

Investigation on the Activation Mechanism of Pro-Sustainable Behavior Intention in Marine Tourism

Heesup Han

College of Hospitality and Tourism Management, Sejong University, Seoul, South Korea

Dori Davari

School of Hotel & Tourism Management, The Hong Kong Polytechnic University, Hong Kong, China

Seongseop (Sam) Kim

School of Hotel & Tourism Management, The Hong Kong Polytechnic University, Hong Kong, China

Xin Cheng

School of Business, Xi'an International University, Xi'an, China

Jiachen Li

College of Hospitality and Tourism Management, Sejong University, Seoul, South Korea

Xiaoting Chi

Business School, Qingdao University, Qingdao, China

Received: 28 June 2025. **Revision received:** 2 September 2025. **Accepted:** 19 October 2025

Abstract

Sustaining coastal and marine destinations depends heavily on tourists' willingness to act in environmentally responsible ways. Having incorporated Behavioral Reasoning Theory and the Theory of Planned Behavior, this study develops an integrated model linking travelers' reasons for and against sustainable conduct to attitudes, subjective norms, perceived behavioral control, moral obligation, daily eco-practices, and intention. Six reasoning dimensions—financial, environmental, and social benefits versus cost, regulatory, and support barriers—were measured. Structural equation modeling showed that positive reasons strongly enhance attitude, norms, and perceived control, whereas negative reasons mainly erode attitude and control. Moral obligation was the most powerful direct driver of pro-sustainable intention, while daily eco-practices displayed no significant direct effect. Necessary condition analysis confirmed that sufficient levels of positive reasons, favorable attitude, perceived control, and moral obligation are indispensable for strong intention. Fuzzy-set qualitative comparative analysis uncovered several causal combinations, indicating that strong moral obligation can offset weak norms and that abundant positive reasons can counter moderate barriers. These insights advance understanding of sustainable behavior in marine tourism and offer managers practical levers—amplifying positive reasons, fostering moral obligation, and lowering key barriers—to encourage environmentally responsible visitor actions.

Key Words: coastal and marine eco-tourism, normative beliefs, environmentally sustainable behaviors, BRT, TPB, asymmetric causal configuration

JEL Classification: Z32, Q56, D91

Reference: Han, H., Davari, D., Kim, S. (Sam), Cheng, X., Li, J., & Chi, X. (2025). Investigation on the Activation Mechanism of Pro-Sustainable Behavior Intention in Marine Tourism. *Journal of Tourism and Services*, 16(31), 245-269. <https://doi.org/10.29036/ww7saj23>

1. Introduction

With more than three billion people living within 100 km of the coast, marine and coastal areas are some of the world's busiest leisure spaces (UNWTO, 2023). Marine tourism—beach recreation, boating, diving, wildlife watching—as well as coastal tourism—shore-based leisure activities—bring major economic gains but also places fragile ecosystems under serious strain (Fauzi et al., 2024; Han et al., 2024; Rezapouraghdam, 2021). Encouraging visitors to act sustainably, by disposing of waste properly, saving energy on vessels, and maintaining safe distances from wildlife, has become essential for protecting biodiversity and keeping destinations attractive (Hofman et al., 2020; Liu et al., 2020; Koval et al., 2024), making a clear theoretical account of the drivers of sustainable behavioral intention both a research need and a management priority. Although the Behavioral Reasoning Theory (BRT) and Theory of Planned Behavior (TPB) are often used to explain pro-environmental actions, they have seldom been combined in marine-tourism studies (Han et al., 2024). Moreover, long-term research shows that what people intend to do and what they actually do can diverge (Hofman et al., 2020). Marine destinations present special challenges: visitors see problems such as coral bleaching and beach litter firsthand, the classic commons dilemma pits short-term personal gain against long-term ecosystem health (Hardin, 1968), and rules and enforcement often vary across overlapping maritime zones (Meng et al., 2022; Nikic et al., 2024). These conditions heighten both the “reasons for” and the “reasons against” sustainable conduct (Ajzen, 1991), making a combined BRT–TPB model especially useful.

The main research gap lies in a lack of studies pro-sustainable behavior intention in the marine tourism setting. Therefore, this study introduced the interplay of BRT and TPB in order to explain pro-sustainable behavior intention of marine tourism. The TPB's strength lies in its parsimonious, well-validated pathway from attitudes, subjective norms, and perceived behavioral control to intention (Ajzen, 1991), while its limitations include weaker attention to why those antecedents form in the first place, limited treatment of context-specific barriers and facilitators, and reduced sensitivity to the moral and affective drivers common in marine settings. BRT directly addresses these limitations by presenting context-specific “reasons for” (e.g., financial, environmental, social benefits) and “reasons against” (e.g., cost, regulatory, support barriers) that shape attitudes, norms, and control (Westaby, 2010), but BRT on its own is less precise about the normative and control structure through which reasons translate into intention. Our integrated approach leverages BRT's explanatory strength to supply the content and asymmetry of antecedent reasoning and uses the TPB's structural clarity to specify how those reasons propagate through attitudes, subjective norms, and perceived behavioral control to intention, using each theory's strengths to compensate for the other's limitations.

Because many marine activities are optional, pleasure-seeking, and sometimes new to visitors (Chua et al., 2024; Jain et al., 2024;), their judgments about benefits and barriers can shift more than in everyday land-based settings (Chi et al., 2023; Westaby, 2010), which further emphasizes the value of integrating reason-based explanations (BRT) with a robust intention-formation mechanism (TPB). Encounters with marine wildlife often stir strong feelings of moral duty that can strengthen or even replace the usual TPB pathways (Dimitrovski et al., 2021; Errmann et al., 2021; Liu et al., 2020). While TPB accommodates moral influence indirectly via subjective norms, it does not focus on personal moral obligation; therefore, we explicitly incorporate moral obligation to capture deontic motives that are particularly salient in marine encounters (Dimitrovski et al., 2021; Errmann et al., 2021; Liu et al., 2020). Including moral obligation in the model captures these common reactions among different stakeholders including divers, snorkelers, and whale-watchers (Errmann et al., 2021; Meng et al., 2022). Tourists' eco-friendly habits at home may carry over to vacations, or in some cases may give them a sense of license to behave less responsibly (Chua et al., 2024), so examining both moral obligations and daily practices helps separate moment-based motives from long-standing habits (Fauzi et al., 2024). In this way, daily eco-practices complement the integrated BRT–TPB model by accounting for habitual spillover and moral licensing dynamics that neither theory, on its own, fully addresses.

Choices in marine tourism rarely follow a straight path. Weak rule enforcement can wipe out the effect of positive attitudes, while a strong sense of moral obligation can offset low perceived control

(Ajzen, 1991; Hofman et al., 2020; Dimitrovski et al., 2021; Errmann et al., 2021; Meng et al., 2022). To capture both symmetric and asymmetric pathways, where different configurations can yield the same outcome or where certain elements are necessary but not sufficient, this study combines Structural Equation Modeling (SEM) with Necessary Condition Analysis (NCA) and fuzzy-set Qualitative Comparative Analysis (fsQCA), answering recent calls for multi-method studies of tourism behavior (Chi et al., 2024a; 2024b). By embedding the BRT–TPB framework in the real-world setting of marine tourism, the study offers both new theory and practical guidance for managers hoping to encourage visitor sustainable behavior. It pinpoints the key reasons that push travelers toward or away from sustainable behavior, tests how well the expanded model explains moral obligation, everyday eco-practices, and pro-sustainable intent, and shows the different mixes of factors that can boost—or block—environmentally responsible actions at coastal and marine destinations.

Despite extensive use of the TPB and growing application of BRT in sustainability research, marine-tourism studies rarely integrate the two to explain why tourists form particular attitudes, norms, and control beliefs and how these translate into intention (Han et al., 2024). Existing work often treats moral obligation and daily eco-practices as peripheral rather than central determinants, overlooks asymmetric causality and necessity relations that are common in complex field settings (Chi et al., 2024a; 2024b), and under-examines context-specific barriers such as regulatory fragmentation and support constraints unique to marine destinations (Meng et al., 2022). This study addresses these gaps by fusing BRT and the TPB, explicitly modeling moral obligation and daily practices, and employing SEM, NCA, and fsQCA to reveal both net effects and configurational pathways.

2. Literature review

2.1. Pro-sustainable intentions within coastal and marine tourism

Coastal and marine tourism refers to leisure or tourist activities that take place in or around aquatic environments. Marine tourism is defined as activities on or under the sea, such as diving, boating, and snorkeling, while coastal tourism covers shoreline-based leisure like beach recreation and swimming (Papageorgiou, 2016). Since it is expected that tourists may participate in both types during a single trip, and tourism statistics and literature often group them together, the terms are used interchangeably in this study. In this context, pro-sustainable intentions, including tourists' planned willingness to act in environmentally responsible ways such as correctly disposing of waste, saving energy on vessels, minimizing disturbance to wildlife, and respecting spatial buffers, are increasingly recognized as pivotal for maintaining destination quality and biodiversity (Hofman et al., 2020; Liu et al., 2020).

