

## GREEN HOTEL PRACTICES AND INTENTIONS TO STAY: THE MODERATING ROLES OF PERSONAL INNOVATIVENESS AND NATIONALITY

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### Abstract

This study examined how green hotel practices influence international tourists' intentions to stay, using the Stimulus-Organism-Response (S-O-R) framework. It also investigated the moderating roles of personal innovativeness and nationality. Data were collected from 539 international tourists who stayed at certified green hotels in Thailand's Eastern Economic Corridor (EEC). The study employed exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and structural equation modeling (SEM) to validate the green practice dimensions and test the hypothesized relationships. The results revealed four key dimensions of green hotel practices: resource efficiency, energy conservation, water efficiency, and green certifications. All dimensions were found to positively influence perceived value, which, in turn, mediated their effects on green satisfaction and the intention to stay, confirming a cognitive-affective-behavioral pathway. Personal innovativeness was found to significantly moderate the relationship between resource efficiency and perceived value, as well as between water efficiency and perceived value, highlighting the role of innovation orientation in sustainability perceptions. A multi-group analysis showed that nationality (categorized as European vs. Non-European) moderates the relationship between satisfaction and intentions to stay, suggesting that cultural context influences how green satisfaction translates into behavioral intentions. This study advances sustainable hospitality theory by identifying the green practices that have the greatest influences on guest behavior and exploring the boundary conditions that shape their effectiveness. The findings offer practical implications for hotels, advising them to prioritize visible, tangible sustainability practices, adopt differentiated communication strategies based on guest innovativeness, and develop culturally tailored approaches to enhance the impact of green initiatives across international markets.

**Keyword:** Green practices, perceived value, green satisfaction, intentions to stay, personal innovativeness, nationality, S-O-R framework, sustainable hospitality

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## 1. INTRODUCTION

The acceleration of global economic development has been supported by the tourism and hospitality industry, which contributes to job creation and community growth (Manosuthi, 2024). However, growing environmental concern, increasing traveler environmental awareness, and the need to preserve natural ecosystems and communities, has prompted a shift toward sustainable practices in the industry's standards (Papallou et al., 2024). In response, green tourism—particularly a subset focused on minimizing environmental impact—has emerged as a key approach to promoting sustainability (Šimičević et al., 2024). This approach encourages environmentally conscious behavior among travelers, such as cultural immersion and conservation efforts (Lu et al., 2023), thereby requiring hotels to contribute to ecological preservation. To meet these needs, hotel operators are confronting challenges in adapting to sustainability issues and changes in tourist behavior. These evolving demands require hotels to develop strategies that emphasize sustainable practices (Ojha, 2022). In recent years, hotels have increasingly employed eco-friendly initiatives such as energy efficiency, water management, and waste management to promote sustainable operations and improve guest experiences (Barakagira & Paapa, 2024). Major hotel chains now embed sustainability into core business strategies, adopting net-zero policies for responsible operations (Hilton, 2022; Marriott International, 2022), reflecting a broader industry trend toward sustainability as a source of competitive advantage and brand differentiation.

Empirical studies consistently reveal that environmentally conscious tourists exhibit higher intentions to stay at green hotels, with perceived value serving as a fundamental predictor in green hotel selection (Filimonau et al., 2022; Moise et al., 2021; Po & Jiang, 2023). Perceived value, representing guests' cognitive appraisal of the benefits derived from a hotel's green initiatives, enhances green satisfaction—emotional fulfillment linked to the hotel's sustainability performance—which subsequently influences tourists' intentions to stay at green hotels (Po & Jiang, 2023). This cognitive-affective-behavioral pathway aligns with the Stimulus–Organism–Response (S-O-R) framework in environmental behavior research, where green hotel practices act as external stimuli; perceived value and satisfaction serve as internal cognitive and affective organism responses, respectively, shaping behavioral intentions (Nosrati et al., 2025).

Despite growing attention to sustainability, critical gaps persist. First, the conceptualization of green hotel practices remains fragmented across different geographical contexts (Acampora et al., 2022; Han et al., 2021). This absence is particularly evident in innovative economic zones such as Thailand's Eastern Economic Corridor (EEC). The EEC's dual focus on economic advancement and environmental sustainability, combined with its diverse international tourist base from different nationalities (Tourism Authority of Thailand, 2024), provides a unique setting for examining green hotel practices and responses across different nationalities. This region faces distinctive environmental pressures from both industrial development and tourism expansion (Eastern Economic Corridor Office, 2024; Lee-Anant, 2024) making it particularly relevant for understanding how hotels can balance economic growth with ecological responsibility and for validating contextually appropriate green practice dimensions.

Second, the psychological mechanism connecting green practices, perceived value, satisfaction, and behavioral intentions remains incompletely understood, as most studies have tested these variables independently or used simple mediation models rather than investigating the sequential mediating role of cognitive and affective evaluations (Han et al., 2021; Zhang et al., 2024). Understanding this sequential mechanism—how practices generate value perceptions, which foster satisfaction, and drive intentions—clarifies these underlying processes. Testing this pathway in the EEC context—where diverse tourists encounter

sustainability initiatives amid visible environmental pressures—provides a robust examination of whether this mechanism operates universally or varies by context.

Third, prior research typically assumes uniformity in these relationships, overlooking how individual traits and cultural contexts moderate the effectiveness of green practices (Ciftci et al., 2021; Zhang et al., 2024). This study addresses this gap by examining personal innovativeness (PIN) and nationality as boundary conditions that may influence relationship strength within the cognitive-affective-behavioral pathway. PIN, defined as openness to new ideas and technologies, is treated as a moderating personality trait that influences the strength of the relationship between green practices and perceived value (Li et al., 2021; Zhang et al., 2024). More innovative guests may perceive higher value from green initiatives, compared to less innovative ones. This moderator conceptualization addresses the gap identified by Ciftci et al. (2021) regarding how individual traits shape consumer responses to sustainable hospitality practices.

Similarly, nationality is an important boundary condition (moderator) that has not been sufficiently explored in green hotel research. While nationality is often treated as a demographic control variable, it also serves as a significant cultural determinant of environmental attitudes and sustainable behaviors (Hansen et al., 2023; Song & Wei, 2024). Cross-cultural consumer behavior research shows that cultural context shapes the strength of attitude-behavior relationships (Blake, 1999; Hofstede, 2001; Wąsowicz-Zaborek, 2024). Given the EEC's diverse international tourist base and its focus on European markets (Tourism Authority of Thailand, 2024), examining whether nationality moderates the effectiveness of green practices—categorizing tourists as European versus non-European following established conventions in cross-cultural tourism research (Nekmahmud et al., 2022; Ruiz-Molina et al., 2022)—provides insights into how and for whom green hotel practices most effectively drive behavioral outcomes. This study responds to calls for contextual exploration of nationality as a moderator, exploring cross-cultural differences in green consumption behavior and informing tailored sustainability strategies.

To address these gaps, this study aims to (1) explore and validate the core dimensions of green hotel practices as perceived by international tourists in the EEC; (2) examine how these practices influence intentions to stay through the sequential mediating roles of perceived value and green satisfaction; and (3) investigate how personal innovativeness and nationality moderate specific pathways within this sequential mechanism. By validating green practice dimensions and clarifying the psychological and cultural boundaries of their effectiveness, this study advances theoretical understanding of sustainable hospitality consumer behavior while providing practical guidance for targeted green marketing strategies.

## **2. LITERATURE REVIEW**

### **2.1 Green Hotels in Thailand's Eastern Economic Corridor**

Thailand's Eastern Economic Corridor (EEC)—covering Chachoengsao, Chonburi, and Rayong provinces—is a strategic region focusing on sustainable tourism under the Thailand 4.0 and Bio-Circular-Green (BCG) initiatives. These national policies emphasize high-value services and sustainable development, making green hotels an integral part of the EEC's transformation (Government Public Relations Department, 2023; The Nation, 2024). The adoption of green hotels in the EEC is growing but remains uneven. Leading hotels, including some international chains in Pattaya and Rayong, have implemented solar energy, water-saving fixtures, waste sorting, and sustainable sourcing. For example, Holiday Inn Pattaya integrates solar power and efficient water-use practices (Asset World Corp, 2024).

However, smaller hotels often face barriers such as limited capital and technical knowledge, which slow widespread uptake (Fuchs et al., 2024).

Certification schemes support this shift. The Green Hotel Plus program, developed by Thailand’s Department of Climate Change and Environment, covers waste management, renewable energy, sustainable procurement, staff welfare, and carbon reduction (Global Sustainable Tourism Council, 2024). In 2024, the program gained GSTC-Recognized Standard status, affirming its alignment with international sustainability criteria and supporting Thailand’s carbon neutrality goals for 2050 (Global Sustainable Tourism Council, 2024). Complementary certifications such as the LEED certification (Leadership in Energy and Environmental Design) focus on sustainable building design, energy and water efficiency, carbon reduction, and indoor environmental quality (U.S. Green Building Council, 2025). These certifications formalize environmental commitments and signal sustainability to eco-conscious travelers, enhancing competitiveness (Fuchs et al., 2024).

