

DETERMINANTS OF TOURISTS' BEHAVIORAL INTENTIONS TOWARD ECO-FRIENDLY HOTELS IN WINTER TOURISM: EVIDENCE FROM TÜRKİYE

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Abstract

Purpose – This study investigates the impact of eco-friendly practices implemented in winter tourism hotels in Türkiye on tourists' behavioral intentions. It aims to examine how tourists' perceptions of environmental practices influence accommodation preference, intention to recommend, and willingness to pay more.

Methodology/Design/Approach – A quantitative research design was employed, and data were collected through a structured survey from 1,175 tourists staying at three major ski destinations in Türkiye (Uludağ, Kartalkaya, and Palandöken). The proposed model analyzes the effects of perceived eco-friendly practices, environmental attitudes, and environmental awareness on preference, recommendation, and willingness to pay more. The data were analyzed using PLS-SEM.

Findings – The findings indicate that the perception of eco-friendly practices is the strongest determinant of tourists' behavioral intentions, exerting significant positive effects on preference, recommendation intention, and willingness to pay more. Environmental awareness also positively influences all three outcomes, although its effect on willingness to pay more is comparatively weaker. Environmental attitude significantly affects preference and recommendation intention but has no significant impact on willingness to pay more, supporting the attitude-behavior gap. Furthermore, willingness to pay more positively influences preference but does not directly affect recommendation intention. Finally, preference significantly enhances recommendation intention, highlighting its central role in transforming positive evaluations into supportive behavioral responses toward eco-friendly hotels.

Originality of the research – By focusing on winter tourism, this study extends green hotel research beyond traditional coastal and urban contexts. The findings highlight the dominant role of observable and credible environmental practices over abstract attitudes, offering a more context-sensitive and integrated understanding of pro-environmental behavior in tourism.

Keywords Winter tourism, Environmental practices, Eco-friendly hotels, Accommodation preferences, Behavioral intentions, Green hotel

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INTRODUCTION

Accommodation businesses are widely recognized as major contributors to environmental degradation due to their intensive consumption of water, energy, and other natural resources, as well as the substantial volumes of waste they generate (Wang et al, 2024; Liang et al., 2025). In particular, the hospitality sector produces disproportionately high levels of waste compared to local communities, with daily waste generation per hotel bed reported to range between 1,56 kg and 2,28 kg (Bajada, 2017; Phu et al., 2018; Wani et al., 2018; Turan & Çavuş, 2026), while tourists themselves tend to generate more waste than residents (Fenech et al., 2020). As global environmental concerns intensify, hotels-especially those operating in environmentally sensitive destinations-are increasingly expected to adopt environmentally responsible practices and contribute proactively to sustainable tourism development (Bashir et al., 2019). In response, many hotels have implemented eco-friendly practices not only to mitigate their ecological footprint but also to enhance brand image, improve competitive positioning (Kim et al., 2017), and strengthen customer loyalty and financial performance (Ibnou-Laaroussi et al., 2020). Nevertheless, the adoption and effectiveness of such practices remain uneven across tourism contexts, largely shaped by destination characteristics and evolving tourist expectations (Turan & Çavuş, 2026).

Pro-environmental consumer behavior has been extensively explained through well-established theoretical frameworks such as the Theory of Planned Behavior (Ajzen, 1991), the Norm Activation Theory (Schwartz, 1977), and the Value-Belief-Norm Theory (Stern et al., 1999). These frameworks converge on the premise that individual behavior is formed through the interaction of cognitive evaluations, affective responses, and normative considerations (Han, 2021). Within this perspective, behavioral intentions-such as accommodation preference, intention to recommend, and willingness to pay more-are widely accepted as proximal predictors of actual behavior (Ajzen, 2015). Environmental awareness has also been one of the most frequently integrated variables in the model (Zulkepli et al., 2024). However, prior research has predominantly examined

these outcomes in isolation. Considering them jointly offers a more holistic understanding of pro-environmental behavior by simultaneously capturing attitudinal alignment, social influence, and financial commitment (Han et al., 2010; Wang et al., 2024; Gupta et al., 2023). Despite this potential, integrated models encompassing these three dimensions remain limited, particularly within destination-specific contexts.

In the tourism domain, increasing environmental awareness among tourists has led to a growing preference for environmentally friendly accommodation options (Kokkhangplu et al., 2023; Wang & Wong, 2020). Tourists, as active stakeholders, increasingly shape the sustainability strategies of hospitality businesses, creating market-driven pressure for the adoption of green practices (Choi et al., 2019). However, a well-documented attitude-behavior gap persists, particularly regarding willingness to pay more for environmentally responsible services (Yarimoglu & Gunay, 2020). Moreover, the existing literature is heavily concentrated on urban and coastal destinations (Kim et al., 2012; Phu et al., 2018; Fenech et al., 2020), thereby limiting the generalizability of findings across alternative tourism contexts with distinct structural and environmental characteristics.

In this regard, winter tourism represents a critical yet underexplored context. Ski destinations are typically located in environmentally fragile mountain ecosystems and are associated with high levels of resource consumption, waste generation, pollution, vegetation degradation, and exposure to climate-related risks (Demiroğlu et al., 2016; Leal Filho et al., 2024; Balaskas et al., 2025). Accommodation facilities in these constitute a significant source of environmental pressure, given both operational intensity and prolonged tourist stay durations. At the same time, the relatively high cost structures of ski tourism may amplify tourists' price sensitivity, potentially influencing their willingness to pay for environmentally friendly services (Liu & Thanh, 2026). Despite these distinctive characteristics, empirical research examining how eco-friendly practices influence tourist behavior in winter tourism settings remains limited.

Addressing these gaps, the present study develops an integrated model to examine the effects of eco-friendly practices implemented in accommodation businesses on tourists' accommodation preferences, intention to recommend, and willingness to pay more. By focusing on winter tourism destinations-particularly ski resorts in Türkiye-it aims to provide a more comprehensive and context-specific understanding of pro-environmental tourist behavior. In this respect, the study extends the scope of green hospitality research beyond the predominantly examined urban and coastal tourism contexts by incorporating a winter tourism perspective. Moreover, by adopting a multidimensional approach to behavioral intention, it offers a more holistic explanation of tourists' attitudes and behaviors toward eco-friendly practices. In addition, the study provides context-specific empirical evidence that contributes to both theoretical development and managerial decision-making processes for accommodation businesses operating in environmentally sensitive tourism destinations.

1. THEORETICAL BACKGROUND

Pro-environmental behavior in tourism has been widely explained through established frameworks such as the Theory of Planned Behavior (TPB) (Ajzen, 1991), the Norm Activation Theory (Schwartz, 1977), and the Value-Belief-Norm (VBN) theory (Stern et al., 1999). These theoretical approaches converge on the notion that individual behavior is shaped by the interaction of cognitive, affective, and evaluative processes. Within this perspective, environmental awareness represents the cognitive dimension reflecting individuals' knowledge and consciousness about environmental problems, while environmental attitude captures the affective evaluation of environmentally responsible actions (Han, 2021; Schultz et al., 2004). In addition, the perception of eco-friendly practices reflects individuals' assessment of firms' environmental performance and the credibility of their sustainability efforts (Kim et al., 2012). These constructs collectively form the psychological foundation of pro-environmental decision-making, as individuals tend to develop favorable behavioral responses when they are both aware of environmental issues and perceive organizational practices as meaningful and effective (Wang & Wong, 2020; Liang et al., 2025).