Typical activities include sailing, cruising, fishing, swimming, snorkeling, and wildlife watching (Spinelli & Benevolo, 2022). Like other forms of sustainable tourism, responsible practices in coastal and marine tourism aim to reduce negative impacts on the environment and local communities, while increasing benefits for both tourists and destinations. In practice, these responsible behaviors are preceded by pro-sustainable intentions that are shaped by perceived benefits (e.g., environmental and social gains), perceived barriers (e.g., cost or limited support), subjective norms, and perceived behavioral control (Ajzen, 1991; Westaby, 2010), which are especially salient in marine settings where activities may be novel and discretionary (Chua et al., 2024; Jain et al., 2024). Sustainable coastal and marine tourism goes beyond ecotourism, sustainable fishing, and responsible boating. Hofman et al. (2020) showed that political actions and education about conservation behaviors are especially effective in protecting these environments. Such interventions can bolster intention formation by strengthening favorable attitudes, clarifying norms, and enhancing perceived control over actions such as waste reduction or wildlife-safe viewing (Hofman et al., 2020; Liu et al., 2020). In a study of solid-waste management in Vietnam's coastal cities, Tsai et al. (2021) found that stakeholder engagement, tourism activities, and government policies

all played important roles in sustainability. These governance and engagement mechanisms not only improve environmental outcomes but also create enabling conditions, including clear rules, visible support, and social expectations, which elevate tourists' pro-sustainable intentions and translate them into behavior (Meng et al., 2022).

Coastal areas, in particular, focus on promoting civilized tourism and have drawn attention from many stakeholders (Errmann et al., 2021; Liu et al., 2020; Qiu et al., 2022). Encounters with marine wildlife and sensitive habitats often evoke moral obligations, which can directly motivate pro-sustainable intentions even when perceived control is limited or norms are weak (Errmann et al., 2021; Dimitrovski et al., 2021). By adopting sustainable practices, tourists can help to protect both coastal and marine ecosystems and support the long-term development of these destinations. Strengthening pro-sustainable intentions, and the antecedents that feed them, therefore becomes a practical lever for managers and policymakers seeking to align visitor experiences with conservation goals in coastal and marine tourism (Han et al., 2024; Fauzi et al., 2024). Sustainable coastal and marine tourism practices not only safeguard local environments and communities but also offer tourists unique and memorable experiences (Dimitrovski et al., 2021). When intentions are effectively activated through education, normative cues, and supportive infrastructure, tourists report greater satisfaction and more meaningful, ethically grounded experiences, reinforcing a cycle of sustainable behavior and destination resilience (Hofman et al., 2020; Liu et al., 2020).

2.2. Research model and hypothesis

2.2.1. Relationships from reasons for behaviors to attitude toward environmentally sustainable behaviors, subjective norms, and perceived behavioral control

Previous studies have confirmed the three key components within the TPB, which are attitude, subjective norms, and perceived behavioral control (e.g., Chi et al., 2022; Meng et al., 2022). According to Ajzen (1991), attitude refers to the degree to which a person has a positive or negative evaluation of performing a particular behavior, based on their assessment of its benefits and drawbacks. Before determining whether or not to act, people typically weigh the advantages and disadvantages of a certain conduct (Chi et al., 2023). This evaluative process is central to the formation of attitudes, as individuals consider both personal and contextual reasons for or against the behavior (Ajzen, 1991; Bamberg & Möser, 2007).

Subjective norms are defined as personal moral beliefs that can be used as personal benchmarks for assessing a certain behavior (Chi et al., 2022). However, subjective norms also encompass the perceived social pressure to perform or not perform a behavior, reflecting the influence of important others such as family, friends, or society at large (Ajzen, 1991). People prefer to respect and adopt the opinions of others when making decisions about whether or not to engage in a particular conduct. In the context of coastal and marine tourism, subjective norms are especially important for encouraging sustainable behavior (Dimitrovski et al., 2021; Liu et al., 2020). Empirical evidence suggests that when tourists perceive strong social expectations or approval for sustainable actions, they are more likely to form positive intentions and attitudes toward such behaviors (Bamberg & Möser, 2007; Liu et al., 2020).

Meanwhile, the reasons for tourists engaging with responsible behavior cover three domains: financial, social, and environmental (Chi et al., 2023). Among these, the ethical aspects of decisions are arguably either social or environmental (Chi et al., 2024a; Qiu et al., 2022). People's decision-making process is socially influenced instead of individually because they consider diverse social factors such as ethical values or others' responses (Chi et al., 2024a). The financial reasons could be mainly understood as the financial costs of doing pro-sustainable actions (Chi et al., 2023). Research has shown that when individuals perceive greater financial, social, or environmental benefits, their attitudes, perceived social norms, and sense of control over sustainable behaviors are strengthened (Bamberg & Möser, 2007; Chi

et al., 2023). Conversely, perceived costs or barriers can undermine these TPB components. Accordingly, the following three hypotheses are suggested:

H1-H3: Reasons for behaviors have a significant influence on attitude toward environmentally sustainable behaviors, subjective norms, and perceived behavioral control.

2.2.2. Relationship from reasons against behaviors to attitude toward environmentally sustainable behaviors, subjective norms, and perceived behavioral control

The foundation of BRT is that people use reasoning to decide what to do. This process is shaped by social norms, attitudes, and beliefs (Chi et al., 2023; Westaby, 2010). BRT also stresses the importance of behavioral, emotional, and cognitive factors in decision-making (Chi et al., 2023). Many studies have shown that the way people make pro-environmental decisions is key to understanding how they form eco-friendly intentions and what shapes their attitudes (Han, 2014; León et al., 2021; Meng et al., 2022).

Han (2014) found that cognitive triggers, including subjective norms, are linked to the final choice to act in an eco-friendly way. Meng et al. (2022) also showed that both reasons for and against sustainable behavior help predict global motives, such as attitude, subjective norms, and perceived behavioral control. Barriers like high costs, strict rules, and lack of support can discourage pro-environmental behavior (Chi et al., 2023; Huang et al., 2020; Kaiser & Gutscher, 2003). For example, expensive activities, complicated regulations, or not enough information can make it hard for tourists to act sustainably. These barriers can weaken positive attitudes, reduce the influence of social norms, and lower perceived control. Accordingly, the following three hypotheses are proposed:

H4-H6: Reasons against behaviors have a significant influence on attitude toward environmentally sustainable behaviors, subjective norms, and perceived behavioral control.

2.2.3. Relationships from attitude, social norms, perceived behavioral control to intention to engage in environmentally sustainable behaviors in coastal and marine tourism destinations

Scholars have found a positive relationship between customers' mindful attitudes toward green practices and their pro-environmental behavioral intentions (Errmann et al., 2021; Westaby et al., 2010). Both self-interest and pro-social motives shape attitudes toward the environment and help explain sustainable behavioral intentions (Han, 2014). Several studies have shown that individuals' environmental concerns and positive attitudes about green practices influence their intentions to act sustainably (Dimitrovski et al., 2021; Merli et al., 2019; Lui et al., 2020; Ajzen, 1991).

The importance of subjective norms in shaping people's behavioral intentions has been well established by earlier research (Chi et al., 2022; Ferreira et al., 2025). According to BRT, people often consider their overall motivations in relation to subjective norms (Westaby et al., 2010). People generally consider and follow others' opinions when deciding whether to participate in a certain behavior. If influential people value or support eco-friendly travel, their opinions can encourage tourists to act more sustainably (Chi et al., 2023; León et al., 2021). Tourists often rely on the views of parents, significant others, friends, colleagues, and even other tourists when deciding whether to engage in environmentally friendly behavior (Ferreira et al., 2025).

To understand human decision-making, perceived control is a key part of the cognitive framework in BRT (Chi et al., 2023; Westaby et al., 2010). Previous research has shown a strong link between tourists' intentions to behave in environmentally friendly ways and their sense of behavioral control (Khanra et al., 2021). Chi et al. (2022) stated that perceived behavioral control comes from individuals' perceptions of their knowledge, abilities, skills, and resources. This belief has a positive impact on tourists' pro-social and pro-environmental intentions, as well as their willingness to take actions like litter-picking. The Theory of Planned Behavior also supports the idea that attitude, subjective norms,

and perceived behavioral control are direct predictors of behavioral intention (Ajzen, 1991). These findings lead to the following hypotheses:

H7-H9: Attitude toward environmentally sustainable behaviors, social norms, and perceived behavioral control have a significant influence on intention to engage in environmentally sustainable behaviors in coastal and marine tourism destinations.

