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How do green hotel practices affect guests' behavioral intentions? A PLS-SEM approach

Como as práticas hoteleiras verdes afetam as intenções comportamentais dos hóspedes? Uma abordagem PLS-SEM

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Abstract

This study examines how guests' perceptions of green hotel practices (GHP) shape their behavioral intentions, drawing on the Theory of Planned Behavior. It explores the extent to which eco-friendly practices influence guests' loyalty and their likelihood of recommending hotels that prioritize sustainability. Data were collected from 642 hotel guests aged 18 and over who had previous experience with green hotel practices. An online survey was employed, and the data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with bootstrapping techniques to assess the relationships among guests' perceptions of GHP, satisfaction, and behavioral outcomes. The findings indicate that favorable perceptions of GHP strongly predict guest loyalty and recommendation intentions, with satisfaction as a critical mediator. These results highlight the pivotal role of sustainable practices in fostering positive guest experiences and behaviors in the hospitality industry. The study offers practical insights for hotel managers, enabling them to design and implement effective sustainability strategies that enhance guest satisfaction and loyalty. Furthermore, it contributes to the literature on sustainable tourism by providing robust empirical evidence on the influence of GHP on guest behavior, thus addressing a key gap in hospitality management research.

Keywords: Green Hotel Practices, Guest Loyalty, Recommendation Intention, Satisfaction, Behavioral intention.

Resumo

Este estudo examina como as percepções dos hóspedes sobre práticas sustentáveis na hotelaria (PSH) moldam suas intenções comportamentais, baseando-se na Teoria do Comportamento Planeado. Ele explora até que ponto práticas ecológicas influenciam a lealdade dos hóspedes e a probabilidade de recomendarem hotéis que priorizam a sustentabilidade. Os dados foram recolhidos, através de questionário online, junto de 642 hóspedes de hotéis que tinham experiência anterior com PSH. Os dados foram analisados usando PLS-SEM com técnicas de bootstrapping para avaliar as relações entre as percepções dos hóspedes sobre práticas hoteleiras verdes, satisfação e resultados comportamentais. Os resultados indicam que percepções favoráveis de PSH predizem tanto a lealdade dos hóspedes como as suas intenções de recomendação, com a satisfação atuando como um mediador crítico. Esses resultados destacam o papel central das práticas sustentáveis na promoção de experiências e comportamentos positivos dos hóspedes na hotelaria. O estudo oferece implicações para gerentes de hotéis, permitindo-lhes projetar e implementar estratégias de sustentabilidade eficazes que aumentem a satisfação e a lealdade dos hóspedes. Além disso, contribui para a literatura sobre turismo sustentável ao fornecer evidências empíricas robustas sobre a influência das PSH no comportamento dos hóspedes, abordando assim uma lacuna importante na investigação em hotelaria.

Palavras-chave: Práticas Sustentáveis na Hotelaria, Lealdade, Intenção de Recomendação, Satisfação, Intenção Comportamental.

1. Introduction

As global environmental challenges intensify and ecological awareness grows, the hospitality industry faces increasing pressure to embrace sustainable practices. With the world's population exceeding 7 billion, ecosystems are under significant strain, raising urgent concerns about sustainable consumption and the planet's capacity to support current lifestyles. These dynamics highlight the critical role of the tourism sector, which has a substantial environmental footprint, in advancing sustainability initiatives.

The hospitality industry faces growing pressure to adopt sustainable practices as environmental challenges escalate and consumer demand for eco-friendly options increases. Accounting for 8% of global carbon emissions (UNEP, 2023), the sector's environmental footprint is expected to grow as tourism rebounds post-pandemic. This urgency aligns with evolving consumer preferences: 78% of travelers now favor eco-certified hotels (Booking.com, 2023), and 64% feel guilt over unsustainable travel choices (Skyscanner, 2023). However, a notable gap exists between guests' stated sustainability preferences and their actual booking behaviors, which this study explores through behavioral psychology and service marketing perspectives. In Türkiye, a major tourism destination with over 50 million annual visitors before COVID-19 (Turkish Statistical Institute, 2023), hotels play a vital role in advancing sustainability goals. The rise of eco-conscious travel, particularly post-pandemic, has driven demand for green hotels—properties emphasizing energy efficiency, water conservation, and green certifications (Pekerşen & Canöz, 2022; Clark et al., 2023). A 2023 TripAdvisor survey found that 68% of travelers prefer accommodations with visible sustainability efforts, highlighting a clear market trend toward environmental responsibility.

Despite growing interest in sustainable hospitality, limited research has explored how specific green hotel practices (GHP) shape guest satisfaction and behavioral intentions, such as loyalty and recommendation, particularly in emerging markets like Türkiye. While prior studies have examined the impact of GHP (Han et al., 2018; Zhang et al., 2018), the role of guest satisfaction in connecting practices like towel reuse or green certifications to behavioral outcomes remains largely unaddressed, especially in culturally unique settings (Loehr et al., 2023). In Türkiye, where tourism drives a significant portion of the economy (TUIK, 2023), this gap is critical as hotels strive to balance global sustainability standards with local guest expectations (Rixos Sustainability Report, 2023).

The move toward sustainability in tourism extends beyond regulatory requirements, reflecting a rising consumer preference for eco-friendly travel options. Surveys, such as one by TripAdvisor (2013), indicate that many travelers favor accommodations committed to environmental responsibility. This demand has driven the rise of green hotels—properties that embed sustainability into their operations through practices like energy conservation and waste reduction (Green Hotels Association, 2014; Manaktola & Jauhari, 2007; Chan, 2013; Pekerşen & Canöz, 2022). Nevertheless, further research is needed to understand how these practices shape guests' perceptions and influence their behavioral intentions toward such hotels.

