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Modeling Tourists' Sustainable Travel Intentions Through an Extended Theory of Planned Behavior: Evidence from PLS-SEM Analysis

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Abstract

The present research explores the factors that shape tourists' willingness to engage in environmentally responsible travel within an island destination context. Using an extended behavioral framework derived from the Theory of Planned Behavior and analyzed through Partial Least Squares Structural Equation Modeling, the study investigates how environmental attitude, travel motivation, destination perceptions, peer communication, perceived service quality and tourism knowledge influence sustainable travel intention. Responses were obtained from 512 domestic travelers through an online survey instrument. The model exhibits strong predictive capability, explaining a considerable proportion of sustainable travel intention, as reflected by an R^2 value of 0.680 (68%). Service quality and destination image were not significant, while WOM (β = 0.322) and tourism knowledge (β = 0.288) were the strongest predictors, followed by motivation (β = 0.146) and environmental attitude (β = 0.108). The hypothesized moderating role of tourism knowledge on the attitude–intention relationship was unsupported. These findings indicate that peer influence and environmental literacy are more influential than traditional destination image or service quality in shaping pro-environmental travel behavior. The study advances TPB by validating its extended framework through PLS-SEM and provides actionable insights for sustainable tourism management and policy formulation.

Keywords: : Environmental Attitude, Siargao Island, SmartPLS-SEM, Sustainable Tourism, Travel Intention, Word-of-Mouth.

Introduction

Tourism has become a major contributor to national development across emerging economies (1), yet its rapid expansion has intensified environmental pressures in ecologically sensitive destinations (2, 3). Island tourism sites are particularly vulnerable due to ecosystem fragility, waste accumulation and resource overuse associated with increasing visitor demand (4–6). As tourism continues to grow, promoting environmentally responsible travel behavior has become essential for balancing economic benefits with long-term environmental sustainability. In the Philippine context, Siargao Island has positioned itself as a sustainability-oriented destination that promotes nature-based tourism alongside environmental stewardship and community participation (7, 8). However, the long-term success of these initiatives eventually depends on tourists' willingness to adopt sustainable travel behaviors.

Despite increasing attention to sustainable tourism, the psychological mechanisms influencing tourists' decisions to select sustainable destinations remain insufficiently explained. Policy interventions and infrastructure improvements alone cannot guarantee sustainable outcomes when tourist behavior does not align with environmental objectives. Travel decisions are shaped by interactions among cognitive evaluations, social influences, personal motivations and contextual expectations (9). This issue is particularly relevant in emerging island destinations, where ecological vulnerability coexists with strong tourism dependence. Behavioral dynamics in these settings may differ from those observed in urban or mass-tourism contexts, highlighting the need to examine determinants of sustainable travel intention within island environments. Recent studies further suggest that tourists' expectations influence how sustainability attributes affect behavioral intention. As environmental awareness becomes quality and destination image may function as baseline expectations rather than primary

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motivational drivers. Under these conditions, social validation mechanisms, including Word-of-Mouth (WOM) communication and informational awareness reflected through tourism knowledge may exert stronger influence on decision-making processes (10). Integrating expectation-based reasoning with behavioral theory therefore provides a more nuanced explanation of sustainable travel behavior.

The Theory of Planned Behavior (TPB) has been widely applied to explain behavioral intention by linking attitudes, subjective norms and perceived behavioral control to decision-making processes (11). Within tourism research, TPB has been extended to incorporate additional psychological and contextual variables relevant to sustainable travel. Prior studies identify environmental attitude, motivation, destination image, WOM and perceived service quality as important predictors of sustainable travel intention (11, 12). Environmental attitude has consistently been associated with pro-environmental decision-making among tourists (13), while motivation reflects intrinsic and extrinsic drivers shaping travel preferences and environmentally conscious choices (14–16). Destination image and WOM contribute to behavioral intention by strengthening emotional attachment and social validation toward eco-destinations (17). Similarly, perceived service quality influences satisfaction, loyalty and post-visit behavioral responses (18).

Tourism knowledge has also received growing attention as a contextual factor influencing sustainable behavior. Previous studies indicate that knowledge enhances tourists' ability to make informed decisions, reduces uncertainty and strengthens alignment between environmental attitudes and pro-environmental actions (19–26). However, empirical findings remain inconsistent. While some studies report a strengthening moderating effect (23, 27), others suggest that cognitive overload or cultural influences may weaken this relationship (18, 25). These mixed results indicate the need for further empirical validation, particularly in island tourism contexts where sustainability awareness and experiential expectations may differ.