2.2.4. Relationships from attitude, social norms, and perceived behavioral control to sense moral obligation to take pro-environmental actions

Tourists' environmental attitudes can have a significant impact on their willingness to engage in environmentally friendly behaviors (Chi et al., 2022, 2023; Rezapouraghdam, 2021). A strong sense of moral obligation is also important. Tourists who have a mindful environmental ethic are more likely to act in environmentally friendly ways (Dimitrovski et al., 2021; Errmann et al., 2021; Liu et al., 2020; Qu et al., 2021). Moral obligation helps bridge the gap between what tourists want to do and what they actually do in terms of sustainability (Chi et al., 2023; Richards & Font, 2019; Onwezen et al., 2013). The obligation to take pro-environmental actions relates to a "moral obligation to perform or refrain from specific actions" (Schwartz & Howard, 1981, p. 191).

Subjective norms also shape an individual's behavioral intentions (Chi et al., 2021). People often consider and follow the opinions of others when deciding whether to act sustainably. This means that social influence, including from celebrities or peers, can affect their sense of moral duty. A strong sense of moral obligation can further motivate tourists to engage in environmentally friendly practices (Chi et al., 2022, 2023; Dimitrovski et al., 2021; Liu et al., 2020; Qu et al., 2021; Rezapouraghdam, 2021). Again, moral obligation is key in closing the gap between intention and actual behavior (Chi et al., 2023; Richards & Font, 2019).

There is a considerable association between perceived behavioral control and pro-environmental behavioral intentions among tourists (Khanra et al., 2021). When tourists feel they have the ability and resources to act, their sense of moral obligation to do so can become stronger (Onwezen et al., 2013). In summary, attitude, subjective norms, and perceived behavioral control all play a role in shaping tourists' sense of moral obligation to take pro-environmental actions. Accordingly, the following hypotheses are proposed:

H10-H12: Attitude, subjective norms, and perceived behavioral control have a significant influence on sense of moral obligation to take pro-environmental actions.

2.2.5. Relationship between sense of moral obligation to take pro-environmental actions and intention to undertake environmentally sustainable behaviors in coastal and marine tourism destinations

In tourism sustainability, a sense of moral obligation to take pro-environmental actions is essential for closing the gap between preferences and actual behavior (Chi et al., 2023; Gao et al., 2018). When tourists feel a strong moral duty, they are more likely to act in environmentally friendly ways. However, some research in other contexts shows that people may separate their moral beliefs from their intentions by disengaging from their pro-environmental values (see review by Newman et al., 2019). This means that even if people know what is right, they may not always act on it.

Chi et al. (2022), Han (2014), and Meng et al. (2022) have confirmed that moral duty has a positive effect on visitors' pro-environmental intentions, while moral disengagement can reduce these intentions. In coastal and marine tourism, understanding this relationship is important for promoting sustainable actions. Therefore, the last hypothesis is proposed:

H13: Sense of moral obligation to take pro-environmental actions has a significant influence on intention to undertake environmentally sustainable behaviors in coastal and marine tourism destinations.

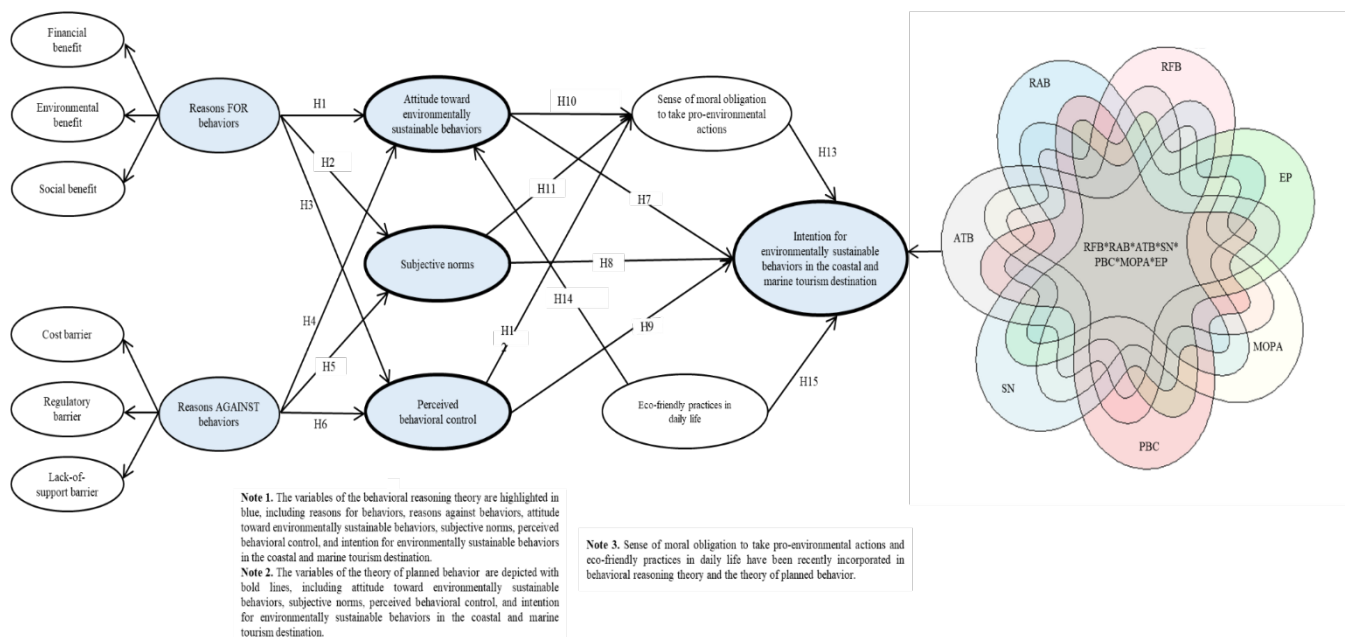
2.2.6. Relationship from eco-friendly practices in daily life to attitude and intention toward environmentally sustainable behaviors

Numerous earlier tourism research have acknowledged the impact of eco-friendly practices in daily life on pro-environmental attitudes (e.g., Chi et al., 2022; Han, 2021; Hofman et al., 2020; Meng et al., 2022). Chi et al. (2023) indicated that people who support environmental regulations or practices have favourable attitudes toward engaging in environmentally conscious behaviors. Despite the recognized impact of eco-friendly practices in daily life on pro-environmental attitudes in tourism (Chua et al., 2024; Han, 2021), there has been disagreeing research results on the gap between preferences and behavior within the context of sustainable tourism (Chua et al., 2024; Pu, et al., 2022). In the context of marine tourism, the following hypotheses are developed to investigate the effects of consistent eco-friendly practices on tourists' pro-environmental attitudes and intention toward sustainable behaviors.

H14-H15: Eco-friendly practices in daily life have a significant influence on attitude and intention toward environmentally sustainable behaviors in coastal and marine tourism destinations.

The proposed theoretical model, aiming to identify the net effects among study variables and the causal configurational impacts from antecedent variables to outcome variable, is illustrated in Figure 1.

Figure 1. Proposed model



Source: Authors' own work

3. Methods

3.1. Measures

This study adopted validated measures from prior research and adapted them with input from academics and field experts to ensure contextual appropriateness. Specifically, four items for financial benefit, four for environmental benefit, and five for social benefit were taken from Meng et al., (2022).

Evaluating reasons against behaviors involved three items for cost barriers, three for regulatory barriers, and four for lack of barriers were taken from Chi et al., (2023). Attitude toward the behavior, subjective norms, perceived behavioral control, and moral obligation were each measured with three items were taken from Chi et al., (2022) and Han (2014). In addition, seven items assessed eco-friendly practices in daily life, and three items measured intentions to engage in environmentally sustainable behaviors were taken from Chua et al. (2024). All items were evaluated on a 7-point Likert scale ranging from “strongly disagree” (1) to “strongly agree” (7), except for attitude toward the behavior (i.e., “harmful” [1] to “beneficial” [7]) and eco-friendly practices in daily life, ranging from “never” (1) to “always” (7). All items are shown in Supplement material B.