The rise of green hotels reflects evolving consumer preferences and industry responses to environmental priorities. These properties address ecological concerns while adapting to a market that increasingly values sustainability (Bohdanowicz & Zientara, 2018). However, research exploring how green hotel practices (GHP) influence guest satisfaction and loyalty, with satisfaction as a mediating factor, remains limited (Han et al., 2015; Chan, 2013). Furthermore, the factors driving eco-conscious decision-making in hotel selections are not fully understood. This study focuses on Türkiye, where tourism accounts for 12% of GDP (TUIK, 2023) and sustainability efforts, such as the Blue Flag certification, have expanded by 40% since the pandemic (Rixos Sustainability Report, 2023). Despite these advances, three key research gaps remain in the literature:

First, most existing models originate from Western contexts, often overlooking cultural factors in emerging markets. Türkiye's distinct hospitality traditions may significantly influence the effectiveness of green practices (Loehr et al., 2023). Second, few studies compare the relative impact of specific sustainability initiatives, such as energy efficiency versus waste reduction (Clark et al., 2023). Third, the psychological processes linking guest satisfaction to green practices and loyalty are not fully understood. To address these gaps, this study investigates the following research questions, aligned with its hypotheses:

RQ1: How do energy efficiency, water conservation, and green certifications affect guest satisfaction in hotels?

RQ2: Does guest satisfaction mediate the relationship between green hotel practices and guest loyalty?

RQ3: Does guest satisfaction mediate the relationship between green hotel practices and guests' intention to recommend?

These questions guide the study's investigation into how green practices shape guest behavior, providing valuable insights for academic research and practical strategies for sustainable hospitality management.

2. Literature review

The hospitality industry's growing emphasis on environmental responsibility mirrors a wider societal commitment to sustainability (Gabarda-Mallorguí et al., 2017; Yi et al., 2018). This trend is fueled by changing consumer preferences, as more travelers prioritize environmental considerations when selecting accommodations (Han & Yoon, 2015; Pathak, 2015). Jones and Wynn (2019) note the rise of a market segment that values sustainability in travel decisions, while Zhao et al. (2020) demonstrate a clear link between travelers' environmental awareness and their preference for eco-friendly hotels. These findings highlight the need for hotels to align with evolving guest expectations and underscore the importance of exploring the drivers of eco-friendly behavior in the hospitality sector (Yi et al., 2018; Han & Yoon, 2015; Pathak, 2015; Jones & Wynn, 2019; Clark et al., 2023; Loehr et al., 2023).

2.1 *Environmentally Friendly Tourist Behavior*

Over the past three decades, hotel managers have increasingly prioritized environmentally responsible practices to address sustainability challenges (Gabarda-Mallorguí et al., 2017). At the same time, marketers in the hospitality industry have focused on building lasting relationships with eco-conscious guests (Han & Yoon, 2015). A TripAdvisor survey analyzed by Pathak (2015) found that 62% of travelers consider environmental factors when choosing accommodations. Similarly, Slye (2009) reported that 87% of guests value eco-friendly hotels, with 80% identifying as environmentally aware and approximately 30% willing to pay a premium for sustainable practices.

Eco-friendly initiatives are integral to sustainable development in the hospitality sector (Chan, 2013). Wu et al. (2016) highlight the importance of fostering guest loyalty for the long-term success of sustainable hotels, emphasizing the need to encourage guest engagement in green practices. Understanding the complex decision-making processes behind eco-conscious choices remains challenging, but identifying key factors can clarify how these decisions are shaped (Wu et al., 2016). Recent research has also explored how guests perceive green hotel practices, examining both hedonic (pleasure-driven) and utilitarian (functionality-driven) values and their role in fostering pro-environmental behaviors (Ozturk et al., 2016).

Water conservation and waste reduction are essential components of sustainable hotel management (Singh et al., 2014; Wyngaard & de Lange, 2013). However, limited research has examined how these specific practices influence guests' pro-environmental intentions. The extent to which these practices shape hedonic (pleasure-driven) and utilitarian (functionality-driven) values, and their impact on guests' willingness to engage in eco-friendly behaviors or remain loyal to green hotels, requires further exploration. Quantitative studies in hospitality and tourism indicate that environmental concern significantly influences individuals' decisions to adopt sustainable behaviors (Han et al., 2015; Steg & De Groot, 2010).

In Turkish, unique behavioral patterns enhance our understanding of eco-friendly tourism (Kement et al., 2023). Pekerşen and Canöz (2022) found that staff engagement in sustainability initiatives accounts for 28% greater variance in guest satisfaction compared to global averages, underscoring the role of human interaction in green hospitality. Additionally, the 2023 Rixos Sustainability Report highlights that religious values in Türkiye significantly boost participation in water conservation programs. These culture-specific findings address a key gap in prior research, which has largely focused on Western markets.

For hotel managers, these insights suggest several actionable strategies. Communication approaches should be tailored to cultural contexts, with collective cultures responding better to social proof messaging and individualistic markets preferring emphasis on measurable impacts. Staff training should evolve to position employees as sustainability ambassadors, leveraging the power of visible role-modeling. Certification strategies should prioritize verifiable credentials like LEED or Green Star, ensuring that sustainability claims are both credible and comprehensible to guests.

This deeper insight into eco-friendly tourist behavior addresses three key gaps in existing research: the heavy reliance on Western samples, the limited analysis of specific green practices' effect sizes, and the insufficient focus on staff-guest interaction dynamics. As we examine subsequent sections, these behavioral insights will inform our analysis of how specific green practices are evaluated by guests and ultimately influence loyalty intentions in the Turkish hospitality context.