Although TPB has been extensively applied in tourism research, several gaps remain. First, empirical validation of extended TPB models in emerging island destinations is limited. Second, previous studies often examine determinants independently rather than simultaneously integrating attitudinal, motivational, perceptual and informational variables within a unified framework. Third, inconsistencies surrounding the moderating role of tourism knowledge highlight unresolved theoretical questions regarding how environmental beliefs, social influence and informational awareness jointly shape sustainable travel intention. Addressing these gaps is necessary to refine the explanatory capacity of TPB and support evidence-based strategies promoting responsible tourism behavior.

Thus, this study extends TPB by integrating motivation, destination image, WOM, perceived service quality and tourism knowledge into a comprehensive behavioral model of sustainable travel intention. The proposed framework captures psychological, social and informational influences within a single structure. Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed to test the direct and moderating relationships among constructs, as this method is well suited for complex models involving multiple latent variables and interaction effects and has demonstrated strong predictive capability in behavioral and tourism research (28).

This study aims to validate an extended TPB framework within the context of sustainable tourism in an emerging island destination in the Philippines. Specifically, it examines how environmental attitude, motivation, destination image, WOM, perceived service quality and tourism knowledge interact to influence sustainable travel intention. The findings are expected to provide theoretical insights into sustainable travel behavior while offering practical guidance for tourism authorities, local government units and destination managers in designing eco-literacy initiatives, responsible tourism strategies and community engagement programs that encourage sustainable travel choices. Based on this framework, the following hypotheses are proposed:

H_1: Environmental attitude positively influences the intention to select sustainable tourist destinations.

H_2: Motivation positively influences the intention to select sustainable tourist destinations.

H_3: Destination image positively influences the intention to select sustainable tourist destinations.

H_4: Word-of-mouth (WOM) positively influences the intention to select sustainable tourist destinations.
H_5: Higher perceived service quality increases tourists' likelihood of selecting sustainable destinations.
H_6: The influence of environmental attitude on intention varies depending on the level of tourism knowledge.

Methodology

Research Design

A cross-sectional design was utilized in this study to examine the behavioral determinants influencing tourists' sustainable travel intentions through an extended Theory of Planned Behavior (TPB) framework. The design was appropriate for testing theoretical relationships among multiple latent variables and identifying the extent to which behavioral, motivational and perceptual factors explain sustainable travel intention (28). The study utilized PLS-SEM as the main statistical approach, which allows the simultaneous assessment of both measurement and structural models. PLS-SEM was chosen for its predictive accuracy, suitability for non-normal data and effectiveness in evaluating complex models with moderating effects. The study was explanatory in nature and aimed to validate the extended TPB model by quantifying the relationships among environmental attitude, motivation, destination image, WOM, perceived service quality, tourism knowledge and sustainable travel intention.

Participants and Sampling

The target population consisted of domestic tourists who had previously visited or planned to visit sustainable destinations in the Philippines. The study employed a non-probability sampling approach using convenience and snowball sampling techniques. This strategy is commonly adopted in tourism behavior research where access to a comprehensive sampling frame of tourists is limited (19). This technique is appropriate when respondents are geographically dispersed. The use of convenience sampling allowed the efficient collection of data from tourists who had prior experience travelling to Siargao Island. While snowball sampling facilitated the broader reach through participant referrals within travel-related social networks.

Although probability sampling enhances representativeness, non-probability sampling is considered acceptable and methodologically sound for exploratory and theory-testing studies using Partial Least Squares Structural Equation Modeling (PLS-SEM). PLS-SEM prioritizes prediction accuracy and model estimation over population parameter generalization and is robust when applied to large samples obtained through non-random methods.

In total, 512 usable responses were obtained, surpassing the minimum threshold suggested for PLS-SEM based on the "10-times rule" (28). This also ensured adequate statistical power for estimating complex structural relationships. Table 1 summarizes the demographic profile of the respondents in terms of their age, gender, educational background and travel frequency. The demographic data indicated that the majority of respondents were aged 18 to 28 years, consistent with the younger segment of travelers who are digitally active and environmentally conscious. Other demographic information, such as gender, educational attainment and travel frequency, was also gathered to describe the respondent profile. Although convenience sampling has inherent limitations in representativeness, the sample size was adequate for structural model estimation and ensured sufficient statistical power.