Building on this theoretical foundation, behavioral outcomes in sustainable tourism are typically conceptualized through multiple but interrelated dimensions. In this study, three key outcome variables-accommodation preference, intention to recommend, and willingness to pay more-are considered as complementary indicators of pro-environmental behavior. Preference reflects the individual's evaluative choice among alternatives, recommendation represents social endorsement and post-consumption behavioral intention, and willingness to pay more indicates the extent of economic commitment to sustainability (Han et al., 2010; Gupta et al., 2023). While prior research has often examined these outcomes separately, integrating them within a single framework allows for a more comprehensive understanding of how pro-environmental intentions are formed and expressed at different behavioral levels. In this context, cognitive (awareness), affective (attitude), and perceptual (evaluation of practices) factors are expected to influence these behavioral outcomes simultaneously, although their relative effects may differ depending on the nature of the outcome, particularly when financial sacrifice is involved.

1.1 Hypothesis Development

1.1.1 Perception of Eco-Friendly Practices

Perception of eco-friendly practices refers to tourists' cognitive evaluation of the extent, visibility, and credibility of environmental initiatives implemented by hotels (Butler & Peppard, 1998). Unlike general environmental awareness or attitudes, this perception is context-specific and reflects how individuals interpret actual organizational practices rather than their personal environmental beliefs (Kim et al., 2012; Han et al., 2010). Within the framework of the Theory of Planned Behavior (TPB), such evaluations function as salient beliefs that directly shape behavioral intentions (Ajzen, 1991; Han, 2021). When eco-friendly practices are perceived as effective, visible, and trustworthy, they reduce uncertainty, enhance perceived value, and strengthen the alignment between consumer expectations and service delivery (Wang et al, 2024; Gupta et al., 2023).

Tourist purchasing behavior is a dynamic process influenced by multiple factors, among which environmental considerations play a critical role (Butler & Peppard, 1998). In hospitality settings, eco-friendly practices are often directly observable—such as waste management systems or energy-saving technologies—making them more influential in decision-making than abstract environmental concerns. Accordingly, how these practices are perceived significantly affects tourists' behavioral responses. Empirical evidence suggests that positive perceptions of eco-friendly practices increase tourists' intention to stay in environmentally responsible hotels (Han et al, 2009). For instance, Rawashdeh and Al-Ababneh (2021) found a positive relationship between tourists' perceptions of environmental practices and their accommodation choices, while Patwary, Aziz, and Hashim (2023) reported similar findings in the Malaysian context.

Moreover, perception operates as a proximal determinant, meaning it exerts a direct influence on behavioral outcomes such as recommendation intention, willingness to pay more, and hotel preference (Wang & Wong, 2020; Wang et al, 2024). Supporting this view, several studies have demonstrated that favorable perceptions of eco-friendly practices significantly enhance tourists' intention to recommend, their willingness to pay a premium, and their preference for eco-friendly hotels (Kokkhangplu et al., 2023; Doğan et al., 2022; Nimri et al., 2020). Accordingly, the following hypotheses are proposed:

H1: Perception of eco-friendly practices positively influences tourists' preference for eco-friendly winter tourism hotels.

H2: Perception of eco-friendly practices positively influences tourists' willingness to pay more.

H3: Perception of eco-friendly practices positively influences tourists' intention to recommend.

1.1.2 Attitude toward Eco-Friendly Practices

Attitude toward eco-friendly practices represents an individual's overall evaluative judgment (favorable or unfavorable) regarding environmentally responsible actions. Unlike perception, which is externally oriented and context-specific, attitude is internally driven and reflects learned beliefs, emotions, and value orientations toward environmental issues (Schultz et al., 2004; Han, 2021). Environmental attitudes, in this sense, express individuals' accumulated beliefs and affective responses to environmental issues and are widely recognized as important determinants of pro-environmental behavior (Han et al., 2010). Within the framework of the Theory of Planned Behavior (TPB), attitude is considered a core antecedent of behavioral intention; however, its influence is often indirect and contingent upon situational constraints (Ajzen, 1991; Ajzen, 2015).

Empirical studies generally support the positive role of environmental attitudes in shaping tourists' behaviors. For instance, favorable attitudes toward eco-friendly practices have been associated with accommodation choice and recommendation intentions and customers with stronger pro-environmental attitudes are more likely to support eco-friendly accommodation businesses (Nguyen, 2017; Patwary et al., 2023). Moreover, tourists' environmentally responsible attitudes have encouraged tourism businesses to adopt visible sustainability practices, such as eco-label certifications and resource-efficient systems in waste, water, and energy management (Wang et al., 2021). Supporting this, Patwary, Aziz, & Hashim (2023) found that attitudes toward eco-friendly practices positively influenced tourists' intentions to visit environmentally responsible hotels.

However, more recent research highlights the existence of an attitude-behavior gap, particularly in contexts that require financial sacrifice (Gao & Mattila, 2016). While attitudes may strongly predict low-cost or symbolic behaviors—such as recommendation or general preference—they tend to have weaker or even non-significant effects on high-cost behaviors like willingness to pay more. This limitation can be explained by the fact that attitudes are often generalized and may require more concrete, context-specific evaluations (e.g., perception of actual practices) to translate into real purchasing decisions (Han et al., 2010; Fauzi et al., 2024). Based on this reasoning, attitude is expected to have a differentiated effect across behavioral outcomes:

H4: Attitude toward eco-friendly practices positively influences tourists' preference for eco-friendly winter tourism hotels.

H5: Attitude toward eco-friendly practices positively influences willingness to pay more.

H6: Attitude toward eco-friendly practices positively influences tourists' intention to recommend.

1.1.3 Environmental Awareness

Environmental awareness refers to the extent to which individuals possess knowledge, recognition, and understanding of environmental issues and their potential consequences (Han, 2021). In the present study, awareness is conceptualized as a cognitive construct reflecting individuals' knowledge and understanding of environmental problems rather than their affective reactions, personal concerns, or evaluative judgments. Unlike attitude, which represents favorable or unfavorable evaluations toward a particular behavior or object, environmental awareness concerns the extent to which individuals recognize and understand environmental issues and their consequences (Wang & Wong, 2020). Likewise, awareness differs from perception, which reflects individuals' interpretations and evaluations of specific products, services, or situations. As a cognitive antecedent, environmental awareness facilitates the processing and interpretation of environmental information and may contribute to the development of pro-environmental attitudes and behavioral intentions (Schwartz, 1977; Stern et al., 1999). Accordingly, individuals with higher environmental awareness are more likely to recognize environmental problems and consider environmental information in their decision-making.