2.2 *Green Hotel Practices and Satisfaction*

The relationship between service features and customer satisfaction in the hospitality industry has been extensively examined by scholars (Albayrak & Caber, 2015; Arslan Ayazlar & Gün, 2020). Yet, there is an emerging need to delve deeper into how the characteristics of eco-friendly hotels influence guest satisfaction. Customer satisfaction is crucial for maintaining a competitive edge in business (Nash et al., 2006) and serves as a vital indicator of a firm's performance (Kassinis & Soteriou, 2003) and financial success (Anderson et al., 1994).

Customer satisfaction, especially in the hotel industry, has become a focal point of interest. It is often described through cognitive and affective approaches, leading to feelings of pleasure or disappointment based on the perceived performance of a service compared to expectations. Xu & Gürsoy (2015) describe this as a cognitive process where the customer experience is compared against an initial reference point. Oliver (1997) defines satisfaction as the cognitive gap between what a consumer expects, and the actual performance experienced after a purchase. Chitty et al. (2007) view it as a balance between the costs incurred and the perceived benefits. This evaluation becomes crucial when considering the impact of green practices on guest satisfaction.

In Türkiye, the adoption of environmentally friendly practices in hotels has gained significant momentum. For example, Cappadocia Cave Resort and Spa, which was recognized as the 6th best hotel globally in 2022 by TripAdvisor, implemented sustainable measures such as energy efficiency and water conservation, resulting in higher guest satisfaction and repeat visits. Similarly, Rixos Hotels has implemented green initiatives such as reducing plastic use and promoting local cultural heritage, which have significantly improved guest experiences (Rixos Sustainability Report, 2023). These examples clearly link sustainable practices and increased guest satisfaction in Türkiye's hospitality sector. This trend reflects the increasing global expectation that hotels prioritize sustainability, as evidenced by guest preferences worldwide (Berezan et al., 2013).

The relationship between service quality and guest satisfaction in the hospitality industry is widely recognized (Albayrak & Caber, 2015; Arslan Ayazlar & Gün, 2020). Recent studies have shifted focus to the specific role of eco-friendly initiatives in enhancing guest satisfaction. Gupta and Singh (2020) highlight that high-quality green services contribute significantly to positive guest experiences. Similarly, Trang et al. (2019) showed that well-implemented sustainable practices can improve satisfaction levels. Kim and Han (2010) further suggest that green practices shape guests' perceived value and satisfaction, with eco-friendly initiatives influencing their appreciation and overall hotel experience. According to this:

H1: Energy efficiency practices has a statistically significant relationship with guest satisfaction.

H2: Water conservation practices has a statistically significant relationship with guest satisfaction.

H3: Green certificate practices has a statistically significant relationship with guest satisfaction.

Recent studies have increasingly explored the link between green hotel practices and guest satisfaction. Zhang et al. (2018) found that eco-friendly initiatives enhance guest satisfaction by improving the overall guest experience through sustainable measures.

Similarly, Assaker (2020) observed that hotels implementing green practices report higher guest satisfaction levels. Legrand et al. (2022) further argue that sustainable practices support environmental conservation and significantly enhance guest satisfaction, demonstrating the dual benefits of sustainability in the hospitality industry. Based on this:

H4: The level of satisfaction towards green hotel practices has a statistically significant relationship with guest loyalty.

H5: The level of satisfaction towards green hotel practices has a statistically significant relationship with intention to recommend.

2.3 *Green Hotel Practices, Loyalty and Intention to Recommend*

Customer loyalty and satisfaction are crucial for businesses, particularly in competitive sectors like tourism. Guest loyalty, a widely studied concept in consumer behavior, is generally understood as a complex construct comprising both behavioral and attitudinal dimensions. The behavioral aspect focuses on past experiences, whereas the attitudinal aspect is oriented towards future actions. These two constructs – loyalty and satisfaction – are interrelated, with satisfaction often seen as a key predictor of customer loyalty. In essence, loyalty can be seen as both an outcome and a future manifestation of satisfaction.

The precise definition of customer loyalty remains a subject of debate. Oliver (1997, p. 709) describes it as "a deeply felt commitment to continually repurchase or reappropriate a product or service of choice in the future, despite situational influences and marketing efforts that could potentially alter behavior." Loyalty is typically divided into two dimensions: behavioral loyalty, reflected in consistent guest actions over time, and attitudinal loyalty, marked by an emotional connection that fosters positive word-of-mouth. Although no universal consensus exists on the components of loyalty (Mason et al., 2006), hospitality studies emphasize the importance of considering both dimensions (Han et al., 2016). Fostering guest loyalty through environmental management initiatives is critical for the long-term success of hotels (Han et al., 2018; Szczepańska-Woszczyna et al., 2024).

The interplay between green hotel practices, guest loyalty, and intention to recommend is a key focus in sustainable hospitality research. Loyalty, a vital driver of success in competitive sectors like tourism, becomes more intricate when viewed through the lens of eco-conscious consumption. Traditional views of loyalty as a dual construct—encompassing behavioral consistency and attitudinal commitment—require adaptation in green hospitality, where guests' environmental values intersect with standard satisfaction measures. Recent studies suggest that satisfaction derived from sustainability initiatives plays a greater role in fostering loyalty compared to conventional service attributes (Han et al., 2018; Chang et al., 2024). According to this:

H6: Guest satisfaction mediates the effects of energy efficiency hotel practices on loyaty intention.

H7: Guest satisfaction mediates the effects of water conservation hotel practices on loyaty intention.

H8: Guest satisfaction mediates the effects of green certificate practices on loyaty intention.

Consumers frequently share their opinions about products or services by communicating their experiences, often with the intention to recommend them. The intention to recommend is described as "verbal communication between consumers and other parties, such as channels, producers of products or services, experts, and relatives" (Chaniotakis & Lymperopoulos, 2009). Typically, positive experiences lead to a positive intention to recommend, whereas negative experiences can result in complaints and adverse word-of-mouth (Anderson, 1998). In the context of environmental claims, some businesses may inadvertently damage consumer trust by overstating the environmental benefits of their products (Seele & Gatti, 2017). Consumers are more likely to spread negative feedback when companies engage in misleading green marketing campaigns (Zhang et al., 2018).