Table 1: Profile of the Respondents

Profile	Category	Frequency (f)	Percentage (%)
Sex	Male	202	39.8
	Female	306	60.2
Age	18–28 years old	425	84.3
	29–39 years old	56	11.1
	40–50 years old	21	4.2
	51–59 years old	2	0.4
Marital Status	Single	453	89.2
	Married	51	10.0
	Widowed	3	0.6
Nationality	Filipino	478	94.0
	Non-Filipino (Foreigner)	30	5.9
Educational Background	Bachelor's degree	207	40.7
	High School	129	25.4
	Certificate Diploma	83	16.3
	Masters	24	4.7
	PhD	65	12.8

Knowledge of Sustainable Tourism	Yes	419	82.0
	No	89	17.5
Travel Frequency (last 3 years)	2–3 Times	206	40.6
	No, once only	175	34.4
	Over 5 Times	70	13.8
	4–5 Times	57	11.2

Note: n=512

Research Instrument

The study utilized a self-administered structured questionnaire consisting of two main sections. The first section included demographic information, while the second measured the key latent constructs of the extended TPB model, namely Environmental Attitude (29), 5 items for Motivation (30), Destination Image (9 items) (31), 8 items for Word-of-Mouth (32), 6 items for Perceived Service Quality (33), 4 items for Tourism Knowledge (34) and Sustainable Travel Intention (29). All constructs were measured using multiple indicators adapted from established scales used in previous studies to ensure content validity and reliability. The responses were rated on a five-point Likert scale ranging from 1 (strongly disagree) to 5 (strongly agree).

Before data collection, the questionnaire was reviewed by three experts in tourism management and behavioral research to ensure the items were clear and contextually appropriate. A pilot study with 30 respondents was also performed to evaluate the internal consistency of the instrument. All constructs yielded Cronbach's alpha values above 0.70, indicating that the questionnaire was reliable for the subsequent main data collection.

Data Collection Procedure

The online survey was distributed between December 2024 and March 2025 using social media platforms and email networks. Respondents were briefed on the study's purpose, assured that their involvement was voluntary and informed that their responses would remain confidential. Inclusion criteria required participants to be at least 18 years old and have prior experience traveling to Siargao Island within the past two years. Responses that were incomplete or duplicated were removed to maintain data integrity. The online approach allowed for a wide geographic reach while adhering to health and safety guidelines that remain relevant in the post-pandemic research context.

Ethical Considerations

Ethical considerations were carefully observed throughout the conduct of this study. Respondents received clear information regarding the purpose of the research, the procedures involved and how the collected data would be used before participation. Completion of the online questionnaire was voluntary and informed consent was secured electronically before access to the survey was granted.

Confidentiality and anonymity were maintained by ensuring that no identifying information was collected from participants. Individuals were also informed of their option to discontinue participation at any time without any negative consequences. All survey data were stored in a secure environment and used exclusively for scholarly purposes. These measures were undertaken to uphold ethical research standards and to protect the welfare and privacy of the respondents.

Data Analysis

SmartPLS 4 was utilized to perform the statistical analysis using a sequential two-step procedure. Initially, the measurement model was assessed by testing reliability and validity indicators, including Cronbach's alpha, composite reliability, average variance extracted and discriminant validity through both the Fornell–Larcker and HTMT criteria. To determine whether the proposed relationships were supported, the structural model was analyzed by computing path estimates and testing their significance through a bootstrapping process involving 5,000 resampled observations. Additional model evaluation metrics such as R^2, f^2 and Q^2 were also examined to assess the explanatory strength and predictive relevance of the proposed model.

A moderation analysis was conducted to explore whether tourism knowledge modifies the effect of environmental attitude on intention to engage in sustainable travel. This was implemented in PLS-SEM through an interaction modeling procedure based on product indicators. Statistical significance was evaluated at a 0.05 level. These analytical steps ensured a rigorous and

comprehensive assessment of the extended TPB model.

Results

The following section details the study's findings, beginning with the descriptive analysis of each construct, followed by an examination of the overall research model. Table 2 presents the descriptive statistics of all constructs. Respondents reported high environmental attitudes (M = 4.26 – 4.69) and strong motivation (M = 4.58 – 4.65), indicating environmentally aware and engaged travelers. Destination image and perceived service quality received moderately high ratings (M ≈ 3.9 – 4.3), while WOM (M = 4.31 – 4.52) and tourism knowledge (M = 4.24 – 4.45) were both perceived very favorably. Sustainable travel intention was likewise strong (M ≈ 4.41 – 4.47).