3.2. Data Collection

An online survey method was used in this study, and individuals aged 18 and above residing in South Korea were targeted. The web-based survey was conducted by the specialized company Macromill Embrain, which is one of the largest research companies in Korea and has been providing online samples for over two decades. The research company's database uses a screening question to randomly contact qualified potential participants, and it invites them to participate in the survey by emails. To ensure relevance, participants were screened based on their recent travel experiences, and only those who had engaged in coastal and marine tourism activities within the past 6 months were directed to the survey by clicking on the hyperlink provided in the email. 382 valid questionnaires were used for data analysis. Table 1 shows the sample profiles. To assess common method variance (CMV), Harman's single-factor test was conducted. The explained variance of the first component was 35.2%, which is below the recommended threshold of 40% (Chi et al., 2023). Furthermore, all constructs exhibited variance inflation factor (VIF) values below 5, confirming the absence of collinearity issues (Sharma et al., 2021). These results indicate that CMV was not a concern in this study.

Table 1. **Demographic information and travel characteristics (n=382)**

Variable	Category	Distribution	Valid percentage
Gender	Male	202	52.9
	Female	180	47.1
Age	18 ~ 29 years old	83	21.7
	30 ~ 39 years old	89	23.2
	40 ~ 49 years old	98	25.7
	50 ~ 59 years old	112	29.3
Household annual income	Under \$25,000	36	9.4
	\$25,000 ~ \$39,999	87	22.8
	\$40,000 ~ \$54,999	74	19.4
	\$55,000 ~ \$69,999	62	16.2
	\$70,000 ~ \$84,999	38	9.9
	\$85,000 ~ \$99,999	35	9.2
	Over \$100,000	50	13.1
Education background	Less than high school degree	2	0.5
	High school degree	60	15.7
	2-year degree / community-college degree	48	12.6
	University graduate	237	62
	Graduate degree	35	9.2
Travel frequency in 5 years	1 time	29	7.6
	2 ~ 3 times	133	34.8
	4 ~ 5 times	122	31.9
	6 ~ 9 times	36	9.4

	Over 10 times	62	16.2
Last costal and marine tourism	Within the last 1 month	86	22.5
	Within the last 2 months	79	20.7
	Within the last 3 months	81	21.2
	Within the last 4 months	47	12.3
	Within the last 5 months	19	5.0
	Within the last 6 months	70	18.3

Source: Authors' own work

3.2. Data analytic methods

This study employed a systematic and rigorous methodological approach, integrating multiple analytical techniques to enhance the robustness of the findings. Specifically, confirmatory factor analysis (CFA) was conducted using SPSS 23.0 to evaluate the reliability and validity of the measurement model. Structural equation modeling (SEM) was subsequently performed in AMOS 26.0 to test the hypothesized relationships among the constructs. Reverse case analysis was then carried out in SPSS 23.0 to identify cases that contradicted the proposed hypotheses, suggesting the need for nonlinear analytical approaches to uncover potential relationships that linear methods such as SEM might overlook. Necessary condition analysis (NCA) was next conducted in R Studio, followed by a bottleneck table analysis to determine the minimum level of each condition required to achieve different outcome levels. Finally, fuzzy-set qualitative comparative analysis (fsQCA) was performed using fsQCA 4.0 to explore the causal complexity underlying configurations that lead to equivalent outcomes.

4. Results

4.1. Reliability and validity

This study assessed the overall quality of the measurement model using confirmatory factor analysis (CFA) (Cheng et al., 2023). The intra-item consistency of the scale was tested through Cronbach's alpha and composite reliability (CR) to assess the reliability and internal consistency of measurement scales (Chi et al., 2024a; Fornell & Larcker, 1981). The CFA outcomes (in supplement material A) showed a good model fit ($X^2=71.119$, $df=965$, $X^2/df=1.524$; $p < .001$, RMSEA =.037; CFI =.961; IFI =.961; TLI=.956). The average variance extracted (AVE) values of variables were all greater than the cutoff of 0.5 (Hair et al., 1998), supporting the convergent and discriminant validity of the measurement model used. Additionally, to assess the normality of this study, the skewness and kurtosis of each measurement item were measured. The values for skewness fell between -.973 and .265, and the values for kurtosis fell between -.827 and .826. This indicates that the dataset of this study exhibits a clear normal distribution and does not include severe skewness or kurtosis issues. Upon establishing the reliability and validity of the measurement model, the subsequent subsection tested the hypothesized structural relationships.

4.2. Sufficient antecedents

Table 2 and Figure 2 show the results of SEM, indicating that the structural model adequately fits the data ($\chi^2=1658.174$, $df=1010$, $p < .001$; $\chi^2/df=1.642$; RMSEA = .041; CFI = .950; IFI = .950; TLI = .947). The higher order constructs of reasons for and against behaviors implied a well-explained level in financial benefit ($R^2 = .818$), environmental benefit ($R^2 = .930$), social benefit ($R^2 = .771$), cost barrier ($R^2 = .598$), regulatory barrier ($R^2 = .608$), and lack-of-support barrier ($R^2 = .681$). The reasons for behavior had a significant and positive impact on attitude toward the behavior ($\beta = .518$, $p < .001$),

subjective norms ($\beta = .730, p < .001$), and perceived behavioral control ($\beta = .747, p < .001$). Therefore, hypotheses 1, 2, and 3 were supported.

The reasons against behavior had a significant and negative impact on attitude toward the behavior ($\beta = -.106, p < .01$) and perceived behavioral control ($\beta = -.125, p < .01$), but it did not show a significant negative impact on subjective norms ($\beta = -.089, p > .05$). Thus, hypotheses 4 and 6 were supported, while hypothesis 5 was not supported. Attitude toward behavior ($\beta = .263, p < .001$) and perceived behavioral control ($\beta = .271, p < .001$) were significantly linked to intention for environmentally sustainable behaviors in the coastal and marine tourism destination. Therefore, hypotheses 7 and 9 were supported. Subjective norms did not show a significant impact on intention for environmentally sustainable behaviors in coastal and marine tourism destination ($\beta = .051, p > .05$), thus, hypothesis 8 was not supported. Attitude toward behavior ($\beta = .338, p < .001$), subjective norms ($\beta = .349, p < .001$), and perceived behavioral control ($\beta = .348, p < .001$) had a significant and positive impact on sense of moral obligation to take pro-environmental actions. Thus, hypotheses 10, 11, and 12 were supported.

Sense of moral obligation to take pro-environmental actions was found to positively predict intention for environmentally sustainable behaviors in coastal and marine tourism destination ($\beta = .552, p < .001$), supporting hypothesis 13. Eco-friendly practices in daily life did not show a significant impact on attitude toward the behavior ($\beta = .016, p > .05$) and intention for environmentally sustainable behaviors in the coastal and marine tourism destination ($\beta = .038, p > .05$). Therefore, hypotheses 14 and 15 were not supported by the data.