For eco-friendly hotels to be viewed favorably, providing transparent information about their sustainable practices is essential. One effective approach is offering brief training sessions for guests to highlight the link between environmental initiatives and the hospitality industry. Such education can deepen guests' appreciation of these practices, encouraging more positive word-of-mouth recommendations. Wang et al. (2018) established a strong connection between guest satisfaction and the likelihood of recommending eco-friendly hotels, indicating that higher satisfaction with green initiatives increases guests' propensity to endorse these properties. Based on this:

H9: Guest satisfaction mediates the effects of energy-efficient hotel practices on intention to recommend.

H10: Guest satisfaction mediates the effects of water conservation hotel practices intention to recommend.

H11: Guest satisfaction mediates the effects of green certificate practices on intention to recommend.

2.4 *Theory of Planned Behavior*

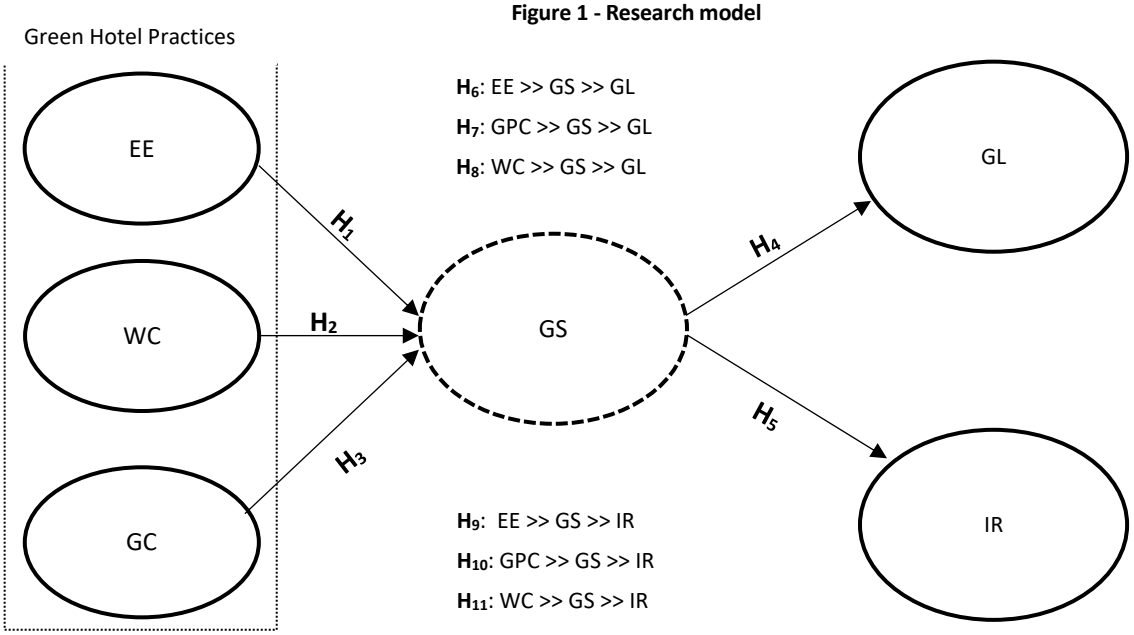
This study employs the Theory of Planned Behavior (TPB) to explore tourists' behavioral intentions toward green hotel practices. Developed by Ajzen (1991), the TPB is a widely recognized psychological model that explains human behavior through three core components: attitudes, subjective norms, and perceived behavioral control. Recent applications of the TPB in tourism research offer valuable insights into how these factors shape environmentally sustainable behaviors in the hospitality sector.

This study examines the 'attitude' component of the Theory of Planned Behavior (TPB) by evaluating tourists' positive or negative perceptions of green hotel practices. Li and Han (2020) found that favorable attitudes toward eco-friendly practices strongly shape tourists' intentions to select green hotels. This research assesses attitudes through guests' views on sustainable initiatives, such as energy conservation, water-saving measures, and waste reduction efforts. Within the TPB framework, 'subjective norms' refer to perceived social pressures influencing behavior. Here, they reflect the impact of peers, family, and societal expectations on tourists' choices of eco-friendly accommodations. Garay et al. (2019) note a rising societal focus on environmental sustainability, suggesting that subjective norms increasingly support green practices in tourism.

Within the Theory of Planned Behavior (TPB), perceived behavioral control reflects the ease or difficulty of adopting environmentally friendly behaviors, shaped by knowledge, skills, and available resources. This study investigates how perceived behavioral control influences tourists' intentions to choose green hotels. Han et al. (2010) found that greater perceived control over selecting eco-friendly accommodations strengthens tourists' commitment to sustainable tourism practices. By applying the TPB, this research provides a holistic understanding of how attitudes, subjective norms, and perceived behavioral control collectively drive tourists' decisions in the realm of environmentally sustainable tourism.

To connect the theoretical framework with empirical analysis, this study tests (see Figure 1) hypotheses H1–H11 using a PLS-SEM approach, based on data gathered from Turkish hotel guests. The methodology, described in the following section, details the survey design, sampling strategy, and analytical techniques employed to validate the structural model and evaluate the influence of green practices on guest behavior.

Figure 1 - Research model



Note: EE: Energy efficiency, WC: Water conservation, GC: Green certificate, GS: Guest satisfaction, GL: Guest loyalty, IR: Intention to recommend.
Source: own elaboration.