Table 2: Descriptive Statistics of Study Constructs

Construct	Mean	SD
Environmental Attitude	4.26 – 4.69	0.45 – 0.64
Motivation	4.58 – 4.65	0.47 – 0.59
Destination Image	3.91 – 4.34	0.51 – 0.72
Word-of-Mouth	4.31 – 4.52	0.53 – 0.66
Perceived Service Quality	3.88 – 4.25	0.58 – 0.69
Tourism Knowledge	4.24 – 4.45	0.49 – 0.63
Sustainable Travel Intention	4.41 – 4.47	0.52 – 0.61

Measurement Model Assessment

Before analyzing the structural paths, the study first assessed the measurement model to ensure it met reliability and validity standards. As shown in Table 3, all outer loadings exceeded the recommended 0.70 threshold (28), except for four items (ISD 4 = –0.269, DI 1 = 0.693, DI 7 = 0.673 and KN 2 = 0.537), which were removed due to low or negative loadings to enhance model fit and reliability (35). The retained items demonstrated strong convergent validity, with loadings ranging from 0.701 to 0.917 across constructs. This result confirms that all observed variables effectively measure their intended latent constructs, providing a sound basis for subsequent model testing.

Table 3: Outer Loadings of Indicators

	Destination Image (DI)	Environmental Attitude	Intention To Select a Sustainable Tourist Destination	Knowledge	Motivation	Perceived Service Quality	WOM	Knowledge X Environmental Attitude
DI1	0.693							
DI2	0.776							
DI3	0.79							
DI4	0.845							
DI5	0.8							
DI6	0.783							
DI7	0.673							
DI8	0.845							
DI9	0.719							
EA1		0.711						
EA2		0.872						
EA3		0.929						
EA4		0.898						
EA5		0.878						
ISD1			0.904					
ISD2			0.937					
ISD3			0.928					
ISD4			-0.269					
ISD5			0.828					
KN1				0.847				
KN2				0.537				
KN3				0.857				
KN4				0.866				
MT1					0.875			
MT2					0.918			
MT3					0.901			
MT4					0.91			
MT5					0.876			
PQ1						0.837		
PQ2						0.864		
PQ3						0.811		
PQ4						0.882		
PQ5						0.772		
WOM1							0.818	
WOM2							0.868	
WOM3							0.903	
WOM4							0.91	

WOM5	0.903	
WOM6	0.893	
WOM7	0.727	
WOM8	0.841	
KNxEA		1

The reliability and convergent validity of the constructs were examined through several indicators, including Cronbach's alpha, rho_A, Composite Reliability and Average Variance Extracted. As shown in Table 4, Cronbach's alpha coefficients ranged between 0.829 and 0.939, composite reliability values between 0.898 and 0.953 and AVE values between 0.640 and 0.805. Each metric exceeded the commonly accepted benchmark levels ($\alpha \geq 0.70$, CR ≥ 0.70, AVE ≥ 0.50), demonstrating that the measurement model meets established standards for internal consistency and convergent validity (36). This demonstrates that the items within each construct are internally consistent and collectively explain substantial variance in their respective latent factors.

Table 4: Reliability and Validity Statistics

Construct	Cronbach's α	rho_A	CR	AVE
Destination Image	0.907	0.917	0.925	0.640
Environmental Attitude	0.911	0.922	0.934	0.741
Intention to Select Sustainable Destination (ISD)	0.879	0.882	0.925	0.805
Knowledge	0.829	0.834	0.898	0.745
Motivation	0.939	0.940	0.953	0.803
Perceived Service Quality	0.890	0.900	0.919	0.696
Word-of-Mouth	0.926	0.932	0.942	0.730

Discriminant validity of the measurement model was examined using both the Fornell–Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio. The values reported in Table 5 show that the square roots of the Average Variance Extracted (AVE), ranging between 0.800 and 0.897, surpassed the correlations among constructs. These results indicate satisfactory construct separation and provide evidence that the measurement items capture conceptually distinct variables. For example, the AVE value for Environmental Attitude (0.861) was higher than its correlations with Motivation (0.841) and Knowledge (0.611), providing evidence of satisfactory discriminant validity (35).