Despite the growing interest in green hotels in Thailand’s EEC, limited research exists in this area. Most studies focus on broader implications rather than specific practices within the green hotel sector in Thailand (Fuchs et al., 2024). This gap highlights the need for targeted research to explore green practices specifically for the EEC and to assess overall consumer perceptions of green hotels. Addressing these areas will be essential for fostering a more sustainable hospitality industry in the EEC.

## 2.2 Green Hotel Practices

Green hotel practices generally refer to a set of environmental initiatives implemented by hotels to promote environmentally friendly operations and reduce the negative environmental impacts caused by their business activities (Dang-Van et al., 2023). Hotels that engage in activities such as water conservation, energy efficiency, and waste reduction, are often recognized as green or eco-friendly hotels (Global Sustainable Tourism Council, 2025). From an academic perspective, green hotel practices have long been discussed in literature. Table 1 presents a summary of selected empirical studies that incorporated various dimensions of practices applied across contexts and countries. A notable limitation in the literature is that the conceptualization in prior research remains inconsistent and fragmented, particularly in consumer behavior contexts (Acampora et al., 2022, Trang et al., 2019). While some studies focus on operational aspects such as water, energy, and waste management (Abdou et al., 2020), others incorporate broader areas such as customer benefits or general support for sustainable practices (Trang et al., 2019; Moise et al., 2021).

**Table 1** Summary of Dimensions and Example Items of Green Hotel Practices

Author (Year)	Country	Key Dimensions	Example Items / Practices
Trang et al. (2019)	Vietnam	Green characteristics, energy efficiency, water efficiency, recycling, customer benefits.	Eco-architecture, LED lighting, water-saving devices, recycling, organic amenities, green certifications.
Abdou et al. (2020)	Egypt	Energy conservation, water conservation, waste management.	Triple-glazed windows installation, using low-flow toilets, adopting a donation program.

Moise et al. (2021)	Columbia	Energy management, waste management, water conservation, and general support to sustainable tourism practices.	Renovation of facilities, composting kitchen waste, reusing linens and towels, displaying leaflets in hotel rooms.
Po & Jiang (2023)	China	Water conservation, energy efficiency, waste management.	Low-water laundry systems, motion-sensor lights, recycling containers.
Barakagira & Paapa (2023)	Uganda	Energy conservation, water conservation, waste management, and environmental purchasing.	Fluorescent tubes and electronic stabilizers, efficient dishwasher, purchasing recycled products.
Ru-Zhuc et al. (2023)	Thailand	Local and organic food, brand and information, and design and landscape.	Consumption of local food, green certification, landscape design.

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An increasingly important aspect of green hotel practices is the adoption of green certifications, which formalize environmental commitments and align hotels with recognized sustainability standards. Certifications such as Thailand’s Green Hotel Plus and LEED, as discussed earlier, provide structured criteria covering resource efficiency, staff welfare, sustainable procurement, and carbon reduction (Global Sustainable Tourism Council, 2024). Empirical studies suggest that certification promotes the implementation of energy-saving, water conservation, and waste management practices (Luo & Fan, 2019), while also enhancing consumer loyalty and willingness to pay (Velaoras et al., 2025). These findings support that certification is both a functional and perceptual pillar of green hotel strategy. Although green certification has not been consistently included as a major dimension in many studies, its recurring presence as an item nested within broader constructs—such as green characteristics or guest-oriented environmental features—underscores its strategic relevance

However, this conceptual fragmentation poses challenges for both researchers and practitioners in identifying which practices are most influential in shaping guest perceptions and behavioral responses. Among the available frameworks, Trang et al.’s (2019) original pre-EFA (exploratory factor analysis) dimensions—comprising the application of green products and materials, waste reduction management, energy management, water conservation, and guest-oriented environmental features—offer a valuable model by integrating both operational and guest-oriented dimensions, presenting a more holistic view of green hotel practices. In this study, the original dimensions are retained to ensure consistency in interpretation and to enhance contextual veracity. This approach helps avoid bias introduced through reinterpretation and allows for an empirical assessment of whether these dimensions hold in a new geographical context, specifically within green hotels in Thailand’s EEC.

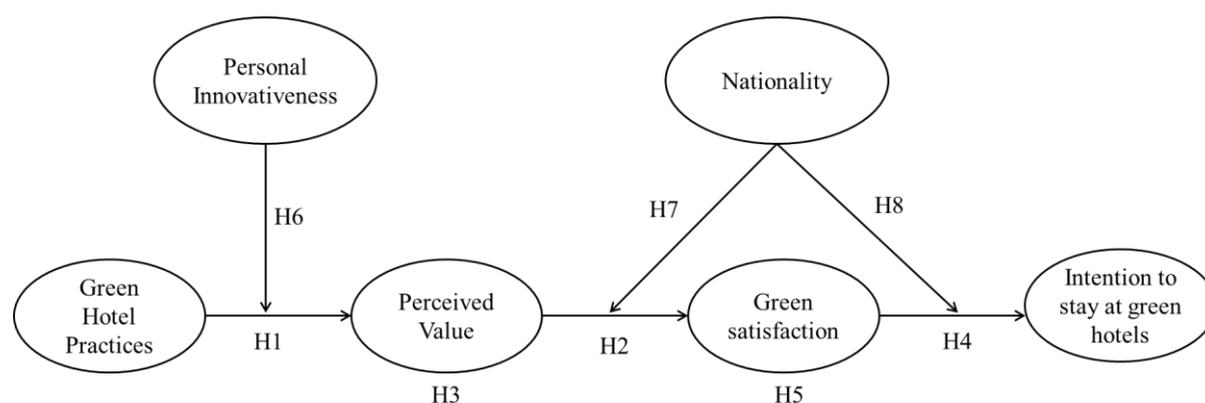
### **2.3 Theoretical Foundation: Stimulus-Organism-Response (S-O-R) Framework**

This study adopts the Stimulus-Organism-Response (S-O-R) framework (Mehrabian & Russell, 1974) as its theoretical foundation to explain how green hotel practices influence guest behavior. The S-O-R framework suggests that external environmental stimuli trigger internal states of an organism—comprising cognitive evaluations and affective responses—which drive behavioral responses. In this context, the S-O-R framework operates as follows: Stimuli (S)

refers to green hotel practices that serve as external environmental cues guests encounter during their hotel experience. These practices trigger Organism (O) states, representing guests’ internal psychological responses that occur in two sequential stages: cognitive evaluation (perceived value) and affective response (green satisfaction). Perceived value reflects guests’ rational assessment of benefits derived from green initiatives, while green satisfaction represents the emotional fulfillment resulting from these practices meeting environmental expectations. Together, these internal states drive Response (R), manifested as intentions to stay at green hotels. Empirical evidence in hospitality contexts supports this theoretical approach. Studies have demonstrated that green practices enhance hotel image and trust, subsequently influencing revisit intentions (Nguyen et al., 2025), while both hedonic and utilitarian values mediate the relationship between green hotel attributes and guests’ behavioral intentions. While the S-O-R framework provides a foundation for understanding how green practices lead to guest behavior, it traditionally assumes that the S-O-R relationship is uniform across all individuals. To address this limitation, contingency theory (Fiedler, 1978) is introduced, suggesting that the strength and direction of relationships between variables depend on contextual factors or boundary conditions (Crespo et al., 2025). Boundary conditions represent the situational or individual factors—such as nationality, culture, or personality traits—that determine when, where, and for whom, certain effects occur (Venkateswaran & George, 2020). Specifically, this study examines how individual traits, such as personal innovativeness, and cultural context, represented by nationality, moderate relationships within the S-O-R framework.

This study extends the S-O-R framework by incorporating personal innovativeness as a moderator of the stimulus-organism relationship, recognizing that more innovative guests may perceive greater value from novel green initiatives (Agarwal & Prasad, 1998; Ciftci et al., 2021). Additionally, nationality functions as a moderator of the organism-response relationships, reflecting cultural differences in environmental attitudes and the strength of value-satisfaction and satisfaction-behavior linkages (Dangelico & Vocalelli, 2017; Nekmahmud et al., 2022). Figure 1 illustrates the preliminary conceptual model integrating these constructions to guide empirical validation.