3. Methodology

3.1 Scale, Sampling and Data Collection

This study targets individuals in Türkiye who have recently stayed at hotels and engaged with at least one eco-friendly practice offered by these establishments. This focus defines the sampling frame, encompassing adults over 18 residing in Türkiye. A convenience sampling method, a non-probability approach, was selected for its practicality and ability to access participants meeting the study's criteria, particularly under pandemic-related constraints and social distancing requirements. To mitigate potential biases inherent in convenience sampling, several steps were taken. First, the survey was distributed across diverse online platforms, such as social media and email, to reach a broad participant pool and minimize over-representation of specific groups. Second, the survey included varied demographic questions to capture a wide range of perspectives and experiences. Third, response patterns were closely monitored to detect and address any inconsistencies or biases in the data. Table 1 presents the variables, items, and references about constructs measurements.

Table 1. Constructs Measurements

Variables	Items	Source (Reference)
Green Hotel Practices (GHP)	1-Saving the lighting and heat system by using motion and thermal sensors in the hotel 2-Using the electronic card system to turn the electrical power of the room on and off in the hotel 3-Using an energy-saving lighting system 4-Towels are not changed every day, only on request or every few days. 5- Changing the sheets on demand, not daily. 6-Providing environmentally friendly certified products (For example; organic, local or handmade products). 7-The hotel has an eco-friendly (Green) hotel certificate. 8-The hotel provides informational training to its guests in order to help them understand environmental certificate practices.	Yi et al. (2018); Tanford & Malek (2015); Millar & Baloglu (2011); Berezan et al. (2014); Jauhari & Manaktola (2007); Baker et al. (2014); Al-Aomar & Hussain (2017)
Guest Satisfaction (GS)	1-I would be happy to choose an environmentally friendly (green) hotel. 2-I think it is a good idea to stay in an eco-friendly (green) hotel. 3-I am satisfied with my overall experience of being a consumer of eco-friendly (green) hotel.	Al-Ansi et al. (2019)
Guest Loyaly Intention (GL)	1- I am willing to stay in a green (eco-friendly) hotel when I travel in the future. 2- I will make an effort to stay in a green (eco-friendly) hotel when I travel in the future. 3- I am ready to encourage others to stay in green (eco-friendly) hotels.	Han, H. et al. (2018)
Intention to Recommend (IR)	1-I would recommend green hotels to other people. 2-I would tell other people positive things about green hotels.	Kim, T. et al. (2009)

Source: Own Elaboration.

General guidelines for quantitative studies informed the sample size. We aimed to reach a threshold of 384 participants, a number considered sufficient for achieving statistical power (Sekaran and Bougie, 2016). However, we extended data collection efforts beyond this number to enhance the robustness of our findings. The final sample size also adhered to the recommendations of the Smart-PLS program for structural equation modeling, which suggests a sample size of ten times the total number of scale items (Hair et al., 2019). The study utilized four scales—green hotel practices, satisfaction, loyalty, and intention to recommend—comprising 16 items, establishing a minimum sample size requirement of 160. Each scale adopted a 5-point Likert-type format, ranging from "strongly disagree" to "strongly agree," to capture participants' responses. The scales underwent thorough testing to ensure reliability and validity. Hypotheses were developed to examine both direct and indirect effects of environmental practices on guest satisfaction, loyalty, and recommendation intentions. Data analysis was performed using SmartPLS structural equation modeling software, enabling a detailed examination of the relationships among constructs and revealing the direct and indirect influences of green practices on guest behavior.

3.2 Common Method Bias

As this study utilized a self-administered survey for data collection, the risk of common method bias (CMB) was evaluated using Harman's Single Factor Test. CMB refers to systematic measurement error stemming from the data collection approach, which may distort relationships between variables, particularly in studies relying on perceptual measures like green hotel practices and guests' behavioral intentions (Podsakoff et al., 2003).

All survey items were analyzed using an unrotated principal component analysis (PCA) in SPSS 25.0 to perform Harman's Single Factor Test. The results indicated that a single factor explained only 38.4% of the total variance, well below the 50% threshold typically considered indicative of common method bias (Hair et al., 2019). This finding suggests that CMB is unlikely to significantly affect the study's results. Several procedural safeguards were implemented during data collection to minimize the risk of CMB further. Survey items were randomized, respondent anonymity was guaranteed, and clear, neutral language was used to reduce social desirability bias. Additionally, participants were informed at the survey's outset about the confidentiality of their responses and the study's academic purpose, further mitigating potential CMB influences.

Although Harman's Single Factor Test has limitations, including its inability to detect multiple method factors and moderate sensitivity, the low variance explained by a single factor, combined with procedural safeguards, suggests that common method bias (CMB) is unlikely to substantially affect this study's findings. As a result, the PLS-SEM analysis results are deemed robust and reliable.

3.3 Rationale for PLS-SEM

Partial Least Squares Structural Equation Modeling (PLS-SEM) was selected for its effectiveness in handling complex models with multiple latent constructs, such as energy efficiency, water conservation, green certifications, satisfaction, loyalty, and recommendation intention, and its ability to manage non-normal data, prevalent in hospitality research (Hair et al., 2019). This method aligns with the study's exploratory nature, facilitating the testing of 11 hypotheses (H1–H11) that explore direct and mediating effects, as depicted in Figure 1. The sample size of 642 exceeds the minimum requirement (160, based on ten times the 16 scale items), ensuring statistical power. SmartPLS software facilitated path analysis and bootstrapping (5,000 repetitions) to validate the structural model's reliability and significance.

3.4 Limitations of Sampling Strategy

While convenience sampling enabled efficient data collection, it introduces potential biases, such as over-representation of tech-savvy or urban respondents due to online survey distribution. To enhance representativeness, the sample includes diverse demographics (50.6% female, 19.3% Gen Z, 80.8% holiday travelers; Table 2), aligning with Turkey's tourism profile (Turkish Statistical Institute, 2023). However, the non-probability approach limits generalizability, particularly for rural or less tech-accessible populations. Future studies should employ probability sampling to improve representativeness.