In tourism, rising environmental awareness has increased demand for eco-friendly hotels and encouraged businesses to adopt sustainable practices as a competitive strategy (Demir, Rjoub & Yeşiltaş, 2021; Wang et al., 2024). Empirical findings show that environmentally aware tourists are more likely to prefer eco-friendly accommodation and recommend such establishments (Groening et al., 2018; Robin et al., 2017). However, similar to attitude, awareness may not directly translate into willingness to pay more due to economic constraints and perceived value considerations (Liu & Thanh, 2026). The literature indicates that personal environmental concern does not always translate into financial support for sustainable hotel practices; however, certain consumer groups with higher levels of environmental awareness and differing demographic characteristics are more willing to pay more for hotels that adopt sustainable practices (Gore & Sardesai, 2026). Therefore, environmental awareness is expected to positively influence preference and recommendation, while having a limited or indirect effect on willingness to pay more:

H7: Environmental awareness positively influences tourists' preference for eco-friendly winter tourism hotels.

H8: Environmental awareness positively influences willingness to pay more.

H9: Environmental awareness positively influences tourists' intention to recommend.

1.1.4 Willingness to Pay More and Preferences towards Eco-Friendly Hotels

Within TPB, behavioral intention is the most immediate predictor of actual behavior, reflecting an individual's readiness to act (Ajzen, 1991; Ajzen & Fishbein, 2008). In sustainable tourism, willingness to pay more (WTP) represents a form of high-commitment intention, as it involves financial sacrifice, while recommendation reflects social and post-consumption intention. Preference, on the other hand, represents a choice-oriented outcome that can be shaped by both attitudinal and intentional processes (Peter & Olson, 2008).

Recent studies emphasize that different behavioral intentions are not independent but interact with each other in shaping consumer decisions (Han et al., 2020; Yadav & Pathak, 2017). Specifically, willingness to pay more signals a stronger commitment to sustainability and is therefore expected to reinforce preference formation (Balaji et al., 2019). Similarly, preference reflects a favorable evaluation that can translate into recommendation behavior through satisfaction and positive word-of-mouth mechanisms (Chang et al., 2024; Demir et al., 2021). This suggests a hierarchical relationship among behavioral constructs, where economic commitment and evaluative preference jointly shape social advocacy. Accordingly, the following relationships are proposed:

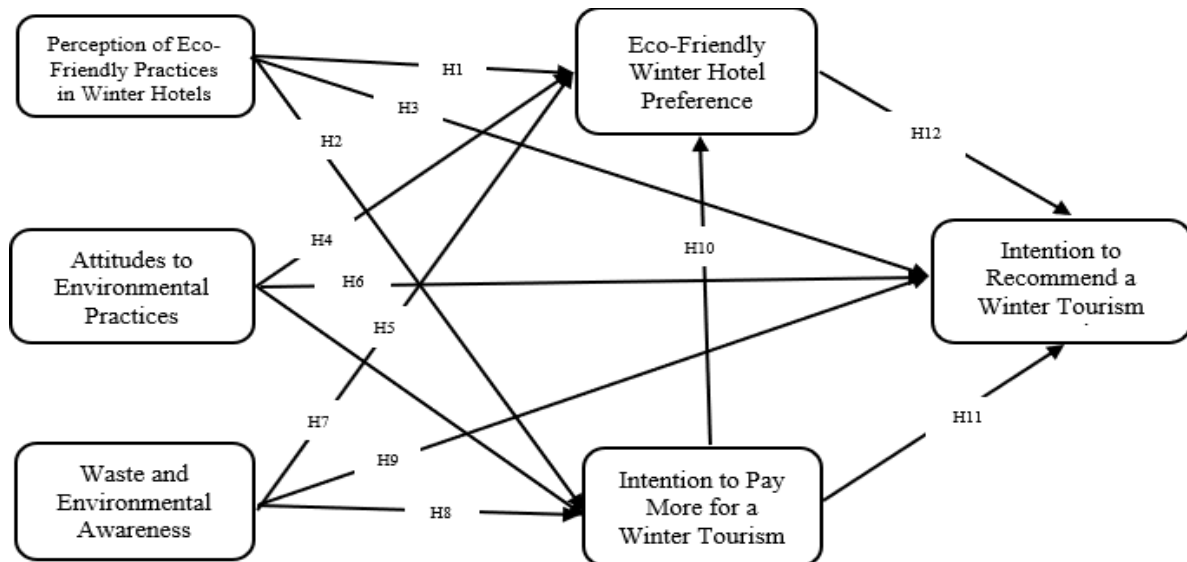
H10: Willingness to pay more positively influences preference for eco-friendly winter tourism hotels.

H11: Willingness to pay more positively influences intention to recommend.

H12: Preference positively influences intention to recommend.

The proposed model was specified to examine the direct relationships among the constructs based on the underlying theoretical framework. Accordingly, the study focuses exclusively on testing the hypothesized direct effects; therefore, no mediation hypotheses or competing alternative models were specified. The conceptual research model is presented in Figure 1.

Figure 1: The Research Model



2. MATERIAL AND METHODS

This research was conducted using a quantitative field research design. The questionnaire technique was used as the primary data collection method due to its cost-effectiveness and suitability for field-based quantitative research (Fraenkel & Wallen, 1990). The study targeted tourists staying at winter tourism hotels in Turkish ski centers during the winter tourism season, when these hotels operate primarily in response to seasonal ski tourism demand. Winter tourism hotels typically experience concentrated demand and intensive operational activity during the ski season, while their operations may be substantially reduced or suspended outside the winter period. The seasonal nature of winter tourism makes the winter season the most appropriate operational context for examining tourists' perceptions, attitudes, awareness, preferences, willingness to pay more, and recommendation intentions regarding eco-friendly hotel practices. Based on the Ministry of Culture and Tourism's 2020 data, three destinations-Erzurum Palandöken, Bursa Uludağ, and Bolu Kartalkaya-were selected because they had the largest accommodation capacities among active winter tourism centers.

A convenience sampling approach was used because a complete sampling frame of tourists staying at the selected hotels was not available. Data were collected primarily through face-to-face surveys and, where appropriate, by leaving questionnaires in common areas such as hotel lobbies and gardens. Tourists encountered in these areas at different times of the day were invited to participate voluntarily. Thus, participants were recruited based on their accessibility and willingness to participate rather than through a formal random selection procedure. During the winter tourism season, a total of 1,175 usable responses were obtained, including 394 surveys from Bursa Uludağ Ski Center, 392 from Bolu Kartalkaya Ski Center, and 389 from Erzurum Palandöken Ski Center.