**Figure 1** Preliminary Conceptual Model



## 2.4 Perceived value and Green Satisfaction

Perceived value is defined as the consumer’s overall assessment of the utility of a product (service) based on perceptions of what is received and what is given (Zeithaml, 1988) and is often recognized as a key element of consumer decision making in the marketing and

hospitality sectors (Papista & Krystallis, 2013). Within the S-O-R framework, perceived value represents the cognitive organism response to green hotel practice stimuli. As guests encounter sustainability initiatives (stimuli), they engage in cognitive appraisal processes to evaluate the benefits and costs associated with these practices, forming perceived value judgments that subsequently shape effective and behavioral responses (Mehrabian & Russell, 1974). Consumer literature has identified many dimensions of perceived value and suggested four established value dimensions including economics (value for money), functional (i.e., the utility provided by an offering), emotional, and social (the ability of an offering to enhance self-concept) (Zeithaml et al., 2020). In the hospitality literature, Teng et al. (2018) defined guests' perceived value as a guest's subjective evaluation of green hotels and identified this concept as a unidimensional construct consisting of economic, functional, social, and emotional value. Past studies also confirmed the direct effect of green practices on guests' perceived value in the hotel context (Po & Jiang, 2023; Lee et al., 2019). Thus, the following hypothesis is proposed:

*H1: Green hotel practices have a direct effect on guests' perceived value.*

Customer satisfaction occurs when customers compare their expectations with the actual service they receive. If the service meets or goes beyond what they expected, they feel satisfied (Oliver, 1997). This concept is also applicable to green satisfaction, which emerges when green practices are perceived as part of hotel services (Moise et al., 2018). Green satisfaction reflects how well guests' environmental and sustainability expectations are met (Chen, 2010; Martinez, 2015). In green hotels, perceived value plays a key role in shaping satisfaction, especially when guests see the environmental benefits as aligning with their personal values (Po & Jiang, 2023; Chang & Lin, 2022). Building on this basis, research suggests that the relationship between green hotel practices and green satisfaction may be indirect and may be mediated by perceived value (Moise, 2020). Empirical studies show that distinct green practices enhance perceived value, which in turn boosts customer satisfaction and behavioral intentions (Kokkhangplu et al., 2023). Thus, we posit:

*H2: Perceived value has a direct effect on green satisfaction.*

*H3: Perceived value mediates the relationship between green hotel practices and green satisfaction.*

## **2.5 Intentions to Stay at Green Hotels**

Purchase intentions represent consumers' willingness to purchase a product or service in the future and serve as a widely accepted predictor of actual consumer behavior (Chen & Chang, 2012; Martínez, 2015; Román-Augusto et al., 2022). Within the hospitality context, this concept is more often demonstrated through the intention to stay at a hotel (Chen & Chang, 2012; Hou & Wu, 2021). This study specifically considers the intention to stay at a hotel which demonstrates eco-friendly practices. Empirical studies confirm that green satisfaction is a strong determinant of intentions to stay at green hotels. For example, Chen and Tung (2014) found that satisfaction with eco-friendly initiatives directly increases Taiwanese tourists' revisit intentions, while Lee and Kim (2020) confirmed that green satisfaction enhances Korean tourists' intentions to recommend or rebook eco-friendly hotels. More recently, Kokkhangplu et al. (2023) showed that green satisfaction directly and indirectly strengthens the intention to stay at eco-certified hotels in Southeast Asia. Together, these studies establish robust empirical evidence that green satisfaction is not only an outcome of perceived value but also an independent predictor of intentions.

Furthermore, research demonstrates that satisfaction acts as a key mediator between perceived value and purchase intentions, with satisfaction, translating guests' perceptions of

value into behavioral outcomes (Kokkhangplu et al., 2023; Chang et al., 2024). This sequential mediation pathway—from green practices through perceived value and green satisfaction to behavioral intentions—aligns with the S-O-R framework’s cognitive-affective-behavioral sequence. Therefore, we hypothesize:

*H4: Green satisfaction has a direct effect on intentions to stay at green hotels.*

*H5: Green satisfaction mediates the relationship between perceived value and intentions to stay at green hotels.*

## **2.6 The Moderating Role of Personal Innovativeness**

According to Rogers’ (1962) Diffusion of Innovation (DOI) theory, personal innovativeness (PIN) is conceptualized as a unique trait that reflects how different individuals engage with new technologies, practices, and ideas ahead of others. Agarwal & Prasad (1998) described it as an individual’s openness to novelty, including new technologies, and risk tolerance (Hasudungan & Saragih, 2024). In the green hotel setting, DOI helps explain how guests adopt and perceive environmentally friendly practices, particularly when these efforts align with their personal environmental values (Sharma et al., 2023).

Prior hospitality studies emphasize the importance of personal innovativeness (PIN) in shaping consumer responses to novel and sustainable service offerings. Specifically, PIN enhances consumer participation in co-creating sustainable experiences (Ghali et al., 2024). Innovative consumers tend to perceive green initiatives as more valuable (Hasudungan & Saragih, 2024; Cudjoe et al., 2024), exhibiting higher engagement across omni-channel platforms (Zhang et al., 2024). Kamboj et al. (2022) further confirmed that PIN significantly predicts green hotel adoption, with more innovative consumers perceiving greater utilitarian and biospheric value in eco-friendly accommodations. Kim and Han (2022) incorporated PIN within a broader technology readiness framework and found that it significantly influences perceived ease of use, attitude, and behavioral intentions toward smart hotel services, revealing that hotel guests with higher PIN are more receptive to eco-technological innovations. Recent empirical studies have started to explore PIN as a moderating variable. In a meta-analysis across 28 hospitality and tourism studies, Ciftci et al. (2021) concluded that PIN significantly influences technology adoption and should be modeled as a moderator to explain behavioral heterogeneity. Similarly, Albaom et al. (2022) found that PIN moderated tourists’ intentions to adopt Web 3.0 technologies, suggesting that innovative individuals engage more deeply with novel service environments. These findings collectively underscore the strategic role of PIN in enhancing consumer responsiveness to green hotel innovations, particularly when aligned with perceived value and sustainability involvement.

Despite this evidence of direct effects, the moderating role of PIN—particularly in amplifying the impact of green hotel practices on perceived value—has received limited attention (Ciftci et al., 2021). Given that highly innovative individuals are more open to sustainability-driven innovations, it is reasonable to expect that they would derive greater value from green hotel practices. Hence, we propose:

*H6: The relationship between green hotel practices and perceived value is moderated by personal innovativeness.*

## **2.7 The Moderating Role of Nationality**

While the S-O-R framework establishes the sequential pathway from stimuli through internal states to responses, contextual factors may moderate specific linkages within this pathway (Nosrati et al., 2025). Nationality represents one such boundary condition that may influence the strength of relationships between psychological states and behavioral outcomes

in sustainability contexts. The conceptualization of nationality as a moderator stems from cross-cultural consumer behavior literature, which posits that cultural values shape how individuals translate attitudes into behavior (Hofstede, 2001; Wąsowicz-Zaborek, 2024). The attitude-behavior literature further demonstrates that consistency between beliefs and actions varies systematically across cultural contexts (Blake, 1999), with recent hospitality research confirming that national culture moderates the effectiveness of environmental practices on consumer responses (Song & Wei, 2024). Within the S-O-R framework, nationality is theorized to primarily moderate the organism-response linkage—specifically how satisfaction translates into behavioral intentions—as cognitive assessments of green practices may be relatively universal while behavioral expression depends on culturally embedded norms regarding environmental action (Dangelico & Vocalelli, 2017; Hansen et al., 2023).

Measuring cultural orientation through comprehensive frameworks such as Hofstede's dimensions might be impractical in hotel settings, as guests cannot complete lengthy surveys (Wąsowicz-Zaborek, 2024). Nationality provides a practical proxy that can be collected during check-in while capturing meaningful cultural variation. Following established methodological conventions in cross-cultural hospitality research (Nekmahmud et al., 2022; Ruiz-Molina et al., 2022), this study categorizes international tourists as European or non-European. This classification is theoretically justified by research demonstrating systematic differences in environmental attitude-behavior consistency between these broad cultural regions (Nekmahmud et al., 2022). Tourists from European contexts, predominantly representing individualistic cultures with established environmental norms, tend to exhibit stronger alignment between satisfaction and behavioral intentions in sustainability contexts (Dangelico & Vocalelli, 2017; Falk & Hagsten, 2019). In contrast, tourists from non-European contexts may demonstrate different patterns in how satisfaction influences behavioral commitment due to varying cultural values, social norms, or contextual priorities (Yadav et al., 2019; Yan & Chai, 2021).