3.5 Ethical Considerations

The study adhered to ethical research standards. Ethical approval was obtained from University Ethics Board. Participants received an informed consent form explaining the study's purpose, voluntary participation, and data confidentiality. No personal identifiers were collected, and respondents could withdraw at any time without consequence. These measures ensured ethical data collection and participant protection, aligning with best practices in hospitality research.

4. Data Analysis and Results

This quant study used multiple statistical programs. SPSS was used to transfer and analyze data for descriptive and frequency analysis. SmartPLS, a structural equation modeling program, was used to create and test the research model. Precondition tests were conducted to validate the data for structural equation modeling, including Cronbach Alpha, Reliability Coefficient, Composite Reliability, AVE, HTMT, and Fornell-Larcker criteria. VIF, Fornell Lacker, Heteroid-Monotrait, R square, F square, direct, and indirect effect analyzes were performed. Factor analyzes were used to determine the factor loads of dimensions. Finally, hypotheses were tested using Smart PLS program with path analysis and structural model, and the significance of path coefficients was investigated by bootstrapping with 5,000 repetitions.

4.1 Descriptive statistics

Table 2 presents demographic characteristics of 642 participants, including gender, age group, and education level. Descriptive statistics summarize the study sample and provide valuable information about the characteristics of the participants.

Table 2. Descriptive statistics of the participants

Variables	Number	%	Variables	Number	%
Gender?	--	--	***Marital status?***	--	--
Female	325	50,6	Married	296	45,1
Male	317	49,4	Single	346	54,9
Age groups?	--	--	***Who do you travel with?***	--	--
25 and below	124	19,3	Alone	93	14,5
26-41	339	52,8	Couple	111	17,3
42 and above	179	27,9	Family	345	53,7
			Friends	93	14,5
Education level?	--	--	**What is your annual stay (overnight)?**	--	--
Primary	12	1,9	1-3 nights	129	20,1
High school	174	27,1	4-6 nights	234	36,4
Bachelor	237	36,9	7-10 nights	151	23,5
Graduate (Master/PhD)	219	34,1	11-14 nights	61	9,5
Generally, what is the purpose of your stay at the hotel?	--	--	15 nights and above	67	10,4
Work	123	19,2			
Holiday	519	80,8			

Source: Own Elaboration.

Age ranges in this study were established according to X-Y-Z age generations to obtain meaningful results. Table 2 shows that 19.3% of the participants were in the Z generation (25 years old and below), 52.8% were in the Y generation (26-41 age range), and 27.9% were 42 years old and above. Gender distribution was almost equal, with 50.6% female and 49.4% male participants. Table 2 contains further demographic information about the participants.

4.2 Measurement Model

To evaluate the PLS-SEM results, the structural model should be examined. Evaluation criteria include the coefficient of influence (R2), Q2, significance of path coefficients, and level of correlation. The model's predictive power can also be assessed using the PLSpredict procedure. Table 3 presents the CFA and measurement model values of the scale. Factor loadings with values below 0.50 and t values below 1.96 were excluded from the model (Kim and Hall, 2019). The factor loadings above 0.50 were analyzed, and t values ranging from 16,873 to 168,083 were greater than the reference value of 1.96 (Hair et al. 2019).

Table 3. Confirmatory factor analysis (CFA) and measurement model

Structure (Dimensions)	Mean	Std. Dev.	VIF	*t*-value	Factor Load
Energy Efficiency Practices					
Saving the lighting and heat system by using motion and thermal sensors in the hotel	4.58	1.172	1,945	73.787	0,900
Using the electronic card system to turn the electrical power of the room on and off in the hotel	4.39	1.130	1,543	16.873	0,752
Using an energy-saving lighting system	4.56	1.194	2,032	35.671	0,885
Water Conservation Practices					
Towels are not changed every day, only on request or every few days.	3.99	1.192	2,352	76.987	0,940
Changing the sheets on demand, not daily.	4.08	1.295	2,352	65.877	0,935
Green Certificate Practices					
Providing environmentally friendly certified products (For example; organic, local or handmade products).	4.34	1.180	1,885	63.120	0,872
The hotel has an eco-friendly (Green) hotel certificate.	4.28	1.282	1,882	55.184	0,864
The hotel provides informational training to its guests in order to help them understand environmental certificate practices.	4.02	1.346	1,633	34.177	0,818
Guest Satisfaction					
I would be happy to choose an environmentally friendly (green) hotel.	4.42	1.276	3,921	118.025	0,934
I think it is a good idea to stay in an eco-friendly (green) hotel.	4.44	1.238	4,195	129.539	0,942
I am satisfied with my overall experience of being a consumer of eco-friendly (green) hotel.	4.34	1.268	2,084	35.860	0,860
Guest Loyalty Intention					
I am willing to stay in a green (eco-friendly) hotel when I travel in the future.	4.17	1.494	3,599	89.170	0,931
I will make an effort to stay in a green (eco-friendly) hotel when I travel in the future.	4.19	1.472	3,594	144.950	0,933
I am ready to encourage others to stay in green (eco-friendly) hotels.	4.05	1.507	2,502	53.015	0,897
Intention to Recommend					
I would recommend green hotels to other people.	3.96	1.483	2,036	168.083	0,938
I would tell other people positive things about green hotels.	4.26	1.507	2,036	105.344	0,912

Source: Own Elaboration.