2.1 Data Collection Tool

The development of the survey instrument was guided by two key considerations. First, the importance for hotel organizations to foster positive intentions among customers to ensure loyalty and repeat business, as emphasized by Han et al. (2009), and second, the recognition that behavioral intentions serve as reliable indicators of actual behavior, as established in seminal works (Fishbein & Ajzen, 1975; Ajzen, 2015)

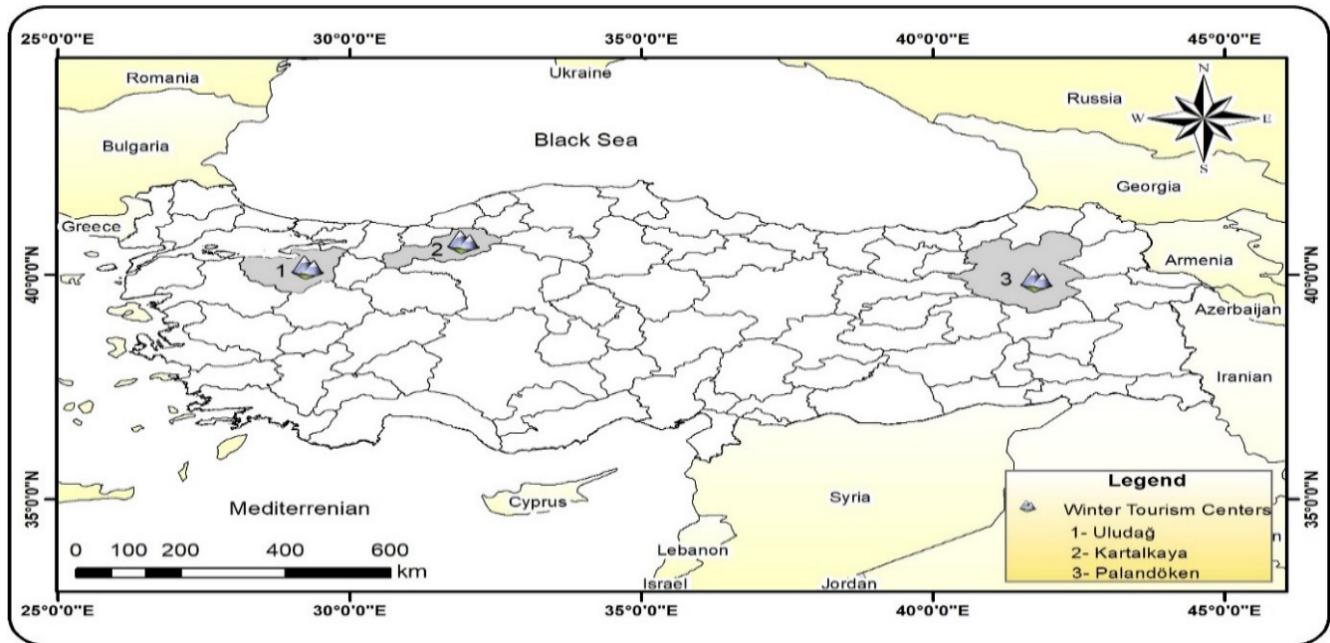
The questionnaire is structured into two main sections. The initial part comprises items assessing tourists' attitudes towards eco-friendly practices within hotels. This includes their perceptions of green initiatives, attitudes towards environmental efforts, awareness of waste and environmental issues, and their intentions to recommend, pay more for, and choose eco-friendly accommodations. The constructs for environmental attitudes, eco-friendly hotel preferences, recommendation intentions, and willingness to pay a premium were adapted from Han et al. (2009). The item concerning perceived green practices in hotels was derived from Kim et al. (2012), and environmental awareness was based on the work of Yıldız & Kılıç (2016). Additionally, informed by extensive literature review and expert consultations, two new items were incorporated to more accurately reflect the nuances of eco-friendly hotel selection as aligned with the study's objectives. The scale measuring eco-friendly hotel preference was adapted from Han et al. (2009), originally consisting of three items. In line with the study's objectives, two additional items (preference4 and preference5) were incorporated based on an extensive literature review and expert evaluation. Recent studies suggest that eco-friendly hotel preference is influenced by (i) tourists' decision-making processes during hotel reservation (Kim et al., 2020) and (ii) psychological factors affecting choice behavior (Cui et al., 2019; Tanford et al., 2020).

Accordingly, this study conceptualizes environmental awareness as a cognitive construct referring to individuals' knowledge, recognition, and understanding of environmental issues and their potential consequences. In this sense, awareness concerns the processing and consideration of environmental information rather than affective responses, personal concerns, or evaluative judgments. Therefore, tourists with higher levels of environmental awareness are expected to be more likely to recognize environmental information and consider environmental aspects when making accommodation-related decisions (Errmann et al., 2021). Therefore, the inclusion of the two additional items was guided by empirical findings from previous studies (Kim et al., 2020; Errmann et al., 2021; Doğan et al., 2022), ensuring the content validity and contextual relevance of the construct. The content validity of the scale was assessed through evaluations by three academic experts in the field. The experts reviewed the items in terms of their relevance to the research objectives, conceptual representativeness, and clarity. Minor wording revisions were made based on their feedback to improve the overall quality of the scale. To ensure linguistic equivalence, the back-translation method was employed. The original items were first translated from English into Turkish, and then independently translated back into English by a separate translator. The two versions were compared to ensure semantic consistency, and discrepancies were resolved to produce the final version of the scale. The second section of the questionnaire gathers complementary data and demographic details of the respondents. A seven-point Likert scale (1=Strongly Disagree to 7=Strongly Agree) is employed for responses. The questionnaire was linguistically validated by English and Turkish experts and then tested through a pilot study conducted in January 2022 at the Sarıkamış Ski Center. Using simple random sampling, data were collected from 57 participants for the 28-item scale, meeting recommended sample size criteria (Seçer, 2015). Reliability analysis indicated a high level of internal consistency, with a Cronbach's Alpha value of 0.87, reflecting excellent reliability (Hair et al., 2010).

2.2 Research Site

The study focused on three ski resorts in Türkiye, known for their significant bed capacity: Palandöken, Uludağ, and Kartalkaya Ski Centers (Figure 2).

Figure 2: Research Site (Uludağ, Kartalkaya, Palandöken)



Uludağ, the highest peak in the Marmara Region and designated as a national park in 1961, is located 40 km from Bursa and is easily accessible from major cities such as Istanbul, Ankara, Izmir, and Kocaeli. The ski area consists of two hotel zones and includes 27 accommodation facilities (15 private, 12 public) with a total capacity of 2,250 beds. It offers 31 slopes of varying difficulty and 22 mechanical lifts, reaching an elevation of 2,543 meters (Uludağ Info, 2022). Kartalkaya Ski Center, situated at 2,200 meters in the Koroğlu Mountains and 32 km from Bolu, began operating in the 1977–78 season and was declared a tourism resort in 1982. The center features 12 slopes extending over 20 km, supported by 11 mechanical lifts, and provides five accommodation facilities with a total bed capacity of 1,713 (Bolu Provincial Directorate of Culture and Tourism, 2022). Palandöken Ski Center, located in Eastern Anatolia near Erzurum, ranges between 2,000 and 3,176 meters in elevation. Recognized as one of Türkiye's leading winter tourism destinations, it includes 24 slopes totaling 28 km, two of which meet Olympic standards, along with 15 mechanical lifts and six accommodation facilities offering 2,466 beds. The resort also provides night skiing opportunities (Erzurum Provincial Directorate of Culture and Tourism, 2022).