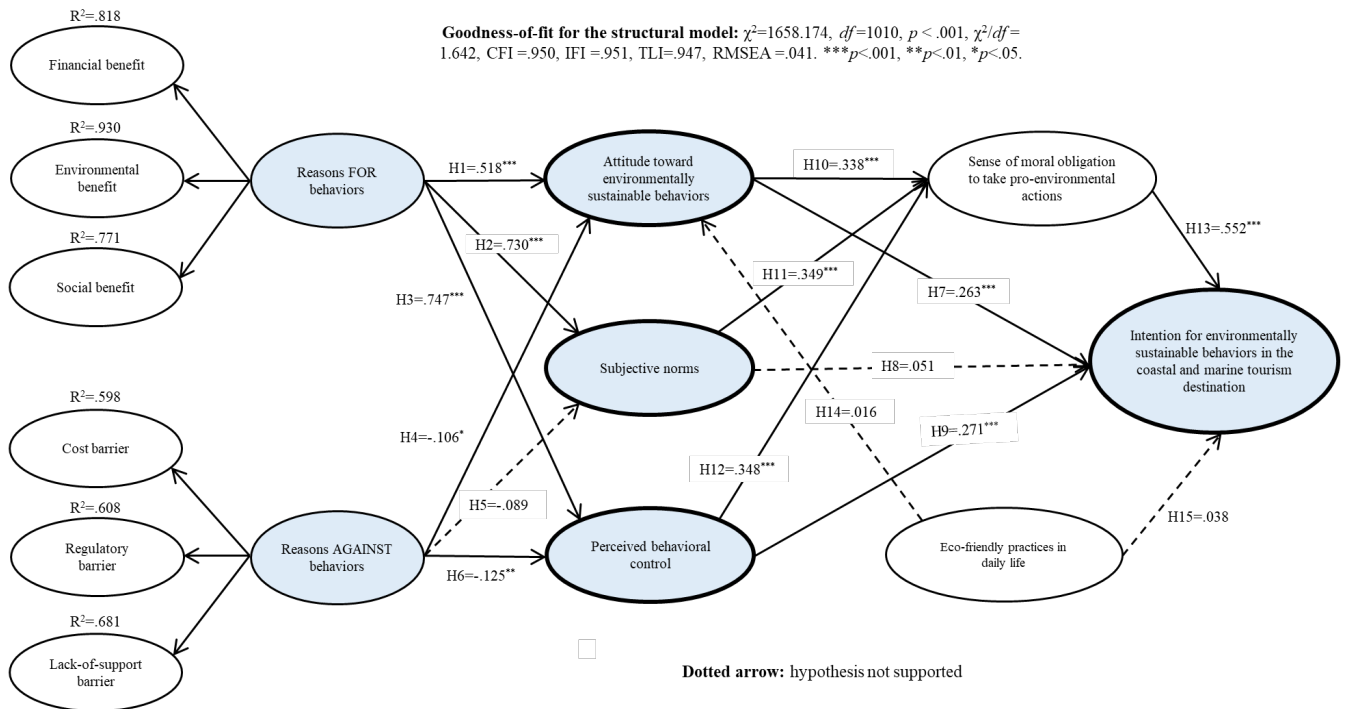
Table 2. Results of hypothesis testing

Hypothesis			Standardized coefficients	t-value	Results
H1: RFB	→	ATB	.518	10.075***	Supported
H2: RFB	→	SN	.730	11.778***	Supported
H3: RFB	→	PBC	.747	11.916***	Supported
H4: RAB	→	ATB	-.106	-2.066*	Supported
H5: RAB	→	SN	-.089	-1.667	Not Supported
H6: RAB	→	PBC	-.125	-2.788**	Supported
H7: ATB	→	IESB	.263	4.437***	Supported
H8: SN	→	IESB	.051	.997	Not Supported
H9: PBC	→	IESB	.271	4.524***	Supported
H10: ATB	→	MOPA	.338	5.640***	Supported
H11: SN	→	MOPA	.349	6.987***	Supported
H12: PBC	→	MOPA	.348	5.977***	Supported
H13: MOPA	→	IESB	.552	6.796***	Supported
H14: EP	→	ATB	.016	.379	Not Supported
H15: EP	→	IESB	.038	.969	Not Supported
Goodness-of-fit statistics:					
$\chi^2 = 1658.174$ ($df = 1010, p < .001$), $\chi^2/df = 1.642$, RMSEA = .041, CFI = .950, IFI = .951, TLI = .947.					

Note: IESB: Intention for environmentally sustainable behaviors in the coastal and marine tourism destination, RFB: Reasons for behaviors, RAB: Reasons against behaviors, ATB: Attitude toward the behavior, SN: Subjective norms, PBC: Perceived behavioral control, MOPA: Sense of moral obligation to take pro-environmental actions, EP: Eco-friendly practices in daily life, S.D: standardized deviation, AVE: average variance extracted, CR: composite reliability. *** $p < .001$, ** $p < .01$, * $p < .05$.

Source: Authors' own work

Figure 2. Results for structural model



Source: Authors' own work

4.3. Contrarian case analysis

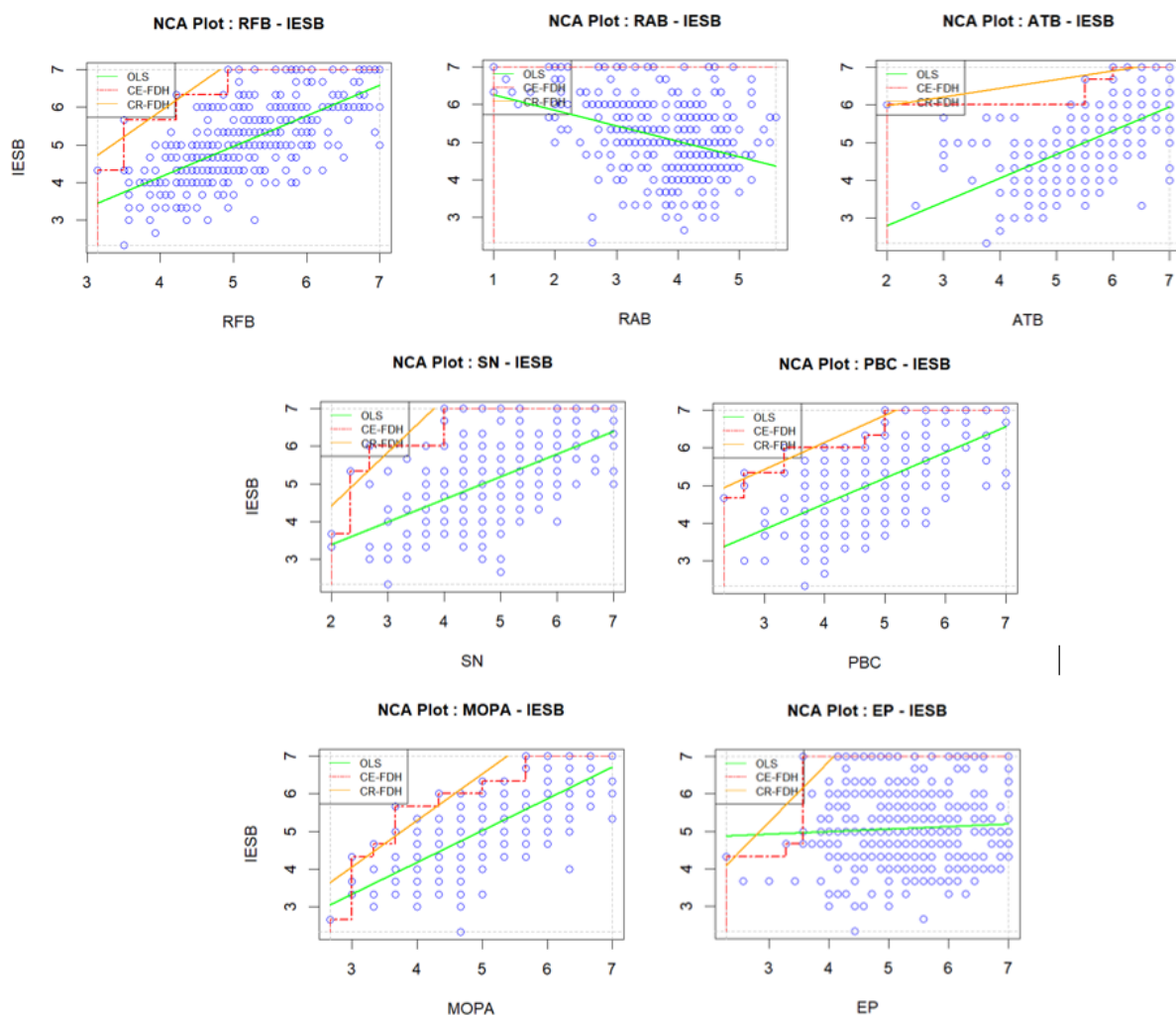
Woodside (2014) emphasized that conducting contrarian case analysis and examining the distribution of sample data not only helps to identify outliers but also reveals cases that cannot be explained by the main effects. To determine whether such contrarian cases existed in the dataset, configuration analysis and contrarian case analysis were performed (Han et al., 2025). All variables were divided into quintiles, with respondent cases grouped into five equally sized categories ranging from the lowest to the highest quintile of each construct. Cross-tabulations were then carried out to assess the relationships between conditions and outcomes (McClelland, 1998). The results revealed several relationships beyond the main effects, thereby underscoring the necessity of configuration analysis (see Supplementary Material B).

4.4. NCA results

Based on the guidelines proposed by Richter et al. (2020) and Sukhov et al. (2022) on NCA, this study generated involved drawing scatter plots on a Cartesian coordinate system using the NCA package in R software. The horizontal x-axis and vertical y-axis correspond to the predictor variable and the outcome variable, respectively. The ceiling line is displayed between the zone containing observed values and the region with no observed values (Figure 3). Dul (2016a) declared that the ceiling regression-free disposal hull (CR-FDH) line is suitable for situations involving data that is discrete with a large number of levels or continuous. Therefore, this study employed the CR-FDH line to analyze effect sizes. The left-hand and right-hand side of the orange ceiling line correspond to the space without any observations and the space containing the observations, respectively. This helped identify the extent to which each antecedent condition constrained the degree of intention to engage in environmentally sustainable behaviors in coastal and marine tourism destinations.

As per Dul (2016b), effect sizes > 0.5 are very large effects, effects sizes between 0.3 and 0.5 are large effects, while those between 0.1 and 0.3 are medium effects. The results in Table 3, indicate that several conditions were necessary for intention for environmentally sustainable behaviors in coastal and marine tourism destination, as they exhibited effect sizes greater than zero. Among these conditions, sense of moral obligation to take pro-environmental actions had the largest effect size ($d = 0.253$, $p < 0.05$), indicating a medium effect size ($0.1 \leq d \leq 0.3$) (Dul, 2016b). This was followed by perceived behavioral control ($d = 0.158$, $p < 0.05$), attitude toward the behavior ($d = 0.157$, $p < 0.05$), reasons for behaviors ($d = 0.132$, $p < 0.05$), and subjective norms ($d = 0.129$, $p < 0.05$).