In Thailand's EEC context, international tourists represent diverse cultural backgrounds, with significant arrivals from both Asian and European source markets (Tourism Authority of Thailand, 2024). Policymakers have identified European tourists as a strategic target segment due to alignment with sustainable tourism development objectives (Shoowong, 2024; The Government Public Relations Department, 2025). Given this diverse tourist base and policy context, examining whether nationality serves as a boundary condition within the S-O-R framework provides both theoretical insights into cultural contingencies and practical guidance for sustainability strategies. Therefore:

*H7: Nationality moderates the relationship between perceived value and green satisfaction, such that the strength of this relationship differs between European and non-European guests.*

*H8: Nationality moderates the relationship between green satisfaction and intentions to stay at green hotels, such that the strength of this relationship differs between European and non-European guests.*

### **3. RESEARCH METHODOLOGY**

#### **3.1 Sample and Data Collection**

Surveys were distributed to foreign tourists visiting Thailand's Eastern Economic Corridor (EEC), a government-promoted region for industries such as affluent and medical tourism, during a three month period from April to June 2024. Purposive sampling was used to identify participants with prior experience staying in green hotels. Data collection occurred in front of hotels certified by the Green Hotel Plus program, ensuring alignment with eco-friendly

standards. A screening question confirmed that respondents had stayed in a green hotel within the EEC provinces in the past 12 months. The study followed ethical research guidelines and was approved by the Burapha University Institutional Review Board prior to data collection. All participants were informed of the study’s purpose, the voluntary nature of participation, and the confidentiality of their responses. Data were collected anonymously and securely stored to ensure privacy. Of the 600 questionnaires distributed, 539 valid responses were retained after excluding incomplete entries.

**Table 2** Characteristics of the respondents

Variable	Category	Percentage (%)	Frequency (n)
Gender	Male	66.2%	357
Age Group	40–49 years	28.6%	154
Education Level	Bachelor’s Degree	55.3%	298
Occupation	Company Employees	52.7%	284
Yearly Household Income (USD)	\$30,000–\$44,999	38.6%	208
Region of Nationality	European	62.3%	336
	Non-European	37.7%	203

### 3.2 Measurements

A total of 39 items were measured using a seven-point Likert scale (1 = strongly disagree, 7 = strongly agree). Green hotel practices were assessed using 23 items adopted from the pre-EFA conceptual dimensions of Trang et al. (2019), which include: application of green products and materials, waste reduction management, energy conservation, water efficiency, and other green attributes. One item, “A hotel completely improves customer’s knowledge on environmental responsibility,” was excluded due to difficulties in accurately assessing respondents’ knowledge in the context of a self-reported survey, which could be highly subjective and variable. Personal innovativeness was measured with four items from Agarwal and Prasad (1998), as verified by Ciftci et al. (2021), who confirmed the relevance and validity of these items in the context of hospitality and tourism research. Perceived value was assessed using five items from Teng et al. (2018), green satisfaction with four items from Chen (2010), and intentions to stay at green hotels (purchase intentions) with three items from Hou and Wu (2021). All items were used without modification.

To ensure contextual validity, all items were reviewed by three academic experts in hospitality and tourism research, who assessed their relevance and clarity in the EEC context. A pilot test with 30 respondents from the target population was also conducted, confirming face validity. Reliability was supported by Cronbach’s alpha values exceeding 0.70 for all constructs, indicating strong internal consistency.

### 3.3 Common Method Bias

Given the cross-sectional nature of this study and its reliance on self-reported data, the potential threat of common method bias (CMB) was addressed as suggested by Kock et al., 2021 and Podsakoff et al., 2003. Procedurally, respondents were assured of anonymity and confidentiality, and informed that there were no right or wrong answers, while the questionnaire was pre-tested with 30 participants to ensure clarity and reduce item ambiguity (Podsakoff et al., 2003). Statistically, Harman’s single-factor test was conducted by loading all 39 items into an exploratory factor analysis without rotation. The first factor accounted for

37.153% of the total variance, well below the 50% threshold, suggesting that common method bias was not a major concern in this study (Podsakoff et al., 2003). Additionally, examination of the correlation matrix (Table 5) revealed that all inter-construct correlations were below 0.90, further indicating the absence of severe common method bias (Hair et al., 2019). Collectively, these multiple assessments demonstrate that common method variance did not pose a significant threat to the validity of this study's findings.

### **3.4 Data Analysis Process**

A two-stage analytical approach was employed: Exploratory Factor Analysis (EFA) was used to identify key dimensions of green hotel practices, while Structural Equation Modeling (SEM) was used to test the hypothesized relationships among the constructs. EFA was conducted using SPSS version 27, applying principal component analysis with Varimax rotation. Data suitability was confirmed using the Kaiser-Meyer-Olkin (KMO) measure and Bartlett's test of sphericity. Factors with eigenvalues greater than 1 were retained, and items with factor loadings of 0.50 or higher were considered significant (Hair et al., 2010). To assess construct reliability and convergent validity, Cronbach's alpha ( $\alpha$ ) and composite reliability (CR) values were expected to exceed 0.70, while the Average Variance Extracted (AVE) values were required to exceed 0.50 (Hair et al., 2019). Discriminant validity was evaluated using the Fornell-Larcker criterion, where the square root of the AVE for each construct was required to be greater than its correlations with other constructs (Fornell & Larcker, 1981).

Subsequently, Structural Equation Modelling (SEM) was conducted using Mplus version 7.3, applying maximum likelihood estimation (MLE). The analysis followed a two-step procedure: (1) Confirmatory Factor Analysis (CFA) and (2) structural model testing to assess the proposed hypotheses.

## **4. FINDINGS**

### **4.1 Exploratory Factor Analysis (EFA) Results**

Results of the EFA analysis of 23 items related to green hotel practices were as follows. The data were suitable for factor analysis, as indicated by an excellent Kaiser-Meyer-Olkin (KMO) value of 0.944 and a significant Bartlett's Test of Sphericity ( $p < 0.001$ ), confirming sampling adequacy and variable correlations for factoring (Hair et al., 2010). Four distinct factors with eigenvalues greater than 1 were extracted and labeled: water efficiency (WEF), green certifications (GCT), resource efficiency (REF), and energy conservation (ECS) (Table 3). Most items demonstrated strong factor loadings above the accepted threshold of 0.500, indicating a robust association with their respective factors (Hair et al., 2010). One item (Q6) had a factor loading of 0.498, slightly below the threshold but regarded as a meaningful contribution to the factor (Hair et al., 2010). The item-to-total correlations exceeded the acceptable threshold of 0.300, supporting the internal consistency of the factors.

Reliability of each extracted factor was assessed using Cronbach's alpha. As suggested by Hair et al. (2019), a cut-off value of 0.60 was deemed as acceptable for this exploratory research, especially as the construct has a smaller number of items. Based on the suggested threshold, all measures in this study demonstrated good internal consistency, with Cronbach's alpha values exceeding 0.60 for most of the constructs, as presented in Table 3. Overall, the results suggest that all factors were internally consistent and appropriate for further validity testing in subsequent analyses.

**Table 3** EFA Results

Construct Items	Factor loadings	Eigenvalue	% of variance	Cumulative
<i>Factor 1: Water Efficiency (WEF) (<math>\alpha = 0.906</math>)</i>		10.157	44.161	44.161
Q14 (GWM1)	.817			
Q15 (GWM2)	.807			
Q16 (GWM4)	.784			
Q17 (GWM3)	.770			
Q13 (GEM6)	.611			
Q8 (GEM1)	.557			
Q9 (GEM2)	.514			
<i>Factor 2: Green Certifications (GCT) (<math>\alpha = 0.894</math>)</i>		2.126	9.246	53.404
Q22 (GOP5)	.795			
Q18 (GOP1)	.750			
Q20 (GOP3)	.712			
Q23 (GOP6)	.701			
Q21 (GOP4)	.700			
Q19 (GOP2)	.665			
Q12 (GEM5)	.548			
<i>Factor 3: Resource Efficiency (REF) (<math>\alpha = 0.873</math>)</i>		1.492	6.486	59.891
Q1 (GAP1)	.786			
Q5 (GWR1)	.701			
Q2 (GAP2)	.683			
Q3 (GAP3)	.678			
Q4 (GAP4)	.668			
Q7 (GWR3)	.639			
Q6 (GWR2)	.498			
<i>Factor 4: Energy Conservation (ECS) (<math>\alpha = 0.642</math>)</i>		1.003	4.362	64.252
Q10 (GEM3)	.834			
Q11 (GEM4)	.569			

Based on the EFA results (Table 3), which revealed four distinct dimensions of green hotel practices, the original hypotheses H1, H3, and H6 were refined into sub-hypotheses (H1a-H1d, H3a-H3d, H6a-H6d) to examine the relationships of WEF, GCT, REF, and ECS, separately, with perceived value, green satisfaction (mediated by perceived value), and the moderating effect of personal innovativeness.