2.3. Data Analysis

Prior to the main analysis, preliminary data screening procedures were conducted to ensure the quality and suitability of the dataset. The data were examined for missing values, normality, and outliers. Outliers were identified using Mahalanobis distance values, and observations exceeding the critical threshold were removed from the dataset (Hair et al., 2010). Additionally, skewness and kurtosis values were assessed, and the results indicated that the data were within acceptable ranges. Following the data screening process, descriptive statistical analyses were performed using SPSS. Subsequently, the data were analyzed using SmartPLS 4 based on the Partial Least Squares Structural Equation Modeling (PLS-SEM) approach. PLS-SEM was selected because the primary objective of this study was to examine the predictive relationships among the proposed constructs and to test the hypothesized direct effects. Furthermore, PLS-SEM is particularly suitable for prediction-oriented research and for analyzing complex structural models (Hair et al., 2022; Sarstedt et al., 2021).

The analysis followed a two-step procedure. First, the measurement model was assessed by examining indicator loadings, Average Variance Extracted (AVE), Composite Reliability (CR), Cronbach's alpha, and rho_A to establish reliability and convergent validity (Hair et al., 2022). Discriminant validity was evaluated using the Fornell-Larcker criterion and the Heterotrait-Monotrait (HTMT) ratio (Henseler et al., 2015). In addition, Variance Inflation Factor (VIF) values were examined to detect potential multicollinearity issues among the constructs. In the second step, the structural model was evaluated by examining the standardized path coefficients (β), bootstrapping results (t-values, p-values, and 95% bootstrap confidence intervals), coefficients of determination (R^2), and collinearity diagnostics (inner VIF) to test the proposed hypotheses (Hair et al., 2022). The significance level was set at $p < .05$.

3. FINDINGS

The demographic analysis of the study participants yielded the following insights: Females represented 48.9% of the sample, whereas males constituted 51.1%. A significant portion, 68%, were married, and over half of the respondents (50%) were aged between 28 and 42 years. Regarding professional status, 49.1% identified as employers. Education-wise, a majority of 61.7% held an undergraduate degree. On the financial front, 31.9% reported a monthly income exceeding 29,786 TL. Additionally, 45.7% of participants indicated they vacation 3-4 times annually (Table 1).

Table 1: Demographic findings of the participants

Demographic	Group	Total	
		n	%
Gender	Women	574	48.9
	Male	601	51.1
Marital Status	Single	376	32.0
	Married	799	68.0
Age	18-22	61	5.2
	23-27	119	10.1
	28-32	187	15.9
	33-37	274	23.3
	38-42	207	17.6
	43-47	166	14.2
	48-52	93	7.9
	53+ years	68	5.8
Occupation	Employer	577	49.1
	Student	114	9.7
	Artisans	88	7.5
	Laborers	132	11.2
	Administrators	201	17.1
	Other	63	5.4
Education	High school or lower	118	10.0
	Associate degree	88	7.5
	Undergraduate	725	61.7
	Postgraduate	205	17.4
	PhD	39	3.4

Demographic	Group	Total	
		n	%
Monthly Income	0-4,255 TL*	86	7.3
	4,256 TL-8,510 TL	57	4.9
	8,511-12,765 TL	103	8.8
	12,766-17,020 TL	117	10.0
	17,021-21,275 TL	110	9.4
	21,276-25,530 TL	131	11.1
	25,531-29,785 TL	196	16.7
	29,786 TL and over	375	31.8
Number of Visits to Annual Holidays	1-2 Times	254	21.6
	3-4 Times	537	45.7
	5-6 Times	280	23.8
	7+	104	8.9
Total		1 175	100.0

*Minimum wage in Türkiye for 2022

Table 2 presents the mean and standard deviation values for all measurement items. Overall, respondents reported relatively high levels of agreement with the statements, as all mean scores are above 5.3 on the scale used. The highest mean values were observed for items related to environmental perception and awareness, particularly the expectation of refillable hotel amenities ($M = 5.91$, $SD = 1.17$) and the importance of environmental friendliness when purchasing products ($M = 5.82$, $SD = 1.12$). Similarly, respondents demonstrated strong intentions to recommend environmentally friendly hotels and engage in environmentally responsible behaviors.

In contrast, the lowest mean scores were found for willingness to pay a premium for green hotels ($M = 5.37-5.43$), suggesting that although participants generally hold positive environmental attitudes, their willingness to incur additional costs is comparatively lower. Standard deviation values range from approximately 1.03 to 1.42, indicating moderate variability in respondents' perceptions and behaviors. The findings suggest a generally favorable orientation toward environmental sustainability and green hotel practices among the participants.

Table 2: Descriptive statistics of measurement items

Factor	Items	Mean	Std. Deviation
		Statistic	Statistic
Perception	I expect the use of eco-friendly products that can be recycled in hotels.	5,7302	1,09493
	I expect materials like soap, shampoo, etc. To be refillable in hotels.	5,9055	1,17270
	I would like products with the same characteristics to be put in containers instead of packaging them one by one in hotels.	5,6255	1,19953
	I expect the use of natural cosmetic (eco-friendly soap, shampoo, etc.) products in hotels.	5,7030	1,13461
	I would like to use products like toilet paper, napkins, paper towels, etc. obtained from recycled paper in hotels.	5,6766	1,07674
Attitude	I would like the removal of unnecessary applications that would be wasteful in hotels.	5,7268	1,11491
	In our country, we have enough electricity, water, and trees that we do not have to worry about conservation.	5,8664	1,16084
	Recycling is too much trouble.	5,6417	1,12739
	Recycling is important to save natural resources.	5,6877	1,07408
	Hospitality firms (e.g., hotel and restaurant firms) are concerned about the environment.	5,5702	1,15714

Factor	Items	Mean	Std. Deviation
		Statistic	Statistic
Awareness	I give importance to environmental friendliness when purchasing many products such as cleaning, food, etc.	5,8204	1,11636
	I believe that when I buy eco-friendly products, I contribute to the protection of the environment.	5,7038	1,07667
	I can pay more products than other products.	5,6128	1,07107
	I try not to buy products from companies that do not respect the environmen.	5,6621	1,05990
	I try to keep the environment clean as long as I can.	5,7821	1,03525
	I pay attention to energy saving (turning off unnecessary lamps, not using too much water, etc.).	5,7949	1,09029
	I separate my domestic waste (paper, glass, metal, etc.).	5,5719	1,08642
Recommend	I can describe myself as an environmentalist.	5,7396	1,04430
	I will encourage my friends and relatives to stay at a green hotel when traveling.	5,8170	1,10430
Payment	I will say positive things about an environmentally friendly hotel.	5,6740	1,10140
	It is acceptable to pay more for a hotel that engages in green practices.	5,4323	1,41673
	I am willing to pay more for a green hotel.	5,3651	1,19138
Preference	I am willing to spend extra in order to stay at an environmentally friendly hotel.	5,4017	1,18278
	I am willing to stay at a green hotel when traveling.	5,6221	1,16311
	I plan to stay at a green hotel when traveling.	5,4613	1,07154
	I will make an effort to stay at a green hotel when traveling.	5,5064	1,05136
	Before making a hotel reservation, I prefer hotels that are environmentally friendly.	5,5277	1,08217
	The environmental friendliness of a hotel is an important factor in my hotel selection decision.	5,5226	1,12019

3.1 Measurement Model Validity and Reliability

The measurement model was assessed using the criteria recommended for PLS-SEM, including indicator reliability, internal consistency reliability, convergent validity, and discriminant validity. Indicator reliability was assessed through standardized outer loadings, while internal consistency reliability was evaluated using Cronbach's alpha, Composite Reliability (CR), and rho_A. Convergent validity was assessed using the Average Variance Extracted (AVE), and discriminant validity was evaluated using the Fornell–Larcker criterion and the Heterotrait–Monotrait (HTMT) ratio (Hair et al., 2022; Henseler et al., 2015).