Figure 3. Visualization of necessity analysis conducted between antecedents and IESB



Source: Authors' own work

Table 3. NCA effect sizes

Antecedent conditions	IESB	
	ce_fdh	p-value
RFB	0.132	0.000**
RAB	0.000	1.000

ATB	0.157	0.042**
SN	0.129	0.003**
PBC	0.158	0.000**
MOPA	0.253	0.000**
EP	0.152	0.055

Note: ce_fdh: Ceiling envelopment—Free Disposal Hull. “***” indicates a medium effect size. IESB: Intention for environmentally sustainable behaviors in the coastal and marine tourism destination, RFB: Reasons for behaviors, RAB: Reasons against behaviors, ATB: Attitude toward the behavior, SN: Subjective norms, PBC: Perceived behavioral control, MOPA: Sense of moral obligation to take pro-environmental actions, EP: Eco-friendly practices in daily life.

Source: Authors’ own work

The bottleneck analysis in Table 4 indicates the minimum level of each condition required for each output level. To attain a high level of intention for environmentally sustainable behaviors in the coastal and marine tourism destination (80% and above), as shown in the table, the minimum levels for various antecedent conditions influencing behaviors were determined as follows: 25.3% for reasons for behaviors, 7.1% for attitude toward the behavior, 23% for subjective norms, 33.1% for perceived behavioral control, 45.2% for a sense of moral obligation to take pro-environmental actions, and 25.8% for eco-friendly practices in daily life. Therefore, when tourism managers aim to achieve high levels of intention to engage in environmentally sustainable behaviors, it is necessary to ensure a certain (but not necessarily excessive) level of reasons for behaviors, attitude toward the behavior, subjective norms, perceived behavioral control, and a sense of moral obligation to take pro-environmental actions, as well as eco-friendly practices in daily life. If these antecedent conditions are not in place, the desired outcome may not occur. When assessing the need for multiple conditions to achieve a certain outcome, a bottleneck table can be helpful in identifying the combination of necessary conditions and their required levels.

Table 4. **Bottleneck table (percentages)**

IESB(Outcome)	RFB	RAB	ATB	SN	PBC	MOPA	EP
0	NN	NN	NN	NN	NN	NN	NN
10	NN	NN	NN	NN	NN	NN	NN
20	NN	NN	NN	NN	NN	NN	NN
30	NN	NN	NN	NN	NN	1.4	NN
40	NN	NN	NN	NN	NN	10.2	1.3
50	NN	NN	NN	3.3	NN	18.9	7.4
60	7.5	NN	NN	9.8	5.3	27.7	13.5
70	16.4	NN	NN	16.4	19.2	36.5	19.7
80	25.3	NN	7.1	23.0	33.1	45.2	25.8
90	34.2	NN	48.1	29.5	47.0	54.0	31.9
100	43.1	NN	89.0	36.1	60.9	62.8	38.0

Note: Bottleneck table for the CE-FDH ceiling technique: required minimum levels of the necessary condition (0 = observed minimum and 100 = observed maximum) for different desired levels of the IESB, NN: Not necessary. RFB: Reasons for behaviors, RAB: Reasons against behaviors, ATB: Attitude toward the behavior, SN: Subjective norms, PBC: Perceived behavioral control, MOPA: Sense of moral obligation to take pro-environmental actions, EP: Eco-friendly practices in daily life, IESB: Intention for environmentally sustainable behaviors in the coastal and marine tourism destination

Source: Authors’ own work

4.5. Sufficient configurations

After confirming the presence of contrarian cases and establishing the effect sizes of the conditions, this study employed fuzzy-set qualitative comparative analysis (fsQCA) to explore how different configurations of antecedents jointly explain both strong and weak intentions for environmentally sustainable behaviors in the coastal and marine tourism destination. The fsQCA 3.0

software was used to convert the fuzzy-set data into truth tables for further analysis (Sangkaew et al., 2025). The analysis yielded three types of solutions: complex, parsimonious, and intermediate solutions. Complex solutions encompass all possible combinations of conditions, including those that are unobserved in the data (Cheng et al., 2025). Therefore, this study employs configurations or formulations proposed for complex solutions. Table 5 displays the relevant combinations of configurations that can predict a high intention among tourists to engage in environmentally sustainable behaviors in coastal and marine tourism destinations. The solution yielded two configurations (coverage: 0.595, consistency: 0.956). Coverage and consistency are two probability measures used to validate that a computed recipe constitutes a sufficient and consistent causal configuration. The threshold values for coverage and consistency are 0.2 and 0.8, respectively (Chi et al., 2024a).

The first model demonstrates that when reasons for behaviors, attitude toward the behavior, subjective norms, perceived behavioral control, and sense of moral obligation to take pro-environmental actions are high, tourists exhibit a high intention to engage in sustainable behavior in coastal and marine tourism destinations. The second model illustrates that high intention to engage in sustainable behavior in the coastal and marine tourism destination is caused by high reasons for behaviors, attitude toward the behavior, subjective norms, sense of moral obligation to take pro-environmental actions, and eco-friendly practices in daily life.

Four configurations explained low intention to engage in sustainable behavior in coastal and marine tourism destinations (coverage: 0.610, consistency: 0.978). Model 1 demonstrates that low intention is caused by the configurations of low reasons for behaviors, attitude toward the behavior, subjective norms, perceived behavioral control, and sense of moral obligation to take pro-environmental actions. Alternatively, a combination of low attitude toward the behavior, subjective norms, perceived behavioral control, and sense of moral obligation to take pro-environmental actions when reasons against behaviors are high can also lead to low intention to engage in sustainable behavior, even when tourists have high eco-friendly practices in daily life. The third model indicates that low intention is caused by high reasons against behaviors, low reasons for behaviors, attitude toward the behavior, perceived behavioral control, and sense of moral obligation to take pro-environmental actions and high eco-friendly practices in daily life. The fourth model shows that low intention is caused by high reasons against behaviors, low reasons for behaviors, attitude toward the behavior, subjective norms, and sense of moral obligation to take pro-environmental actions and high eco-friendly practices in daily life.

Table 5. Sufficient causal configurations for outcome

Models for predicting strong intentions for environmentally sustainable behaviors in the coastal and marine tourism destination	Raw Coverage	Unique Coverage	Consistency
IESB = $f(RFB, RAB, ATB, SN, PBC, MOPA, EP)$			
M1: $RFB*ATB*SN*PBC*MOPA$	0.570	0.167	0.960
M2: $RFB*ATB*SN*MOPA*EP$	0.428	0.025	0.948
Solution coverage: 0.595			
Solution consistency: 0.956			
Models for predicting weak intentions for environmentally sustainable behaviors in the coastal and marine tourism destination			
$\sim IESB = f(RFB, RAB, ATB, SN, PBC, MOPA, EP)$			
M1: $\sim RFB*\sim ATB*\sim SN*\sim PBC*\sim MOPA$	0.567	0.195	0.983
M2: $RAB*\sim ATB*\sim SN*\sim PBC*\sim MOPA*EP$	0.387	0.015	0.979
M3: $\sim RFB*RAB*\sim ATB*\sim PBC*\sim MOPA*EP$	0.388	0.016	0.975
M4: $\sim RFB*RAB*\sim ATB*\sim SN*\sim MOPA*EP$	0.383	0.011	0.978
Solution coverage: 0.610			
Solution consistency: 0.978			

Note: M stands for model. IESB: Intention for environmentally sustainable behaviors in the coastal and marine tourism destination, RFB: Reasons for behaviors, RAB: Reasons against behaviors, ATB: Attitude toward the behavior, SN: Subjective norms, PBC: Perceived behavioral control, MOPA: Sense of moral obligation to take pro-environmental actions, EP: Eco-friendly practices in daily life. ~ indicates negation condition.

Source: Authors' own work

5. Discussion and Implications

5.1. Theoretical implications

Through the lens of integrated theoretical frameworks and the use of a mixed-methods approach, this study deconstructs the underlying mechanism shaping tourists' willingness to engage in environmentally sustainable behaviors at coastal and marine destinations and provides a nuanced understanding of the role of individuals' daily eco-friendly practices on this process.