#### 4.2 Confirmatory Factor Analysis (CFA) Results

Following the two-step procedure recommended by Anderson and Gerbing (1988), CFA was first conducted to validate the measurement model before testing the structural relationships. A CFA was performed to validate the four identified green hotel practices (REF, ECS, WEF, and GCT) and the other latent constructs including perceived value (PVA), green satisfaction (GSA), intention to stay at a green hotel (INT), and personal innovativeness (PIN). Items with factor loadings below 0.500 (Hair et al., 2010) were removed, resulting in 30 items retained in the CFA model. The model was evaluated for a large sample ( $n = 539$ ) with  $>30$  observed variables, where significant chi-square results were expected (Hair et al., 2010). Therefore, relative chi-square ( $\chi^2/df$ ) and fit indices were emphasized. The model demonstrated acceptable fit:  $\chi^2(377) = 1052.490, p < 0.001, \chi^2/df = 2.790, CFI = 0.931, TLI = 0.920, RMSEA = 0.058, SRMR = 0.050$ , meeting the recommended thresholds of CFI with  $TLI > 0.900, RMSEA < 0.080$ , and  $SRMR < 0.070$  (Hair et al., 2010) (See Table 4).

Table 4 presents the results of the CFA, including the standardized factor loadings, t-values, composite reliability (CR), and average variance extracted (AVE) for each construct. The reliability and convergent validity were confirmed:  $\alpha$  ranged from 0.642 to 0.906, CR from 0.682 to 0.906, and AVE from 0.509 to 0.708—all exceeding the recommended values (Hair et al., 2010) (See Table 4).

**Table 4** Confirmatory factor analysis. (n = 539)

Construct Item	Loading	t-value	CR	AVE
<b>Resource efficiency (REF), (<math>\alpha = 0.834</math>)</b>			0.838	0.509
REF1: The hotel only uses refillable soap/shampoo dispensers. (GWR1: Q5)	0.782	37.372**		
REF2: The hotel always places special containers/bins for various recyclable items in guest rooms and hotel lobby. (GWR2: Q6)	0.729	29.930**		
REF3: The hotel only uses recycled materials (e.g., paper, plastic, etc.). (GAP1: Q1)	0.691	26.406**		
REF4: The hotel only uses durable items rather than disposable products (e.g., uses napkins rather than paper towels). (GWR3: Q7)	0.680	25.486**		
REF5: The hotel only offers fresh, healthy, and vegan food. (GAP4: Q4)	0.680	25.391**		
<b>Energy conservation (ECS), (<math>\alpha = 0.642</math>)</b>			0.682	0.530
ECS1: The hotel always changes bed sheets only upon request (options to reuse). (GEM4: Q11)	0.868	19.580**		
ECS2: The hotel always encourages guests to reuse towels (options to reuse). (GEM3: Q10)	0.553	13.632**		
<b>Water efficiency (WEF), (<math>\alpha = 0.906</math>)</b>			0.906	0.708
WEF1: The hotel always uses low-flow toilets/good sanitation practices (saving water). (GWM1: Q14)	0.859	60.940**		
WEF2: The hotel always uses low-flow sinks. (GWM2: Q15)	0.850	58.135**		
WEF3: The hotel always uses other water-efficient appliances. (GWM4: Q16)	0.835	53.340**		
WEF4: The hotel always uses low flow/intelligent showerheads. (GWM3: Q17)	0.821	49.570**		
<b>Green certifications (GCT), (<math>\alpha = 0.847</math>)</b>			0.848	0.582
GCT1: The hotel provides fresh, clean air, and freedom from secondhand smoke. (GOP5: Q22)	0.773	35.487**		
GCT2: The hotel completely achieves green-hotel certifications. (GOP6: Q23)	0.763	34.091**		
GCT3: The hotel always utilizes green landscape and architectural design. (GOP3: Q20)	0.759	33.972**		
GCT4: The hotel is always located in a clean and natural environment. (GOP1: Q18)	0.757	33.547**		
<b>Perceived value (PVA), (<math>\alpha = 0.869</math>)</b>			0.869	0.625
PVA1: The hotel's green services provide very good value for me.	0.809	44.283**		
PVA2: Staying in a green hotel gives me pleasure.	0.808	44.388**		
PVA3: Staying in a green hotel makes a good impression on other people.	0.775	38.213**		
PVA4: Staying in a green hotel makes me feel good.	0.769	37.234**		
<b>Green satisfaction (GSA), (<math>\alpha = 0.855</math>)</b>			0.852	0.593
GSA1: I am happy about the decision to choose a hotel because of its environmental practices.	0.857	54.522**		
GSA2: I believe that it is right to purchase a hotel's services because of its environmentally friendly practices and performance.	0.830	47.899**		
GSA3: Overall, I am glad to stay in a hotel because it is environmentally friendly.	0.717	29.461**		
GSA4: Overall, I am satisfied with a hotel because it shows environmental concern.	0.660	23.927**		
<b>Intention to stay (INT), (<math>\alpha = 0.853</math>)</b>			0.856	0.665
INT1: I plan to stay at a green hotel when travelling.	0.859	52.491**		
INT2: I am willing to stay at a green hotel when travelling.	0.809	42.328**		
INT3: I will make an effort to stay at a green hotel when travelling.	0.777	37.684**		
<b>Personal innovativeness (PIN), (<math>\alpha = 0.871</math>)</b>			0.871	0.629
PIN1: When I hear about new information technology, I would look for ways to experience it.	0.858	50.583**		
PIN2: I like to experiment with new technologies.	0.773	35.564**		
PIN3: In general, I am not hesitant to try out new information technologies.	0.771	35.616**		
PIN4: Among my peers, I am the first one to try out new information technologies.	0.768	35.589**		

*Model fit indices:*  $\chi^2 = 1052.490$  ( $p = 0.000$ ),  $df = 377$ ,  $CFI = 0.931$ ,  $TLI = 0.920$ ,  $RMSEA = 0.058$ ,  $SRMR = 0.050$

Notes:  $\chi^2$  = chi-squared,  $df$  = degree of freedom, Loadings = standardized factor loadings, t-value is significant at \*\* $p < 0.001$ , CR = Composite reliability, AVE = Average variance extracted.

Discriminant validity was established, as the square root of AVE for each construct exceeded its correlations with all other constructs (Table 5) (Fornell & Larcker, 1981). Additionally, the CICFA (sys) was also employed for affirmation (Fakfare et al., 2021; Khetjenkarn & Suwannakul, 2024) which produced 97.5% upper bound coefficients (0.266–0.806) below the 0.900 threshold, indicating no problematic multicollinearity (Rönkkö & Cho, 2022). Overall, the measurement model exhibited good reliability, convergent and discriminant validity, confirming its suitability for structural model analysis.

**Table 5** Discriminant validity analysis

Constructs	GMS	EMN	WMN	GST	PVA	GSA	INT	PIN
GMS	<b>0.713</b>	[.374,.560]	[.615,.736]	[.634,.756]	[.608,.732]	[.581,.710]	[.644,.762]	[.512,.653]
EMN	0.467	<b>0.728</b>	[.576,.737]	[.348,.532]	[.463,.629]	[.251,.438]	[.305,.487]	[.061,.266]
WMN	0.676	0.657	<b>0.841</b>	[.552,.682]	[.658,.764]	[.526,.658]	[.523,.657]	[.210,.387]
GST	0.695	0.440	0.617	<b>0.763</b>	[.549,.684]	[.552,.685]	[.595,.722]	[.383,.544]
PVA	0.670	0.546	0.711	0.616	<b>0.791</b>	[.719,.816]	[.704,.806]	[.278,.451]
GSA	0.645	0.345	0.592	0.618	0.768	<b>0.770</b>	[.658,.770]	[.373,.533]
INT	0.703	0.396	0.590	0.659	0.755	0.714	<b>0.815</b>	[.389,.548]
PIN	0.582	0.164	0.298	0.463	0.364	0.453	0.469	<b>0.793</b>

Note: The square roots of AVE are denoted by the bold numerals in parentheses on the diagonal. The correlations between the constructs are represented by the values in the lower diagonal. The correlations of the constructs at the 97.5% confidence interval (CI) [lower bound, upper bound] are represented by the values in the upper diagonal.

### 4.3 Structural Model Results

The structural model demonstrated an acceptable fit with the following index values:  $\chi^2 = 745.168$  ( $p = 0.000$ ),  $df = 282$ , CFI = 0.944, TLI = 0.935, RMSEA = 0.055, and SRMR = 0.047. Table 6 and Figure 2 present the results of the hypothesis testing. REF, ECS, WEF, and GCT demonstrated a significant direct effect on PVA (H1a:  $\beta = 0.285$ ,  $***p < 0.001$ , H1b:  $\beta = 0.111$ ,  $*p < 0.050$ , H1c:  $\beta = 0.339$ ,  $***p < 0.001$ , H1d:  $\beta = 0.181$ ,  $**p < 0.010$ ), supporting H1. PVA directly impacts GSA (H2:  $\beta = 0.589$ ,  $***p < 0.001$ ).