The measurement model was evaluated in terms of indicator reliability, internal consistency reliability, and convergent validity. All indicator loadings were above 0.75, exceeding the recommended threshold of 0.70. Therefore, the indicators demonstrated strong reliability, and no item removal or retention decisions based on low indicator loadings were necessary. Internal consistency reliability was confirmed through Cronbach's alpha, Composite Reliability (CR), and rho_A values. Cronbach's alpha values range from 0.827 to 0.915, while CR values range from 0.908 to 0.931, all exceeding the recommended threshold of 0.70 (Hair et al., 2019; Henseler et al., 2015). Rho_A values are also within acceptable limits, further supporting construct reliability. Although the high reliability coefficients indicate a consistent measurement structure, they may also suggest potential item redundancy, which should be considered in future research (Table 3).

Convergent validity was assessed using the Average Variance Extracted (AVE). All AVE values exceed the threshold of 0.50 (Fornell & Larcker, 1981), indicating that each construct explains more than half of the variance in its indicators. Notably, the "Recommend" (AVE = 0.853) and "Payment" (AVE = 0.817) constructs demonstrate particularly strong convergent validity. The results confirm that the measurement model satisfies the established criteria for reliability and convergent validity. The results confirm that the measurement model satisfies the established criteria for indicator reliability, internal consistency reliability, convergent validity, and discriminant validity, providing an adequate basis for the subsequent assessment of the structural model.

Table 3: Summary of the measurement model (validity and reliability)

Constructs	Items	VIF	Indicator Loadings	AVE	CR	Rho_a	Cronbach Alpha
Attitude				0,718	0,911	0,870	0,896
	Attitude1	2.837	0,897				
	Attitude2	2.141	0,847				
	Attitude3	1.958	0,818				
	Attitude4	1.884	0,825				
Awareness				0,628	0,931	0,916	0,915
	Awareness1	2.657	0.842				
	Awareness2	2.195	0.803				
	Awareness3	2.070	0.790				
	Awareness4	2.131	0.800				
	Awareness5	2.069	0.767				
	Awareness6	2.230	0.798				
	Awareness7	1.890	0.757				
	Awareness8	2.006	0.781				
Payment				0,817	0,931	0,888	0,888
	Payment1	2.701	0.909				
	Payment2	2.589	0.905				
	Payment3	2.443	0.897				
Perception				0,622	0,908	0,884	0,878
	Perception1	1.739	0.756				
	Perception2	2.875	0.880				
	Perception3	2.004	0.782				
	Perception4	1.807	0.778				
	Perception5	1.730	0.755				
	Perception6	1.868	0.774				
Recommend				0,853	0,920	0,828	0,827
	Recommend1	1.989	0,925				
	Recommend2	1.989	0,921				
Preference				0,717	0,927	0,902	0,901
	Preference1	2.164	0.896				
	Preference2	2.113	0.820				
	Preference3	2.165	0.824				
	Preference4	2.259	0.840				
	Preference5	2.373	0.850				

As presented in Table 4, the R^2 and adjusted R^2 values indicate a moderate level of explanatory power for the endogenous constructs. Furthermore, all inner VIF values ranged from 1.811 to 3.155, remaining well below the recommended threshold of 5.0, thereby confirming the absence of multicollinearity among the predictor constructs in the structural model (Hair et al., 2019).

Table 4: Structural model assessment

Endogenous Construct	R^2	Adjusted R^2	Inner VIF
Payment	0.448	0.447	2.571
Preference	0.547	0.545	3.012
Recommend	0.499	0.496	3.155

Table 5 evaluates discriminant validity using the Fornell–Larcker criterion. The square roots of AVE (diagonal values) are greater than the inter-construct correlations for all constructs. For example, the square root of AVE for “Recommend” (0.923) exceeds its correlations with other constructs (e.g., 0.664 with awareness, 0.606 with perception).

Although some correlations are relatively high (e.g., awareness–perception = 0.743), they remain below the corresponding AVE square roots, satisfying the criterion. Discriminant validity is established according to the Fornell–Larcker criterion, indicating that each construct is empirically distinct from the others (Fornell & Larcker, 1981).

Table 5: Fornell–Larcker criterion

	Attitude	Awareness	Payment	Perception	Preference	Recommend
Attitude	0.847					
Awareness	0.655	0.792				
Payment	0.434	0.549	0.904			
Perception	0.626	0.743	0.664	0.789		
Preference	0.517	0.654	0.611	0.675	0.847	
Recommend	0.567	0.664	0.422	0.606	0.559	0.923

Table 6 reports the Heterotrait–Monotrait Ratio (HTMT) values. All HTMT values are below the conservative threshold of 0.90, with the highest value observed between awareness and perception (0.828). Most values are even below 0.85, indicating strong discriminant validity. For example: Attitude–awareness = 0.735, Perception–preference = 0.756, Payment–recommend = 0.492. These results further confirm that multicollinearity or construct overlap is not a concern. HTMT results reinforce the findings from the Fornell–Larcker analysis, confirming robust discriminant validity across constructs (Henseler et al., 2015).