Theoretically, this study offers new insights by integrating Behavioral Reasoning Theory and the Theory of Planned Behavior into a single model tailored to coastal and marine tourism—a context where their joint use remains rare (Han et al., 2024). The six BRT reasoning dimensions—financial, environmental, and social benefits alongside cost, regulatory, and lack-of-support barriers—are conceptualized as higher-order drivers that shape TPB's attitude, subjective norms, and perceived behavioral control. Demonstrating that these reasoning factors account for sizable variance in the three TPB components confirms BRT's explanatory power for tourists' environmentally sustainable behavior in marine settings and expands the theory's reach (Chi et al., 2023; Chua et al., 2024). By positioning moral obligation and daily eco-friendly practices as sequential mediators, the model also shows that pro-environmental reasoning influences behavior not only through cognitive routes but through ethical feelings and habitual routines—aligned with previous studies (e.g., Wang, 2024; Xu et al., 2020).

Findings further refine TPB in the marine-tourism context. Although all three TPB predictors remain significant, attitude functions as both a sufficient and necessary condition for high intention, while subjective norms play a weaker, context-dependent role. Bottleneck and configuration analyses identify minimum thresholds for attitude, perceived control, and moral obligation, underscoring the dominance of personal conviction over social pressure when visitors confront visible ecosystem threats and fragmented regulation (Meng et al., 2022).

Methodologically, the research pioneers a three-stage analytic protocol—structural equation modeling, necessary condition analysis, and fuzzy-set qualitative comparative analysis—to capture additive and configurational effects on sustainable intention. This multi-method design uncovers hidden asymmetries: daily eco-friendly practices show no direct linear effect yet become indispensable in several high-intention configurations, while “reasons against” behavior are marginal for strong intention but central to explaining weak intention. Demonstrating how linear, necessary, and combinational logics coexist provides tourism researchers with a richer toolkit for untangling complex behavioral processes and highlights that positive reasoning and moral obligation can offset weak social norms and regulatory gaps.

5.2. Managerial implications

The managerial implications of encouraging tourists to participate in sustainable practices in coastal and marine destinations can be discussed from many aspects, aiming to promote local governments, tourism enterprises, communities and tourists to jointly participate in the protection of marine animal diversity and the maintenance of the ecosystem environment. To note, coastal and marine destinations could achieve competitive advantages by offering ecologically compatible products. For coastal and marine destinations, tourists tend to expect a low monetary expenditure to their green

consumption, otherwise they might refuse to pay for the products. Thus, the price of eco-friendly products should consider the affordability for general public. Coastal and marine tour operators and coastal business could control cost budget by adopting eco-friendly equipment, and facilities (e.g., recycled and reusable materials, energy-efficient appliances, etc.) and make the products easier for tourists to make use of. For another, this study further suggest that these products should be designed and promoted as beneficial to protect coastal and marine life, resources, and the environment to improve the well-being of both people and coastal and marine ecosystems. The improvement on the marine environment and coastal community achieved in the past few years or expected to attain by tourists' behavioral involvement can be displayed in terms of posters, photo wall, or PSAs at the destination. The more benefits tourists gain from eco-friendly engagement, the more actively they value environmental practices, thereby helping to build their moral beliefs about these practices.

On the other hand, as for the critical triggering effects on low pro-environmental intention, coastal and marine destinations need to be cautious about the regulatory pressures and provide assisting information appropriately. The guidelines or regulations relating to suggested sustainable practices for tourists should be easily understood and accepted. Coastal and marine destination managers should assess the practicability of environmental-social-governance (ESG) policies (e.g., environmental and social policy as well as regulations developed by local government) to provide navigable guidance to employees and customers. Similarly, environmental knowledge and issue-related awareness should be provided for staff on-site and even local residents, so that they can help in guiding tourists to take pro-environmental practices when visiting their destinations. When tourists perceive fewer barriers, they tend to hold favorable evaluations and feel more confident in controlling their environmental performance.

Considering combined impact identified by fsQCA, the achievement of social moral pressure, personal obligations, and positive attitude towards pro-environmental engagement together with beneficial features of green products are conditions that must be met simultaneously to activate coastal tourists' intention to conduct environmentally friendly behaviors. The power of the common social belief (e.g., individuals have responsibility of engaging in marine conservation activities) from tourists' social relations can contribute to strengthening their obligations to take pro-environmental behaviors. Tourists' awareness regarding the fragility of coastal and marine life can be raised via posting slogans or comic strips and playing audio/video introductions at spots/attractions. Meanwhile, the way of learning relevant marine ecosystem protection knowledge through digital experience should be strengthened, as the application of digital technology and artificial intelligence in scene experience would be favored by consumers.

6. Conclusion

Overall, tourists who practice eco-friendly behaviors such as conserving water and energy, or recycling paper, bottles, and containers in their normal daily lives tend to be more active in practicing those behaviors at coastal and marine destinations. Supports from community involvement (e.g., advocating low-carbon lifestyle, organizing volunteer activities, etc.), business operators (e.g., encouraging green consumption to advance environmental corporate social responsibility, operating educational travel programs, etc.), and education in institutions (e.g., marine research, organizing speech on how public help with coastal and marine conservation, providing specialized briefing at attractions, etc.) are encouraged to enhance individuals' awareness of practicing eco-friendly behaviors in daily life. However, the current results reflected that taking daily eco-friendly practices only will not arouse tourists' engagement at costal and marine destinations. Based on the casual configuration (M2 for IESB: $RFB*ATB*SN*MOPA*EP$), resources invested for achieving financial, environmental, and social benefits, tourists' positive evaluation towards the behavior, and social and self's normative pressures are

required to be fulfilled at the same time. If without them, even tourists take eco-friendly practices in daily life, it might ultimately lead to their weak willingness to take environmentally sustainable behaviors.

7. Limitations and future lines of research

Several limitations need to be noted in this study. Firstly, the survey participants are from South Korea. Future studies could involve more tourists from other countries or regions with renowned coastal and marine destinations to explore the differences in individuals' willingness to take pro-environmental actions. Secondly, destinations with disparate coastal and marine resources or geographical locations may have different requirements or feasibility for sustainable practices. Further research is recommended to determine the differences in order to better manage eco-friendly practices in diverse destinations. Third, other than BRT and TPB, different theories or concepts are recommended to be considered in order to advance the adoptable theories in the coastal and marine context. Lastly, the current results need to be verified in different contexts to examine the generalizability of the comprehensive effects of the factors tested in the current setting.

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Brief description of Author/Authors:

Heesup Han, PhD. Professor

ORCID ID: <https://orcid.org/0000-0001-6356-3001>

Affiliation: College of Hospitality and Tourism Management, Sejong University, Seoul, 143-747, South Korea

E-mail: heesup.han@gmail.com

Heesup Han is a Professor in the College of Hospitality and Tourism Management at Sejong University, South Korea. His research interests include cultural tourism, heritage tourism, airline, medical tourism, green marketing. His papers have been selected as the most downloaded and read articles in many top-tier hospitality and tourism journals. Heesup Han is a 2019, 2020, 2021, 2022, 2023, and 2024 highly cited researcher (HCR) of the world in social science (identified by the Web of Science Group -Clarivate).

Dori Davari, PhD. Assistant Professor

ORCID: <https://orcid.org/0000-0002-3781-8645>

Affiliation: School of Hotel & Tourism Management, The Hong Kong Polytechnic University.

17 Science Museum Road, TST East, Kowloon, Hong Kong, China

E-mail: dordaneh.davari@polyu.edu.hk

Dori Davari is an Assistant professor in the School of Hotel & Tourism Management at The Hong Kong Polytechnic University, specializing in tourism marketing, brand management, and consumer decision-making.

Seongseop (Sam) Kim, PhD. Professor

ORCID: <https://orcid.org/0000-0002-9213-6540>

Affiliation: School of Hotel & Tourism Management, The Hong Kong Polytechnic University.

17 Science Museum Road, TST East, Kowloon, Hong Kong, China

E-mail: sam.kim@polyu.edu.hk

Seongseop (Sam) Kim is a Professor in School of Hotel & Tourism Management, The Hong Kong Polytechnic University. His research interests include tourism impacts, sustainability, new technology and tourism, event/convention tourism, and tourism and hospitality marketing.

Xin Cheng, PhD.

ORCID ID: <https://orcid.org/0000-0002-6262-4324>

Affiliation: School of Business, Xi'an International University, No. 408, Zhangba North Road, Yanta District, Xi'an, Shaanxi Province, China

E-mail: chengxin9731@gmail.com

Xin Cheng is a lecturer in the School of Business, Xi'an International University. Her research interests include heritage tourism, cultural tourism, and traveler behavior.