When examining H3, a significant indirect effect of green hotel practices (REF, ECS, WEF, and GCT) on GSA via PVA was found:  $\beta_{REF} = 0.168$ ,  $***p < 0.001$ ;  $\beta_{ECS} = 0.065$ ,  $*p < 0.050$ ;  $\beta_{WEF} = 0.200$ ,  $***p < 0.001$ ;  $\beta_{GCT} = 0.106$ ,  $**p < 0.010$ , supporting H3a. H4 and H5 were also accepted, as GSA directly influenced INT (H4:  $\beta = 0.331$ ,  $**p < 0.001$ ) and a significant indirect impact of customers' PVA on INT via GSA was also found (H5:  $\beta = 0.195$ ,  $**p < 0.001$ ).

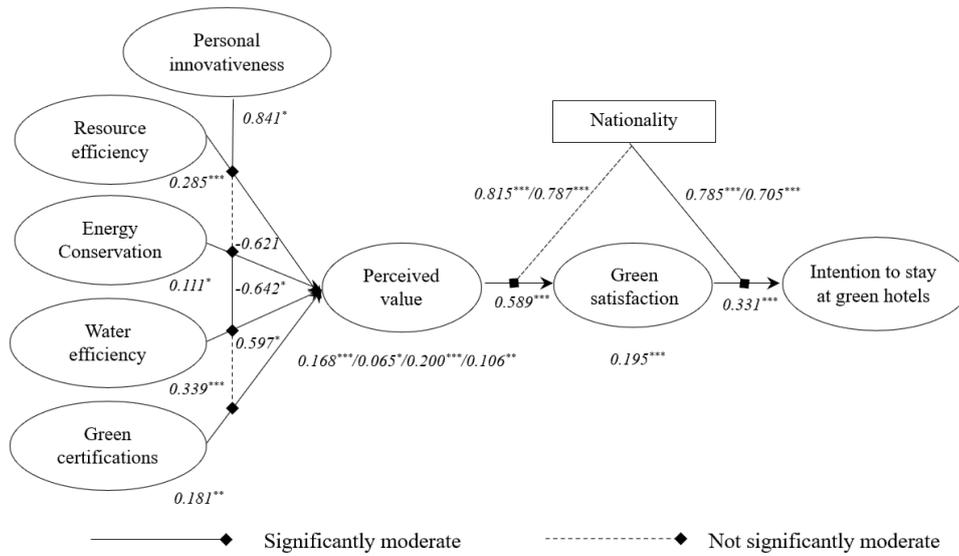
The bootstrap method with 10,000 resamples was utilized to confirm the mediating functions (Preacher & Hayes, 2008). The results show that PVA functioned as a mediator between REF and GSA (97.5% CI = [0.032, 0.304],  $p < 0.001$ ) and between WEF and GSA (97.5% CI = [0.052, 0.264],  $p < 0.001$ ), as their confidence intervals did not cross zero. However, this was not the case for the relationships between ECS and GSA (97.5% CI = [-0.022, 0.244],  $p < 0.050$ ) or GCT and GSA (97.5% CI = [-0.002, 0.225],  $p < 0.010$ ).

**Table 6** The structural model hypothesis testing

Hypotheses	<i>b</i>	t-values	Results
H1a: REF→PVA	0.285	4.522***	Accepted
H1b: ECS→PVA	0.111	2.171*	Accepted
H1c: WEF→PVA	0.339	5.447***	Accepted
H1d: GCT→PVA	0.181	3.162**	Accepted
H2: PVA→GSA	0.589	9.487***	Accepted
H3a: REF→PVA→GSA	0.168	4.081***	Accepted
H3b: ECS→PVA→GSA	0.065	0.036*	Accepted
H3c: WEF→PVA→GSA	0.200	4.690***	Accepted
H3d: GCT→PVA→GSA	0.106	3.010**	Accepted
H4: GSA→INT	0.331	5.044***	Accepted
H5: PVA→GSA→INT	0.195	4.822***	Accepted

Note: t-value is significant at  $***p < 0.001$ ,  $**p < 0.01$ ,  $*p < 0.050$ , and  $p > 0.05$ .

Figure 2 Structural model



Note: Path coefficients below perceived value is H3a/H3b/H3c/H3d, Path coefficients below green satisfaction is H5.

#### 4.4 The Interaction Effects

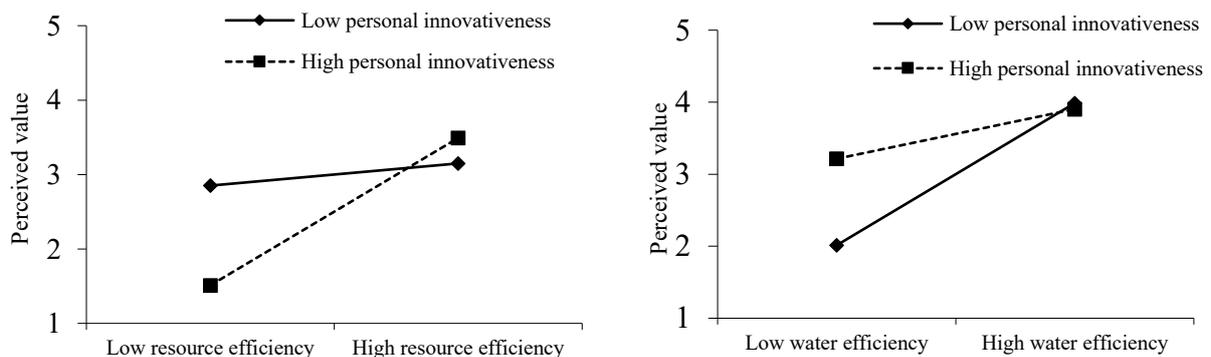
The study examined whether PIN moderates the effect of green hotel practices (REF, ECS, WEF, and GCT) on PVA (H6a-H6d). Significant interactions were found for the relationship between REF and PVA and between WEF and PVA, suggesting PIN's complex moderating role. However, PIN did not significantly affect the relationship between ECS and PVA or between GCT and PVA (Figure 3 and Table 7).

Table 7 The hypothesis testing of interaction analysis

Hypotheses	<i>b</i>	t-values	Results
H6a: REF x PIN → PVA	0.841	2.482*	Accepted
H6b: ECS x PIN → PVA	-0.621	-1.801	Rejected
H6c: WEF x PIN → PVA	-0.642	-2.049*	Accepted
H6d: GCT x PIN → PVA	0.597	1.890	Rejected

Note: t-value is significant at \* $p < 0.050$ , and  $p > 0.050$ .

Figure 3 the moderating effects of personal innovativeness: resource efficiency and water efficiency on perceived value



### 4.5 Moderation Analysis for Nationality

A multiple-group analysis (MGA) was conducted to validate the moderating role of nationality in the hypothesized relationships (H7 and H8). Respondents were categorized as European (n = 336) or non-European (n = 203) based on the nationality variable. Prior to conducting the structural path analysis, measurement invariance was assessed using multiple-group confirmatory factor analysis (MCFA) to ensure that the constructs were measured equivalently across groups. The measurement model showed a satisfactory fit in both groups, with Europeans yielding  $\chi^2 = 117.734$  (p = 0.000), df = 41, CFI = 0.963, TLI = 0.950, RMSEA = 0.075, and SRMR = 0.034, while non-Europeans showed  $\chi^2 = 126.577$  (p = 0.000), df = 41, CFI = 0.941, TLI = 0.921, RMSEA = 0.101, and SRMR = 0.045.

Table 8 presents the results of measurement invariance testing, showing no significant differences between the configural, metric, and scalar models. The CFI differences were within the accepted threshold (< 0.01) (Cheung & Rensvold, 2002). This confirms that the latent constructs were measured equivalently across groups, justifying the use of MGA to test the moderating effect of nationality (Hair et al., 2019).

**Table 8** Measurement model invariance across groups

Invariance test	$\chi^2$	Df	p-value	CFI	$\Delta$ p-value	$\Delta$ CFI
Baseline (a)	244.312	82	0.000	0.954		
Metric invariance (b)	258.976	90	0.000	0.952	(b) - (a) = 0.066	(b) - (a) = 0.002
Scalar invariance (c)	266.010	98	0.000	0.952	(c) - (a) = 0.153	(c) - (a) = 0.002

Note: p-values were significant at \*p < 0.050, CFI = comparative fit index

Factor loadings by group are reported in Appendix A to confirm construct validity within each group, thereby supporting the moderation testing process (Hair et al., 2019). While most loadings exceeded the recommended 0.60 threshold, four items showed slightly lower loadings: GWM2 (EU = 0.58, non-EU = 0.57), GEM3 (EU = 0.54, non-EU = 0.55), GSA4 (EU = 0.61, non-EU = 0.58), and PIN3 (EU = 0.57, non-EU = 0.68). These items were retained due to their statistical significance, theoretical importance, and satisfactory overall construct validity for both groups, supported by composite reliability and AVE values above 0.50 (Hair et al., 2019; Brown, 2015).