In the study, the Variance Inflation Factor (VIF) values for each expression were found to be less than 10, which is within the acceptable range as VIF values below 5 and 10 are generally deemed acceptable (Sevinc, 2013). This finding positively contributes to the overall scope of the research. Table 3 in the study presents the arithmetic mean and standard deviation for each of the six dimensions analyzed. A key step in assessing the measurement model involves examining the item loadings. According to Hair et al. (2019), loadings above 0.708, which explain more than 50% of the variance of the structure's indicators, are indicative of acceptable reliability. In our study, the factor loadings range from 0.752 to 0.942, surpassing this standard and thus demonstrating robust reliability.

The Fornell-Larcker criterion plays a key role in evaluating the measurement model's discriminant validity. According to this criterion, the square root of each construct's average variance extracted (AVE), shown as (Table 4) bolded values in the table's diagonal, must exceed the construct's correlations with other constructs, represented in the table's rows and columns. Analysis of the Fornell-Larcker criterion confirmed that each construct exhibited a stronger correlation with itself than with others, demonstrating that the measurement model effectively distinguishes between the studied dimensions.

Table 4. Reliability, Validity, and Correlation

	Fornell-Larcker Criterion						Heterotrait-Monotrait Ratio					
Variables	**1**	**2**	**3**	**4**	**5**	**6**	**1**	**2**	**3**	**4**	**5**	**6**
EE (1)	**0,848**						-					
GS (2)	0,375	**0,913**					0,422					
GL (3)	0,509	0,702	**0,920**				0,589	0,778				
GC (4)	0,514	0,527	0,677	**0,852**			0,632	0,613	0,787			
WC (5)	0,123	0,177	0,136	0,157	**0,938**		0,154	0,200	0,154	0,186		
IR (6)	0,443	0,667	0,84	0,678	0,193	**0,925**	0,534	0,764	0,861	0,820	0,225	-
Cronbach's Alpha	0.809	0.899	0.909	0.811	0.862	0.833						
Reliability Coefficient (Rho_A)	*0.863*	*0.906*	*0.910*	0.816	0.863	0.848						
Composite Reliability	*0.884*	*0.937*	*0.943*	0,888	0,936	0,922						
AVE	*0.719*	*0.833*	*0.847*	0.726	0.879	0.856						

EE: Energy efficiency, WC: Water conservation, GC: Green certificate, GS: Guest satisfaction, GL: Guest loyalty, IR: Intention to recommend.

Source: Own Elaboration.

Cepeda Carrin et al. (2016) argue that the Fornell-Larcker criterion and cross-loading approaches may lack sufficient reliability for detecting discriminant validity issues. They advocate the Heterotrait-Monotrait (HTMT) correlation ratio as a more robust measure in structural equation modeling. Hair et al. (2019) support this, noting that HTMT values below 0.90 confirm discriminant validity and model reliability. In this study, as presented in Table 4, HTMT ratios range from 0.154 to 0.861, all falling below the 0.90 threshold, thereby confirming discriminant validity for all variables. Cronbach's Alpha is a critical measure for evaluating the internal consistency and reliability of a construct's measurement, with values of 0.70 or higher typically deemed acceptable (Bonett & Wright, 2015; Ringle et al., 2015). All scales in this study exceeded this threshold, enabling further reliability assessments. Similarly, Composite Reliability (CR) values of 0.70 or above are considered acceptable, with higher values indicating greater reliability. For exploratory research, CR values between 0.60 and 0.70 may be adequate, while values from 0.70 to 0.90 are regarded as satisfactory to excellent. However, CR values exceeding 0.95 may suggest problematic items that could undermine construct validity (Hair et al., 2019; Sarstedt et al., 2019; Şengel et al., 2021). The Average Variance Extracted (AVE) is calculated by squaring the loadings of each indicator on a construct and averaging these values. An AVE of 0.50 or higher indicates that the construct accounts for at least 50% of its items' variance, supporting convergent validity (Hair et al., 2019). In this study, AVE values for all constructs in the measurement model ranged from 0.719 to 0.879, exceeding the 0.50 threshold and confirming convergent validity.

4.3 Structural Model

Table 5 summarizes the structural model's fit and the results of hypothesis tests. The model fit indices, including SRMR and NFI, meet acceptable thresholds. Specifically, the SRMR value, a key criterion in social science structural equation modeling, is below 0.08, as Karagöz (2017) recommended. Additionally, the NFI values exceed 0.80, aligning with established standards (Karagöz, 2017). Some studies also consider SRMR values below 0.10 acceptable (Domínguez-Quintero et al., 2020), further supporting the model's adequacy.

Table 5 details the testing of 11 hypotheses examining direct and mediating effects, including path coefficients, p-values, t-statistics, hypothesis outcomes, and SRMR and NFI fit indices. The analysis in this table aims to assess the suitability of the structural model and provide detailed information about whether the hypotheses tests were accepted. All 11 hypotheses formed between the variables were accepted.

Table 5. Path coefficients and impact dimensions

Hypothesis	**Path coefficients**	**t-stat**	**p-value**	**Supported/ Significant**	**SRMR**	**NFI**
Direct effects						
H_1: EE -> *GS*	0.137	3.118	0.002**	Yes		
H_2: WC -> *GS*	0.090	2.469	0.014*	Yes		
H_3: GC -> *GS*	0.442	10.602	0.000**	Yes		
H_4: GS -> *GL*	0.702	38.306	0.000**	Yes		
H_5: GS -> *IR*	0.668	28.253	0.000**	Yes	0.048	0.82
Mediator effects						
H_6: EE -> *GS* -> *GL*	0.096	3.137	0.002**	Yes		
H_7: GC -> *GS* -> *GL*	0.310	9.343	0.000**	Yes		
H_8: WC -> *GS* -> *GL*	0.063	2.465	0.014*	Yes		
H_9: EE -> *GS* -> *IR*	0.091	3.082	0.002**	Yes		
H_{10}: *GC -> GS -> IR*	0.295	9.108	0.000**	Yes		
H_{11}: *WC -> GS -> IR*	0.060	2.413	0.016*	Yes		