Jiachen Li, PhD Candidate

ORCID ID: <https://orcid.org/0000-0002-2986-6399>

Affiliation: College of Hospitality and Tourism Management, Sejong University, Seoul, 143-747, South Korea

E-mail: jiachen.li@sju.ac.kr

Jiachen Li is a post-graduate student in the College of Hospitality and Tourism Management at Sejong University, South Korea. Her research interests include cultural tourism, tourism and hospitality marketing, and sustainability.

Xiaoting Chi, PhD. Associate Professor (*Corresponding author)

ORCID ID: <https://orcid.org/0000-0002-2659-0980>

Affiliation: Business School, Qingdao University, 62 Kedazhi Road, Qingdao 266071, Shandong Province, China

E-mail: xiaoting.chi1@gmail.com

Xiaoting Chi is an Associate Professor in Business School at Qingdao University, China. Her research focuses on festival tourism, sustainable tourism, ski tourism, traveler behaviors, and tourism marketing. She has published works in many top-tier hospitality and tourism journals

Supplement material A. Results of reliability and validity

Construct	Items	Loading	Mean	α	S.D.	AVE	CR
Financial benefit	FB1	0.816	5.005	0.864	0.888	0.614	0.864
	FB2	0.841					
	FB3	0.855					
	FB4	0.859					
Environmental benefit	EB1	0.831	5.162	0.873	0.930	0.631	0.872
	EB2	0.879					
	EB3	0.836					
	EB4	0.856					
Social benefit	SB1	0.871	5.244	0.929	0.904	0.688	0.930
	SB2	0.887					
	SB3	0.849					
	SB4	0.882					
	SB5	0.855					
	SB6	0.813					
Cost barrier	CB1	0.867	3.942	0.847	1.034	0.655	0.851
	CB2	0.894					
	CB3	0.87					
Regulatory barrier	RB1	0.907	3.673	0.903	1.085	0.760	0.905
	RB2	0.935					
	RB3	0.903					
Lack-of-support barrier	LSB1	0.805	3.904	0.869	0.946	0.630	0.872
	LSB2	0.884					
	LSB3	0.88					
	LSB4	0.819					
Attitude toward the behavior	ATB1	0.807	5.62	0.903	1.003	0.710	0.907
	ATB2	0.908					
	ATB3	0.881					
	ATB4	0.923					
Subjective norms	SN1	0.899	4.829	0.900	0.985	0.753	0.901
	SN2	0.93					
	SN3	0.911					
Perceived behavioral control	PBC1	0.848	4.826	0.815	0.920	0.596	0.815
	PBC2	0.832					
	PBC3	0.882					
Sense of moral obligation to take pro-environmental actions	MOPA1	0.89	5.079	0.866	0.886	0.684	0.866
	MOPA2	0.878					
	MOPA3	0.897					
Eco-friendly practices in daily life	EP1	0.815	5.387	0.902	0.882	0.549	0.894
	EP2	0.803					
	EP3	0.754					
	EP4	0.693					
	EP5	0.783					
	EP6	0.85					
	EP7	0.854					

Intention for environmentally sustainable behaviors in the coastal and marine tourism destination	IESB1	0.895	5.086	0.901	0.973	0.756	0.903
	IESB2	0.933					
	IESB3	0.913					
Goodness-of-fit statistics: χ^2 1471.119 ($df=965$, $p < .001$), $\chi^2/df=1.524$, RMSEA =.037, CFI =.961, IFI =.961, TLI=.956.							

Note: loading is factor loading coefficient. α is Cronbach's alpha representing internal consistency.

Source: Authors' own work

Supplement material B – The items of the constructs

No	The items
I	RFB Reasons FOR behavior
	FB Financial benefit
1	FB1 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations reduces costs with a relatively low monetary investment.
2	FB2 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations improves the image of a destination with a relatively low monetary investment.
3	FB3 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations increases visitors' tourism experiences with a relatively low monetary investment.
4	FB4 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations is necessary for the continuous growth of the destination with a relatively low monetary investment.
	EB Environmental benefit
5	EB1 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations uses energy and resources efficiently.
6	EB2 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations reduces the amount of solid waste produced.
7	EB3 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations saves water.
8	EB4 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations protects the environment.
	SB Social benefit
9	SB1 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations contributes to developing good sanitary conditions for residents and visitors.
10	SB2 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations contributes to generating an eco-conscious tourism environment.
11	SB3 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations contributes to creating a healthy consumption environment.
12	SB4 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations contributes to a generally better society.
13	SB5 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations increases the ability of a destination to comply with environmental regulations.
14	SB6 I believe that practicing environmentally sustainable activities in coastal and marine tourism destinations contributes to increasing the well-being of residents and visitors.
II	RAB Reasons AGAINST behavior
	CB Cost barrier
15	CB1 I believe that environmentally sustainable activities are difficult to practice in coastal and marine tourism destinations because of the high initial monetary costs for equipment/facilities.
17	CB2 I believe that environmentally sustainable activities are difficult to practice in coastal and marine tourism destinations because of the high education and promotion costs.
18	CB3 I believe that environmentally sustainable activities are difficult to practice in coastal and marine tourism destinations because of the high time and effort costs.
	RB Regulatory barrier

19	RB1	I believe that environmentally sustainable activities in coastal and marine tourism destinations are inconvenient because of the increase in the number of rules/regulations related to pro-environmental behavior within the destination.
20	RB2	I believe that environmentally sustainable activities in coastal and marine tourism destinations are inconvenient because of the increase in the environmental guidelines/codes within the destination.
21	RB3	I believe that environmentally sustainable activities in coastal and marine tourism destinations are inconvenient because of the increase in environmental training.
	LSB	Lack-of-support barrier
22	LSB1	I believe that environmentally sustainable activities are difficult to practice in coastal and marine tourism destinations because of the lack of information from the destination operator regarding environmentally sustainable activities.
23	LSB2	I believe that environmentally sustainable activities are difficult to practice in coastal and marine tourism destinations because of the absence of policies for such activities in the destination.
24	LSB3	I believe that environmentally sustainable activities are difficult to practice in coastal and marine tourism destinations because of the absence of systems/programs for such activities.
25	LSB4	I believe that environmentally sustainable activities are difficult to practice in coastal and marine tourism destinations because of the lack of employee/resident environmental awareness in the destination.
III	ATB	Attitude toward the behavior
		<i>For me, practicing environmentally sustainable activities in the coastal and marine tourism destination is...</i>
26	ATB1	foolish (1)/wise (7).
27	ATB2	harmful (1)/beneficial (7).
28	ATB3	unpleasant (1)/pleasant (7).
29	ATB4	bad (1)/good (7).
IV	SN	Subjective norms
30	SN1	Most people who are important to me believe that I should practice environmentally sustainable activities in coastal and marine tourism destinations.
31	SN2	Most people who are important to me want me to practice environmentally sustainable activities in coastal and marine tourism destinations.
32	SN3	People whose opinions I value prefer that I practice environmentally sustainable activities in coastal and marine tourism destinations.
V	PBC	Perceived behavioral control
33	PBC1	If I want to, then I can easily practice environmentally sustainable activities in coastal and marine tourism destinations.
34	PBC2	Whether I practice environmentally sustainable activities in coastal and marine tourism destinations is entirely up to me.
35	PBC3	For me, practicing environmentally sustainable activities in coastal and marine tourism destinations is not difficult.
VI	MOPA	Sense of moral obligation to take pro-environmental actions
36	MOPA1	I have an obligation to engage in environmentally sustainable activities in coastal and marine tourism destinations.
37	MOPA2	Regardless of what other people do, I should engage in environmentally sustainable activities in coastal and marine tourism destinations because of my own values/principles.
38	MOPA3	I feel that engaging in sustainable activities in coastal and marine tourism destinations is important to reduce the harm inflicted on the environment of the destination.
VII	EP	Eco-friendly practices in daily life
39	EP1	At home, I conserve energy. [reduce]
40	EP2	At home, I conserve water. [reduce]
41	EP3	At home, I reduce the usage of paper, such as writing paper, toilet paper, and paper towels. [reduce]
42	EP4	At home, I sort trash on the basis of recyclability. [recycle]
43	EP5	At home, I recycle materials, such as paper, cans, and bottles. [recycle]
44	EP6	At home, I search for ways to reuse household items. [reuse]
45	EP7	At home, I use reusable items. [reuse]
VIII	IESB	Intention for environmentally sustainable behaviors in the coastal and marine tourism destination

46	IESB1	I will make an effort to practice environmentally sustainable activities in coastal and marine tourism destinations.
47	IESB2	I plan to practice environmentally sustainable activities in coastal and marine tourism destinations.
48	IESB3	I will engage in environmentally sustainable behavior in coastal and marine tourism destinations.

Source: Authors' own work