Table 5: Fornell–Larcker Criterion Matrix

	DI	EA	ISD	KN	MT	PSQ	WOM
DI	0.8						
EA	0.533	0.861					
ISD	0.614	0.653	0.897				
KN	0.641	0.611	0.745	0.863			
MT	0.572	0.841	0.683	0.646	0.896		
PSQ	0.694	0.48	0.597	0.64	0.541	0.834	
WOM	0.69	0.622	0.758	0.755	0.65	0.66	0.854

In addition, Table 6 shows that all HTMT values were below 0.90 (37), with the highest value observed between Environmental Attitude and Motivation (0.907), which remains within acceptable bounds. This further confirms that each construct measures a unique dimension of tourist behavior.

Table 6: Heterotrait–Monotrait (HTMT) Ratios

	DI	EA	ISD	KN	MT	PSQ	WOM	KN x EA
DI								
EA	0.571							
ISD	0.634	0.757						
KN	0.709	0.66	0.814					
MT	0.609	0.907	0.76	0.684				
PSQ	0.785	0.523	0.651	0.732	0.582			
WOM	0.733	0.691	0.83	0.835	0.709	0.711		
KN x EA	0.59	0.718	0.597	0.6	0.769	0.53	0.607	

Moreover, Variance Inflation Factor (VIF) values were computed to assess potential multicollinearity among indicators. Table 7 shows that all VIFs were below 5.0, with values ranging from 1.100 to 4.681. The interaction term Knowledge × Environmental Attitude had a VIF of 1.000, confirming the absence of collinearity issues (28). Thus, each predictor contributed independent variance to the model. These results confirm that the measurement model satisfies the statistical

assumptions of reliability, validity and independence. Thus, the measurement model was considered suitable for testing the hypothesized structural relationships.

Table 7: Multicollinearity Assessment (VIF Values)

	VIF
DI 2	1.894
DI 3	2.633
DI 4	3.345
DI 5	2.404
DI 6	2.252
DI 8	2.707
DI 9	1.78
EA 1	1.569
EA 2	3.162
EA 3	4.681
EA 4	3.284
EA 5	3.131
ISD 1	2.656
ISD 3	3.067
ISD 5	2.066
KN 1	1.776
KN 3	1.958
KN 4	2.003
MT 1	3.131
MT 2	4.299
MT 3	3.447
MT 4	4.04
MT 5	3.165
PQ 1	2.216
PQ 2	2.6
PQ 3	2.132
PQ 4	2.798
PQ 5	1.877
WOM 1	2.715
WOM 2	3.29
WOM 3	4.009
WOM 6	3.104
WOM 7	2.489
WOM 8	3.669
KNOWLEDGE x ENVIRONMENTAL ATTITUDE	1

Structural Model Assessment

An extended TPB framework served as the theoretical foundation of this study. As shown in Figure 1, the proposed structural model specifies both direct pathways from environmental attitude, motivation, destination image, WOM, perceived service quality and tourism knowledge to sustainable travel intention and an interaction pathway examining whether tourism knowledge alters the strength of the relationship between environmental attitude and intention. Figure 1 illustrates the proposed research model integrating knowledge as a moderating construct in the extended Theory of Planned Behavior.