Table 6: HTMT discriminant validity results

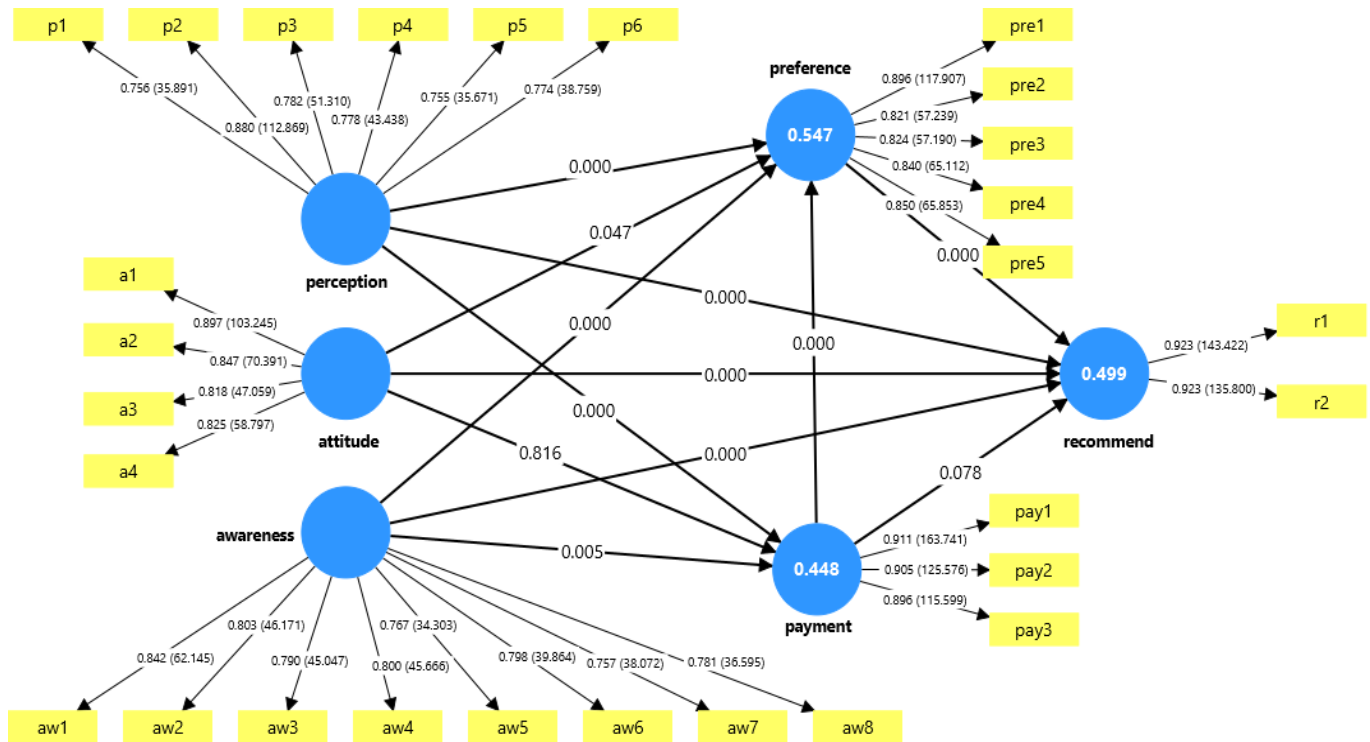
	Attitude	Awareness	Payment	Perception	Preference	Recommend
Attitude	-					
Awareness	0.735					
Payment	0.493	0.605				
Perception	0.718	0.828	0.746			
Preference	0.584	0.719	0.682	0.756		
Recommend	0.670	0.763	0.492	0.712	0.647	-

3.2 Findings on Model and Hypotheses of Research

Figure 3 illustrates the structural model developed for the study, depicting the relationships among perception, attitude, awareness, payment intention, preference, and recommendation intention. The model is grounded in pro-environmental behavior literature, where cognitive (awareness), affective (attitude), and perceptual (perception) factors are expected to influence behavioral intentions such as preference, willingness to pay, and recommendation (Ajzen, 1991; Han et al., 2010).

PLS-SEM results indicate that the model is statistically robust. Perception and awareness significantly affect all behavioral variables, making them the strongest determinants. Attitude significantly influences preference and recommendation but has no significant effect on payment intention. Payment intention affects preference but not recommendation, while preference has a strong effect on recommendation. The findings highlight the dominant role of perception and awareness, while the limited effect of attitude-especially on willingness to pay-supports the attitude–behavior gap.

Figure 3: Structural model



Perception = Perception of Environmentally Friendly Practices in Winter Tourism Hotels, Attitude = Attitude Towards Environmental Practices, Awareness = Waste and Environmental Awareness, Recommend = Intention to Recommend Eco-Friendly Winter Tourism Hotel, Payment = Intention to Pay More for an Eco-Friendly Winter Tourism Hotel, Preference = Eco-Friendly Winter Tourism Hotel Preference

Table 7 presents the results of the hypothesis testing. The findings show that perception has a significant positive effect on preference (H1), payment intention (H2), and recommendation (H3), with its strongest influence observed on payment intention. Awareness also significantly affects preference (H7), payment intention (H8), and recommendation (H9), confirming its important role in promoting environmentally responsible consumer behavior.

Attitude significantly influences preference (H4) and recommendation (H6), but does not significantly affect payment intention (H5), indicating that favorable environmental attitudes do not necessarily translate into a willingness to pay more. In addition, payment intention has a significant positive effect on preference (H10), whereas its effect on recommendation is not significant (H11). Finally, preference significantly influences recommendation (H12), highlighting its role in encouraging consumers to recommend environmentally friendly hotels to others.

Table 7: Hypothesis results

Hypotheses	Path	β	2.5%	97.5%	SD	T statistics	P values	Decision
H1	Perception → Preference	0.254	0.176	0.332	0.040	6.424	< .001	Supported
H2	Perception → Payment	0.576	0.500	0.652	0.039	14.705	< .001	Supported
H3	Perception → Recommend	0.159	0.082	0.242	0.041	3.913	< .001	Supported
H4	Attitude → Preference	0.059	0.001	0.117	0.030	1.987	.047	Supported
H5	Attitude → Payment	-0.009	-0.088	0.071	0.041	0.233	.816	Not Supported
H6	Attitude → Recommend	0.176	0.112	0.237	0.032	5.520	< .001	Supported
H7	Awareness → Preference	0.284	0.209	0.356	0.038	7.537	< .001	Supported
H8	Awareness → Payment	0.127	0.040	0.216	0.045	2.799	.005	Supported

Hypotheses	Path	β	2.5%	97.5%	SD	T statistics	P values	Decision
H9	Awareness → Recommend	0.354	0.270	0.434	0.042	8.449	< .001	Supported
H10	Payment → Preference	0.261	0.187	0.332	0.037	7.039	< .001	Supported
H11	Payment → Recommend	-0.053	-0.111	0.009	0.030	1.760	.078	Not Supported
H12	Preference → Recommend	0.161	0.093	0.229	0.035	4.675	< .001	Supported

4. DISCUSSION

This study re-examines the determinants of pro-environmental behavioral intentions in the context of winter tourism by incorporating a revised structural model and updated empirical findings. Unlike the previous version, the current results provide a more nuanced understanding of how perception, awareness, and attitude differentially shape tourists' preference, willingness to pay more, and intention to recommend eco-friendly hotels. Accordingly, this discussion focuses on interpreting supported and unsupported hypotheses in relation to prior literature, while avoiding mere repetition of statistical findings.

The findings clearly demonstrate that perception of eco-friendly practices is the most consistent and robust predictor across all behavioral outcomes (H1, H2, H3 supported). This aligns with prior research emphasizing that context-specific evaluations of environmental performance are more influential than abstract psychological constructs (Kim et al., 2012; Nimri et al., 2020; Kokkhangplu et al., 2023). From a theoretical perspective, this supports the argument within the Theory of Planned Behavior (Ajzen, 1991) that salient beliefs-particularly those grounded in observable service attributes-play a direct role in shaping behavioral intentions. Importantly, the strong effect of perception on willingness to pay more suggests that tourists are more responsive to tangible and visible environmental practices than to internal dispositions such as attitudes. This finding refines earlier studies (e.g., Kang et al., 2012; Han et al., 2010; Gupta et al, 2023) by indicating that in high-cost tourism contexts such as ski destinations, perceived value and credibility of green practices act as necessary conditions for financial commitment. Thus, rather than assuming a direct attitude-behavior linkage, the results support a perception-driven behavioral mechanism.