The moderating effect of nationality was assessed by comparing path coefficients across groups using the criterion of a significant change in the  $\chi^2$  value (Hair et al., 2010; Schumacker & Lomax, 2004). A significant change following parameter constraints indicated a moderation effect (\*p < 0.050). Table 9 presents the hypothesis-testing results from the multi-group moderation analysis. No significant moderation effect was found for the path from perceived value (PVA) to green satisfaction (GSA), leading to rejection of H7. However, the effect of green satisfaction (GSA) on intentions to stay (INT) was significantly stronger for European tourists ( $\beta = 0.787$ , \*\*p < 0.001) compared to non-European tourists ( $\beta = 0.705$ , \*\*p < 0.001), supporting H8. This indicates that nationality moderates the strength of the relationship between green satisfaction and intentions to stay.

**Table 9** Testing Nationality as a Moderator: Multi-Group Analysis Results

Hypothesis	Path	Moderation Effect		Unconstrained model $\chi^2$ (df = 100)	Constrained model $\chi^2$ (df = 101)	$\Delta \chi^2$ (Adf=1)	$\Delta$ p-Value	Results
		European	Non-European					
H7	PVA → GSA	0.815***	0.787***	322.196	323.733	1.537	0.215	Rejected
H8	GSA → INT	0.785***	0.705***	322.196	329.001	6.805	0.009**	Accepted

Note: b = Path coefficient, \*\* = p < 0.010, \*\*\* = p < 0.001,  $\chi^2$  = chi-squared, df=degree of freedom

## **5. DISCUSSION**

### **5.1 Discussion and Theoretical Implications**

This study advances green hospitality literature by empirically applying the Stimulus–Organism–Response (S-O-R) framework to explain how green hotel practices act as stimuli that shape guests’ cognitive evaluations (perceived value) and affective responses (green satisfaction), which together drive behavioral intentions. By bridging the cognitive–affective–behavioral pathway within a sustainability context, the research provides a clear theoretical lens for understanding green consumption in hospitality settings, addressing prior gaps in integrating established behavioral theories.

Our exploratory factor analysis refined Trang et al.’s (2019) five-dimensional model into four key dimensions: resource efficiency, energy conservation, water efficiency, and green certifications. Among these, resource efficiency, energy conservation, and water efficiency consistently emerged as universal anchor constructs, confirming their cross-cultural robustness across different hospitality contexts (Acampora et al., 2022). In contrast, green certification proved more context-sensitive, with its influence shaped by Thailand’s regulatory and policy environment (Tourism Authority of Thailand, 2024). This distinction highlights that while some green practices are universally recognized by guests, others are heavily dependent on policy-driven visibility and cultural adaptation, contributing a nuanced understanding to the S-O-R framework in sustainable hospitality literature.

Importantly, the generalizability of the S-O-R framework itself is supported theoretically. Although the study was conducted in Thailand’s Eastern Economic Corridor (EEC), the cognitive–affective–behavioral pathway—from green practice stimuli to perceived value, green satisfaction, and behavioral intentions—is widely validated in consumer behavior and hospitality research globally. Thus, the framework can be applied in other contexts, though the strength of specific relationships may vary due to local policies, guest familiarity with sustainability initiatives, or cultural orientation. Anchor practices (resource, energy, water efficiency) are likely to be universally relevant, whereas context-sensitive constructs such as green certification may require adaptation to local regulatory and cultural conditions. Future research should test the S-O-R framework across diverse regions (Europe, North America, other Asian countries) to examine the robustness of mediators (perceived value, green satisfaction) and moderators (personal innovativeness, cultural orientation).

Empirical results show that all green hotel practices (H1a–H1d) significantly influence perceived value, which in turn mediates their effects on green satisfaction (H2, H3a–H3d), aligning with previous studies (Chen & Tung, 2014; Kokkhangplu et al., 2023). Green satisfaction was confirmed as a strong predictor of purchase intentions (H4), consistent with prior research (Lee & Kim, 2020). The mediation analysis supported H5, showing that perceived value influences intentions to stay at green hotels indirectly through green satisfaction, confirming that cognitive (value) and affective (satisfaction) evaluations are necessary before behavioral intentions emerge, in line with the S-O-R framework (Nosrati et al., 2025). This finding also highlights a common challenge in sustainable hospitality: whereby guests recognize green certifications but struggle to link them to personal benefit or authentic sustainable experiences, aligning with the prior research. Prior research has shown that many tourists are either unaware of eco-certifications or do not fully understand their benefits, reducing their influence on decision-making (Font & McCabe, 2017). Theoretically, this highlights the limited power of symbolic sustainability cues to generate perceived value without experiential alignment, especially among innovation-driven consumers. Future research could explore how hotels can transform certifications into experiential touchpoints or meaningful communication strategies to strengthen guest perceptions.

Our findings reveal a nuanced moderating role of personal innovativeness (PIN) on the perceived value of green hotel practices (H6a–H6d). Consistent with prior studies (Ciftci et al., 2021; Ghali et al., 2024; Zhang et al., 2024), PIN amplifies the perceived value derived from resource efficiency initiatives. However, unexpectedly, it negatively moderates water efficiency measures, presenting a contradiction to the common assumption that innovation-driven consumers uniformly enhance perceived value across all resource categories (Gabarda-Mallorquí et al., 2024). This paradox can be explained through Innovation Diffusion Theory (Rogers, 2003), which emphasizes that the visibility and observability of innovations influence their adoption and perception. Resource efficiency practices, such as refillable dispensers and recycling containers, are more visible and tangible, making them more appealing to innovative consumers. These practices are easily perceived as impactful, enhancing their perceived value among innovation-driven guests (Font & McCabe, 2017; Zhang et al., 2024). In contrast, water efficiency measures, such as low-flow toilets and water-saving fixtures, often operate passively behind the scenes, reducing their visibility. This lack of perceptibility may diminish their appeal to innovative consumers, who tend to favor more observable and tangible innovations. Additionally, as noted by Gabarda-Mallorquí et al. (2024), efficiency improvements in certain contexts, such as water conservation, may unintentionally lead to behavioral rebound effects, where consumers use more resources due to the perceived savings, further complicating assumptions about the positive impact of these practices. These intertwined theoretical insights underscore the complexity of PIN as a moderator. This finding highlights the need for further research exploring how cultural and contextual factors influence consumers' engagement with sustainability practices. Tailoring sustainable hospitality strategies to account for these nuances can help align innovation-driven consumers' preferences with effective green initiatives.

Finally, Hypotheses 7 and 8 highlight the moderating role of nationality in shaping behavioral intentions. While green satisfaction and perceived value do not differ significantly between European and non-European guests, the higher level of intentions to stay among European guests suggests that nationality influences how green satisfaction translates into behavioral intentions. This can be explained by stronger pro-environmental attitudes and social norms within European cultures, which foster a more direct connection between satisfaction with sustainability practices and actual behavior. These findings align with previous research, which indicates that cultural and social norms in Europe promote more sustainable behaviors (Shen & Zhang, 2024; Velikova et al., 2025). The lack of significant differences in green satisfaction and perceived value between European and non-European guests may be attributed to the global appeal of sustainability practices within the hospitality sector. Guests from both groups increasingly value eco-friendly practices, reflecting a shared global consciousness about environmental issues (Chang et al., 2024). Empirical studies support this notion, showing that sustainability in hotels has become a universal criterion for tourists worldwide (Nguyen et al., 2024), with the value placed on green practices being relatively similar across cultures (Bernard et al., 2025). The attitude-behavior gap (Blake, 1999) further explains why green satisfaction does not always translate into intentions to stay for non-European guests. While these guests may appreciate green practices, sustainability tends to be a secondary consideration in their decision-making process, with factors such as cost and convenience taking precedence (Dangelico & Vocalelli, 2017). These findings underscore the importance of considering nationality as a moderator in consumer decision-making models. They suggest that culturally tailored sustainability strategies are necessary to engage European guests more effectively, capitalizing on their stronger normative commitment to sustainability without assuming direct differences in perceptions of green value. Further exploration of how cultural dimensions and specific types of green practices influence behavior across nationalities could provide deeper insights. This can guide the development of more nuanced, targeted sustainability strategies.

Overall, the key theoretical contribution of this study lies in grounding green hospitality practices within the S-O-R framework, identifying three universal anchor constructs (resource efficiency, energy conservation, water efficiency) alongside a context-sensitive dimension (green certification). This dual insight clarifies which sustainability dimensions possess cross-cultural robustness and which require contextual adaptation, thus offering a more nuanced, theory-driven foundation for future research on sustainable hospitality behaviors.