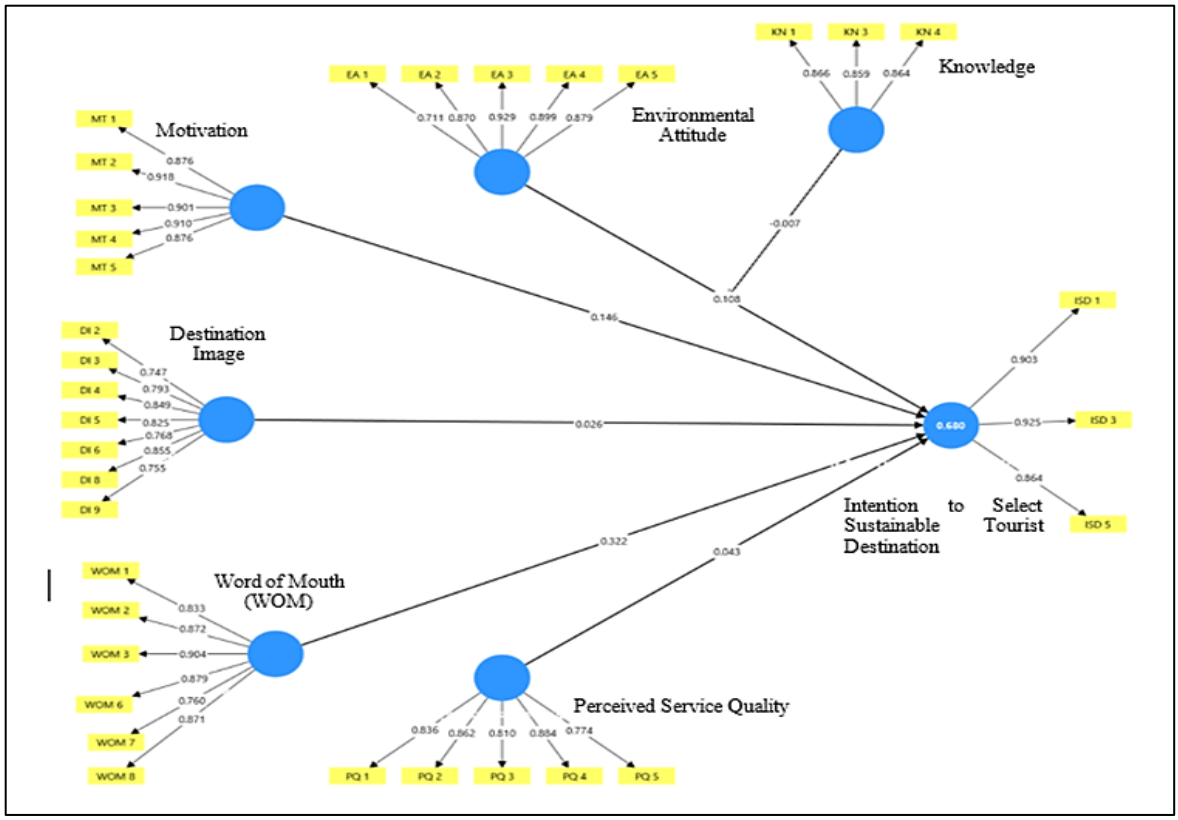

Figure 1: Proposed Research Model Integrating the Extended Theory of Planned Behavior with Knowledge as a Moderating Construct

The structural model was evaluated using a bootstrapping procedure with 5,000 resamples to test the hypothesized relationships among constructs. As shown in Table 8, the extended TPB model explained approximately 68% of the variance in Intention to Select a Sustainable Destination (R^2 = 0.680), demonstrating strong explanatory power. WOM (β = 0.322, p < 0.001) and Knowledge (β = 0.288, p < 0.001) emerged as the most influential predictors. Motivation (β = 0.146, p = 0.046) and Environmental Attitude (β = 0.108, p = 0.039) also exerted positive but moderate effects. However, Destination Image (β = 0.026, p = 0.636) and Perceived Service Quality (β = 0.043, p = 0.329) were not significant. The interaction term Knowledge × Attitude was likewise non-significant (β = –0.007, p = 0.674).

Table 8: Path Coefficients and Hypothesis Testing Results

Hypothesis	Relationship	β	t-value	p-value	Decision
H_1	Environmental Attitude → Intention	0.108	2.068	0.039	Supported
H_2	Motivation → Intention	0.146	1.998	0.046	Supported
H_3	Destination Image → Intention	0.026	0.473	0.636	Not Supported
H_4	WOM → Intention	0.322	5.397	< 0.001	Supported
H_5	Perceived Service Quality → Intention	0.043	0.977	0.329	Not Supported
H_6	Knowledge × Attitude → Intention	–0.007	0.421	0.674	Not Supported

As presented in Table 8, four out of six proposed hypotheses were validated. Environmental attitude (β = 0.108, p = 0.039), motivation (β = 0.146, p = 0.046) and WOM (β = 0.322, p < 0.001) exhibited significant positive effects on sustainable travel intention, underscoring the influence of eco-driven motivation and social endorsement. In contrast, destination image (β = 0.026, p = 0.636) and perceived service quality (β = 0.043, p = 0.329) did not yield statistically significant results, suggesting that these aspects may be regarded as baseline expectations by travelers. Furthermore, tourism knowledge did not moderate the relationship between environmental attitude and intention (β = –0.007, p = 0.674), indicating a direct rather than interactive effect. This diverges from the findings of (10), who identified strong moderating influences of knowledge and image. Interestingly, this study revealed negative coefficients for knowledge (β = –0.47) and image

(β = –0.13), possibly reflecting the elevated expectations of environmentally conscious tourists visiting Siargao. Nevertheless, both studies consistently highlight the critical roles of WOM, motivation and environmental attitude in predicting sustainable travel intentions.