The findings indicate that attitude exerts a relatively weak effect on hotel preference (H4- β = 0.059) and a modest positive effect on recommendation intention (H6- β = 0.176), whereas its influence on willingness to pay more (H5) is not supported. This result reinforces the well-documented attitude-behavior gap (Gao & Mattila, 2016) but extends it by situating the gap within the economic structure of winter tourism. Rather than reflecting a general inconsistency, the findings suggest that this gap is shaped by contextual factors such as price sensitivity, high baseline accommodation costs, and perceived value. Consistent with prior research, Rahman & Reynolds (2016) and Wang & Wong (2020) demonstrate that positive environmental attitudes do not always translate into actual purchasing behavior, while Kang et al. (2012) highlight the moderating roles of perceived consumer effectiveness and service uncertainty. In the context of winter tourism, where accommodation costs are inherently high due to seasonality and operational expenses, tourists tend to exhibit greater price sensitivity, which weakens the translation of favorable attitudes into monetary behavior. Therefore, the non-significant effect of attitude on willingness to pay more should not be interpreted merely as a statistical outcome, but rather as a context-dependent constraint. This finding suggests that attitudes alone are insufficient to generate premium payment behavior unless supported by strong perceived value and credible environmental performance.

Regarding environmental awareness, all hypothesized relationships are supported (H7, H8, H9), including its effect on willingness to pay more. This finding slightly diverges from parts of the literature that report weak or indirect effects of awareness on financial behavior (e.g., Gao & Mattila, 2016; Liu & Thanh, 2026). A possible explanation is that environmental awareness, as a cognitive construct, enables tourists to recognize environmental issues, understand their potential consequences, and process environmental information when evaluating accommodation options. In this context, greater awareness may increase the extent to which environmental considerations are incorporated into tourists' decision-making, including decisions involving additional financial expenditure. However, despite its statistical significance (β = 0.127, p = .005), the effect size remains relatively modest compared with the effect of perception on willingness to pay more (β = 0.576, p < .001), indicating that awareness alone is not sufficient to fully explain premium payment behavior without the support of perceived value.

The relationships among behavioral constructs also provide important insights. The positive effect of willingness to pay more on preference (H10 supported) confirms that economic commitment strengthens evaluative choice, consistent with TPB and consumer behavior theory (Ajzen, 2015; Peter & Olson, 2008). However, the non-significant effect of willingness to pay more on recommendation (H11 rejected) suggests that financial commitment does not necessarily translate into social advocacy. This finding contrasts with studies that assume a linear progression from commitment to word-of-mouth (Han et al., 2010), and instead indicates that recommendation behavior may be driven more by satisfaction and perceived experience than by economic considerations. Finally, the strong effect of preference on recommendation (H12 supported) highlights the important role of evaluative judgment in shaping tourists' social and behavioral intentions. This finding suggests that tourists' preference for

eco-friendly winter tourism hotels is directly associated with their intention to recommend such hotels, indicating a sequential relationship among the behavioral outcomes examined in the model. However, this relationship should not be interpreted as evidence of a formal mediating effect, as no mediation analysis was conducted.

The winter tourism context, characterized by high costs, intensive facility use, and environmental sensitivity, shapes tourist behavior in distinct ways. The findings indicate that perception of eco-friendly practices is the strongest determinant of tourists' behavioral intentions. While attitude has a limited influence on economic behavior, environmental awareness exerts a significant positive effect on willingness to pay more, highlighting its role in shaping tourists' financial commitment toward eco-friendly hotels.

4.1 Theoretical Implications

This study contributes to the pro-environmental behavior and sustainable hospitality literature by refining the relative roles of cognitive, affective, and perceptual determinants within an integrated framework. First, the findings demonstrate that perception of eco-friendly practices consistently outperforms attitude in predicting all behavioral outcomes, supporting the argument that context-specific and observable cues function as primary drivers of behavioral intentions in hospitality settings (Kim et al., 2012; Nimri et al., 2020). This extends the Theory of Planned Behavior by emphasizing that beliefs grounded in tangible service experiences may dominate generalized attitudes, particularly in high-involvement tourism contexts. Second, the results provide a contextually grounded explanation of the attitude-behavior gap. While attitude significantly influences preference and recommendation, its non-significant effect on willingness to pay more confirms that affective evaluations alone are insufficient to generate economic commitment. This finding refines prior research by demonstrating that the gap is not universal but conditioned by contextual factors such as cost structures and perceived value. Third, the study highlights the differentiated roles of behavioral intentions. The findings show that willingness to pay more strengthens preference but does not directly translate into recommendation, whereas preference strongly predicts recommendation. This suggests that economic commitment and social advocacy are distinct behavioral pathways, challenging assumptions of a linear relationship between them. The study advances the literature by demonstrating that pro-environmental behavior in tourism should be understood through a multi-layered and context-sensitive framework, where perception, awareness, and attitude exert uneven and functionally distinct effects.

CONCLUSION

This study examined the impact of eco-friendly practices in winter tourism hotels on tourists' behavioral intentions using an updated structural model. The findings indicate that perception of environmental practices is the most influential determinant, affecting preference, willingness to pay more, and recommendation. Environmental awareness also plays a significant role across all outcomes, while attitude shows a more limited effect, particularly in relation to financial commitment.

These results suggest that tourists' pro-environmental behavior in winter tourism is shaped more by what they observe and evaluate than by their general environmental attitudes. At the same time, the findings indicate that economic and social behavioral intentions may operate through different pathways, as willingness to pay more does not directly lead to recommendation, whereas preference is directly associated with recommendation intention.

From a practical standpoint, the study reinforces the importance of making environmental practices visible, credible, and well-communicated. Certification systems, transparent environmental information, and effective communication strategies may enhance tourists' evaluations and, consequently, their behavioral responses. However, these implications should be interpreted cautiously, as the study is based on cross-sectional and self-reported data, which limits strong causal claims.

Limitations of Research and Recommendations for Future Research

This study is subject to several limitations. The use of a cross-sectional design restricts the ability to draw firm conclusions about causal relationships among the variables, as the findings reflect associations measured at a single point in time. In addition, the study is based on quantitative data collected through standardized measurement scales, which may limit the depth of understanding regarding tourists' underlying motivations and contextual interpretations. Another limitation relates to the sample structure, which consists solely of domestic tourists within the context of Türkiye. This context-specific focus may constrain the generalizability of the findings to different cultural or geographical settings.

In light of these limitations, future research could adopt longitudinal designs to better capture causal relationships and changes in tourist behavior over time. Complementing quantitative findings with qualitative approaches, such as interviews or focus groups, may provide deeper insights into tourists' decision-making processes. Furthermore, conducting comparative studies across different countries, cultures, or tourism types would enhance the external validity of the findings and contribute to the further development of the theoretical framework.

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