## 5.2 Practical Implications

This study contributes to ongoing discourse on sustainable hospitality by highlighting not only which green hotel practices matter to guests, but also why they do—or do not—drive satisfaction and behavioral intentions. The study’s results and theoretical discussions suggest that green initiatives vary significantly in terms of experiential visibility, guest relevance, and strategic potential. Therefore, to promote green hotel practices, several targeted strategic initiatives are proposed in Table 10 to guide hotel managers in enhancing guest engagement and operational sustainability.

**Table 10** Practical implications for hotel managers

Practice Area	Empirical Impact	Interpretation of the Results	Suggested Strategic Hotel Action (Source: Best Practice Example)
Resource Efficiency	High perceived value	Often perceived by guests unless under-communicated.	Use recycled materials, eliminate single-use plastics, display reuse data (Alila Villas Uluwatu, Indonesia)
Water Efficiency	High perceived value	Often perceived by guests unless under-communicated.	Loop-shower recycling with real-time display dashboards. (Comwell Hotels, Denmark)
Energy Conservation	Moderate impact	Invisible; passive technology unnoticed by guests.	Real-time in-room energy dashboards, storytelling, staff engagement (Scandic Hotels, Nordics)
Green Certification	Weak influence	Symbolic; lacks experiential connection.	Sustainability lab tours, interactive experience showing the “From Kitchen to Chicken and Beyond” program (Sivatel Bangkok, Thailand)
Guest Innovativeness	Moderates value perception	Generic green practices do not appeal to all guests	Use digital personalization tools for innovative guests (1 Hotels, Global)
Guest Segmentation by Nationality (EU vs. non-EU)	Influences behavioral intentions	One-size-fits-all messaging lacks resonance	Marriott’s “Serve 360” ESG content with multi-language eco-briefings and customized tour options accommodating different cultural preferences (EU and non-EU). (Phuket Marriott Resort & Spa, Merlin Beach, Thailand)

Resource efficiency and water-saving practices were the strongest predictors of perceived value and green satisfaction, especially among innovative-driven guests. These practices are often visible and directly related to daily behaviors, thus contributing more significantly to guest experience than backend systems. For instance, Alila Villas Uluwatu in Bali uses locally sourced, recycled materials in its design and offers refillable bathroom amenities, making environmental responsibility a visible and tangible part of the stay (Alila

Villas Uluwatu, 2024). Guest engagement with visible green cues can lead to higher satisfaction and loyalty (Assaker, 2020). Similarly, the Flow Loop system at Comwell Hotels features a built-in digital display within the shower, allowing guests to monitor their water consumption in real time, which encourages shorter showers and promotes water-saving behavior without sacrificing comfort (Flow Loop, 2023). This aligns with previous studies that found that transparent communication of water-saving practices enhances guests' perceptions of a hotel's credibility and responsibility (Kokkhangplu et al., 2023).

Despite these successes with visible practices, energy conservation showed weaker influence, likely due to its invisible, passive implementation. This supports existing critiques that guests are unlikely to value what they cannot see or understand (Acampora et al., 2022). Scandic Hotels address this issue by displaying energy savings on in-room dashboards, allowing guests to visualize their individual impact—an approach supported by research into eco-feedback systems (Chalal et al., 2022).

Although green certifications are widely adopted in the industry, they do not automatically enhance perceived value unless the certified practices are clearly communicated, visible to guests, and aligned with their expectations (Moise, 2020). Most notably, green certifications investigated in this study had the least impact on perceived value. The disconnect may lie in its symbolic nature versus experiential sustainability (Font & McCabe, 2017). Hotels with strong green certifications such as Sivatel Bangkok (Green Leaf 4-Leaves) address this issue by offering guided tours of their sustainability operations, including waste transformation labs and circular economy processes, converting symbolic certifications into experiential guest learning opportunities. Without such interactive experiences, certifications may remain passive marketing signals that do not significantly influence guest perceptions.

The moderating role of PIN indicates that communicating these practices to general guests versus innovative guests may require different types of mediums. For example, 1 Hotels engages innovative eco-conscious guests with app-based sustainability tracking, smart controls, and interactive green content (1 Hotels App Store, 2024). These technology-based communications appeal to guests who seek novelty and alignment with their personal values, given that high-involvement travelers demand active sustainability engagements (Juvan & Dolnicar, 2017).

Lastly, in this study, European guests showed stronger responses to green satisfaction, highlighting the need for culturally tailored sustainability communication. Phuket Marriott Resort & Spa, Merlin Beach exemplifies this by adapting Marriott's Serve 360 ESG framework with multi-language eco-briefings and custom sustainability tours, aligning with diverse expectations. Hotels can segment guests by nationality during check-in and customize in-room materials, app content, and staff interactions accordingly. This targeted approach enhances satisfaction and improves the effectiveness of green initiatives across international markets (Nguyen et al., 2022; Marriott International, 2022; Font & McCabe, 2017).

## **6. CONCLUSION, LIMITATIONS AND FUTURE RESEARCH**

This study empirically validated four key dimensions of green hotel practices—resource efficiency, energy conservation, water efficiency, and green certifications—within Thailand's EEC context. The identification of three anchor constructs (resource, energy, and water efficiency) confirms their relevance across cultural settings, while green certification emerged as a more context-sensitive dimension. All green practices significantly enhanced perceived value, which in turn influenced green satisfaction and ultimately intentions to stay at green hotels, supporting the cognitive-affective-behavioral pathway postulated by the Stimulus–Organism–Response (S-O-R) framework. Green satisfaction was confirmed as a key mediator, ensuring that cognitive evaluation translates into behavioral intentions. The

moderating role of personal innovativeness was significant for visible and tangible practices (resource and water efficiency), but not for passive practices (energy conservation and green certifications), highlighting the importance of practicing visibility in shaping innovative guests' perceived value. Lastly, nationality moderated only the satisfaction–intention link, confirming that cognitive evaluation may be universal, while behavioral responses are nationality dependent. Overall, this study adds to the sustainable hospitality literature by clarifying which green practices most strongly influence guest perceptions and demonstrating how these effects vary according to guests' nationality.

Despite its contributions, several limitations of this study should be acknowledged, providing opportunities for future research. First, the study's geographic focus on Thailand's EEC limits generalizability, especially regarding policy-driven green certification impacts. The anchor constructs appear robust, but future studies should replicate this work across diverse regulatory and cultural settings, warranting comparative studies across diverse cultural and regulatory contexts. Second, European versus non-European nationality was used as a proxy for cultural differences, and more precise measurement of cultural values (e.g., Hofstede or Schwartz frameworks) is recommended to better understand how cultural orientation shapes sustainability perceptions. Third, the cross-sectional design limits the ability to capture changes in guest perceptions over time, suggesting that longitudinal studies could provide insights into how sustainability initiatives influence perceptions across multiple stays. Fourth, reliance on self-reported data may introduce social desirability bias, and future research could integrate behavioral or experimental measures to validate reported intentions. Finally, the study examined only four dimensions of green practices, excluding other ESG-related aspects such as social responsibility, biodiversity conservation, or co-creation experiences; expanding the scope could provide a more comprehensive understanding of sustainable hospitality and allow future studies to explore how experiential or participatory initiatives enhance guest satisfaction, perceived value, and behavioral intentions. By addressing these limitations, future research can advance understanding of how hospitality sustainability translates into environmental value or a competitive advantage.

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## APPENDIX A

**Table A** Multi-Group Confirmatory Factor Analysis: Factor Loadings by Nationality Group

Construct	Indicator	European	Non-European
Resource Efficiency	GWR1	0.750	0.833
	GWR2	0.684	0.789
	GAP1	0.665	0.721
	GWR3	0.650	0.731
	GAP4	0.683	0.667
Energy Conservation	GEM4	0.957	0.771
	GEM3	0.545	0.551
Water Efficiency	GWM1	0.840	0.873
	GWM2	0.816	0.900
	GWM4	0.865	0.804
	GWM3	0.839	0.804
Green Certifications	GOP5	0.759	0.789
	GOP6	0.742	0.791
	GOP3	0.740	0.788
	GOP1	0.767	0.755
Perceived Value	PVA5	0.787	0.839
	PVA4	0.809	0.806
	PVA1	0.769	0.789
	PVA3	0.781	0.752
Green Satisfaction	GSA1	0.863	0.851
	GSA2	0.790	0.886
	GSA3	0.699	0.735
	GSA4	0.612	0.717
Intention to Stay	INT1	0.826	0.758
	INT2	0.839	0.913
	INT3	0.772	0.801
Personal Innovativeness	PIN1	0.863	0.847
	PIN2	0.758	0.790
	PIN3	0.818	0.683
	PIN4	0.811	0.696