The results indicate that social influence (WOM) and cognitive awareness (knowledge) are the most decisive factors shaping sustainable travel intentions. The positive but weaker effects of attitude and motivation highlight that favorable environmental dispositions and internal drives support, but do not dominate, behavioral intention. Conversely, destination image and service quality appear to be baseline expectations rather than drivers of sustainable decision-making. Overall, the structural model offers empirical confirmation of the extended TPB's explanatory robustness and underscores the importance of peer endorsement and informational awareness in promoting sustainable travel behavior.

Discussion

The findings demonstrate substantial explanatory strength for the extended TPB model in predicting sustainable travel intention in Siargao Island. The model accounts for 68% of the variance in intention, highlighting the combined influence of cognitive awareness and social validation mechanisms. These results underscore the evolving role of peer-driven information and environmental literacy in shaping pro-environmental travel decisions (9).

WOM is the most influential predictor (β = 0.322, p < 0.001), which confirms its established role in shaping tourist behavior (38, 39). The strong mean scores for WOM (M = 4.308–4.521) reflect its persuasive power, particularly among the digitally engaged and youth-dominated sample (84.3% aged 18–28) who are highly responsive to peer influence (40). These findings indicate that social validation and interpersonal recommendations remain dominant sources of trust and motivation, especially in online environments where travel decisions are formed by social media narratives and electronic WOM. This aligns with prior evidence that social influence significantly shapes both attitude and behavioral intention in travel contexts (41). However, beyond confirming earlier findings, the present results indicate that WOM exerts a stronger influence than traditional perceptual determinants such as destination image and service quality. While earlier tourism models often position destination image as a primary driver of intention, the current findings suggest a shift in evaluative priorities within sustainability-oriented destinations, where peer-generated information and shared experiences increasingly shape pro-environmental travel decisions (37, 38). This pattern reflects the growing importance of digitally mediated trust and collective environmental advocacy in contemporary tourism behavior.

As supported by previous studies, tourism knowledge also demonstrated a significant direct effect, emphasizing the role of cognitive awareness in translating environmental concern into behavioral intention (21, 27, 42). Despite its direct significance, the hypothesized moderating effect of Knowledge × Environmental Attitude was not supported (β = –0.007, p = 0.674). This suggests that knowledge exerts a direct rather than interactive influence on sustainable travel intention. This outcome may be attributed to the high baseline environmental awareness within the sample (82%), reflecting the ceiling effect described by (19). Within populations where sustainability awareness is already widespread, the relationship between attitudes and intention may have reached a saturation point. This limits the additional moderating impact of knowledge. This finding provides a nuanced theoretical contribution by suggesting that the moderating role of knowledge may be context-dependent and influenced by baseline literacy levels. While some studies report strong moderation effects, the present results indicate that in high-awareness contexts, knowledge may function primarily as an independent cognitive driver rather than a conditional variable (21, 27, 42).

Moreover, both Motivation (β = 0.146, p = 0.046) and Environmental Attitude (β = 0.108, p = 0.039) were significant but comparatively weaker determinants of sustainable travel intention. Although respondents demonstrated strong motivation and positive environmental attitudes, their behavioral decisions appeared to be more strongly influenced by external cues such as peer endorsement and cognitive awareness. This suggests that motivation and attitude alone may not be sufficient drivers of sustainable behavior without reinforcing informational or social

triggers (43). The findings, therefore, indicate a contextual recalibration of TPB in sustainability-oriented tourism settings, where social validation and knowledge-based awareness may exert stronger influence than purely internal dispositions. Such results highlight the importance of integrating social and informational dimensions into behavioral models of sustainable tourism.

In contrast, Destination Image ($\beta = 0.026$, $p = 0.636$) and Perceived Service Quality ($\beta = 0.043$, $p = 0.329$) were not significant predictors of intention. This finding diverges from traditional tourism and service-quality models (14) but aligns with recent empirical trends suggesting a shift in tourist priorities. As argued in recent studies, sustainability-oriented travelers increasingly perceive destination image and service quality as baseline expectations rather than decision triggers (44, 45). For frequently visited destinations such as Siargao Island, these attributes may have reached saturation, leading tourists to focus more on experiential authenticity, environmental consciousness and social reputation rather than functional quality indicators. This shift suggests that sustainability-oriented decision-making may be guided more by perceived environmental credibility and peer validation than by conventional service-related evaluations.

Moreover, the non-significant moderation effect reinforces the proposition that knowledge's influence tends to plateau in populations with homogeneous awareness levels (19). To capture potential conditional effects more effectively, future research should extend this model to diverse or cross-cultural samples with varying degrees of environmental literacy and exposure to sustainability initiatives. Examining these contextual variations may provide deeper insight into how knowledge interacts with attitudinal and motivational factors in shaping environmentally responsible behavior across different tourism settings.

Furthermore, the findings indicate an evolving paradigm in sustainable tourism behavior. Peer influence (WOM) and tourism knowledge have emerged as the most salient determinants, overshadowing traditional marketing elements such as destination image and service quality. This emphasizes that promoting sustainability requires not only quality experiences but also strong social engagement and informational empowerment (46). Strengthening eco-literacy campaigns, encouraging community storytelling and leveraging digital peer networks can effectively translate environmental awareness into sustained pro-environmental action (47). The results reaffirm that sustainability in tourism is increasingly grounded in social cognition, shared advocacy and informed intentionality, marking a transition from transactional travel behavior toward more value-driven and environmentally conscious decision-making.

This study advances sustainable tourism theory by extending the Theory of Planned Behavior to include tourism knowledge as a key cognitive factor. The results demonstrate its direct influence on behavioral intention while clarifying the contextual limitations of its moderating role in high-awareness populations. These findings suggest that destination managers and policymakers should harness peer-driven communication and eco-literacy programs, such as social media storytelling and community engagement initiatives. These strategies may help transform environmental awareness into actual sustainable travel behavior. At the policy level, the findings call for integrated strategies that institutionalize sustainability education, incentivize responsible tourism practices and strengthen collaboration among stakeholders to ensure that environmental knowledge and social influence translate into long-term pro-environmental travel behavior.

Conclusion

This study examined sustainable travel intention using an extended TPB framework analyzed through PLS-SEM. The findings indicate that peer influence and tourism knowledge exert stronger effects on intention than traditional destination attributes such as image and service quality. The results suggest a shift toward socially validated and cognitively informed decision-making in sustainability-oriented travel. The study contributes theoretically by contextualizing TPB within island tourism and practically by emphasizing eco-literacy initiatives, community engagement and digitally mediated advocacy as key strategies for promoting responsible tourism behavior.

Moreover, the study provides important implications for tourism managers, policymakers

and destination stakeholders. Strategies that support peer-driven communication, digital storytelling and environmentally focused WOM campaigns may be more effective in promoting sustainable tourism behavior than conventional promotional approaches. Enhancing eco-literacy programs, sustainability awareness campaigns and community-based tourism education can further strengthen tourists' knowledge and reinforce responsible travel choices. These insights may guide destination management organizations and local government units in designing evidence-based interventions that encourage environmentally responsible tourism practices and long-term sustainability.

Furthermore, this study employed non-probability convenience and snowball sampling, which limits the generalizability of the findings to broader tourist populations. The study focused primarily on domestic tourists with relatively high levels of environmental awareness, which may have influenced the strength and direction of certain relationships, particularly the non-significant moderating effect of tourism knowledge. Future research may extend this model by examining diverse demographic and cultural contexts to assess its generalizability across different tourism settings. Incorporating additional variables such as environmental values, perceived behavioral control, or emotional attachment may also deepen theoretical understanding. In addition, future studies can continue to refine theoretical and practical understanding of sustainable tourism decision-making in rapidly evolving global tourism landscapes.

Abbreviations

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Authors Contributions

Randy O Descarten: conceptualization, supervision, writing, reviewed and finalized the manuscript.

Conflict of Interest

The author reports no conflicts of interest. This study was carried out without any commercial or financial ties that might be perceived as influencing the research outcomes.

Data Availability

The dataset underpinning this study's results can be obtained from the corresponding author upon reasonable request. However, in order to safeguard participant confidentiality and adhere to ethical requirements, the data are not openly accessible to the public.

Declaration of Artificial Intelligence (AI) Assistance

The authors declare that no generative artificial intelligence was used in the development of the research design, data analysis, interpretation of results, or generation of scientific content. ChatGPT (OpenAI) was used solely for limited language editing and grammar enhancement to improve clarity and readability of the manuscript. All intellectual content, analysis and final decisions remain the responsibility of the authors.

Ethics Approval

This study follows ethical guidelines for conducting research in the social sciences. Informed consent was obtained from all participants prior to data collection.

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