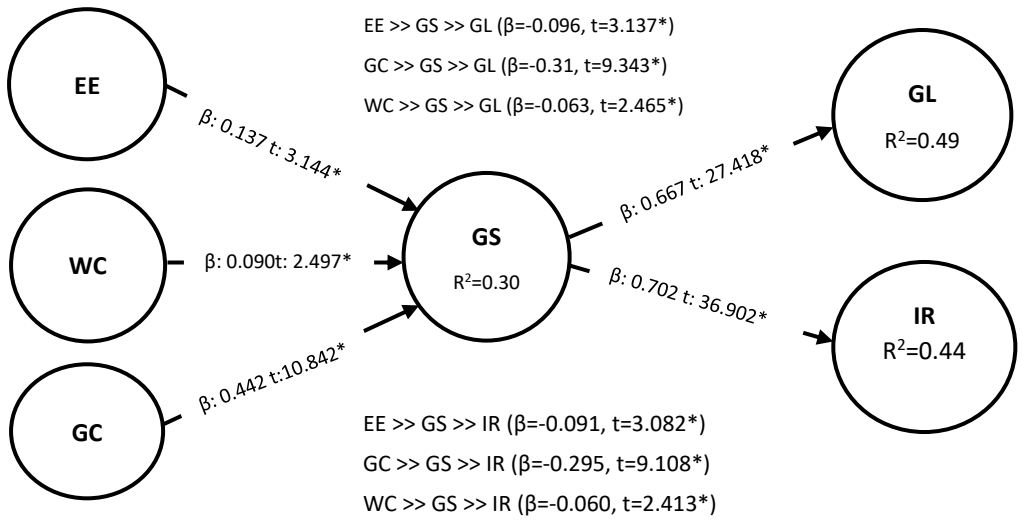
Note(s): *Significant at *p < 0.05 level, Significant at **p < 0.01 level, t > 1.96, EE: Energy efficiency, WC: Water conservation, GC: Green certificate, GS: Guest satisfaction, GL: Guest loyalty, IR: Intention to recommend.*

Source: Own Elaboration

As can be seen from Table 5, it has been determined that energy efficiency practices applied in hotels affect satisfaction (β=0.137; t-value=3.118; p=0.002). H1 is supported, indicating a statistically significant relationship between energy efficiency and guest satisfaction. It is seen that water saving practices, which is the subject of another hypothesis, are effective on satisfaction level (β=0.090; t-value=2.469; p=0.014). In other words, the H2 hypothesis is supported, suggesting that water conservation practices positively affect guest satisfaction. This implies that water-saving measures in hotel operations can improve guests' perceptions of the hotel (Trang et al., 2019). It has been determined that green certificates in accommodation establishments have a significant effect on guest satisfaction (β=0.442; t-value=10.602; p=0.000). This strongly supported hypothesis (H3) indicates a significant effect of green certification practices on guest satisfaction. On the other hand, the effects of guest satisfaction, which is the mediating variable of the structural model, on the intention to recommend and loyalty intention in the context of direct effects were examined. As a result of these examination findings, it was determined that guest satisfaction has an effect on loyalty intention (β=0.702; t-value=38.306; p=0.000) against hotels with environmentally friendly hotel practices. Therefore, hypothesis 4 was accepted. In addition, it has been empirically proven that satisfaction with environmentally friendly hotels is an effective variable (β=0.668; t-value=28,253; p=0.000) in the intention to recommend. It is seen that H5, which measures the final direct effect, is accepted. Both hypotheses are strongly supported with high t-statistics and low p-values. They indicate that guest satisfaction significantly influences loyalty and the intention to recommend. These findings align with the idea that satisfied customers are more likely to remain loyal and recommend the brand.

According to Table 5, it has been determined that energy efficiency practices applied in hotel businesses affect loyalty intention through the guest satisfaction mediator variable (β=0.096; t-value=3.082; p=0.002). In this case, H6 is accepted. The hypothesis tested through another mediator variable is 7. Accordingly, green certification systems implemented in hotels affect loyalty intention through the mediator variable of guest satisfaction versus green hotels (β= 0.310; t-value=9.343; p=0.000). It is seen that perception towards water conservation practices in hotels affect loyalty intention with the mediator variable of guest satisfaction (β=0.063; t-value=2.465; p=0.014). In other words, it is seen that the guest satisfaction has a mediating role in the effect of water conservation variable and loyalty intention variable. Therefore, the H8 hypothesis is supported. It has been determined that energy efficiency practices affect the intention to recommend through the guest satisfaction variable (β=0.091; t-value Another test component of the structural model is that green certification practices applied in hotels explain the recommendation intention by the guest satisfaction mediator variable (β=0.295; t-value=9.108; p=0.000) against eco-friendly hotels. For this reason, the H10 hypothesis was also accepted. Finally, the statistical values of the H11 hypothesis are examined. Accordingly, it was concluded that the water conservation practices applied in the hotels affect the recommendation intention with the satisfaction mediator variable (β=0.060; t-value=2.413; p=0.016). For this reason, the H11 hypothesis was accepted. These hypotheses are supported, suggesting that energy efficiency, water conservation, and green certification practices indirectly affect guest loyalty and the intention to recommend through guest satisfaction. The results demonstrate that environmental sustainability practices indirectly shape guests' hotel preferences and behaviors (see Figure 2).

Figure 2. Partial least square structural equation modelling (PLS-SEM) results



EE: Energy efficiency, WC: Water conservation, GC: Green certificate, GS: Guest satisfaction, GL: Guest loyalty, IR: Intention to recommend.

Source: Own Elaboration

Specifically, eco-friendly hotel practices significantly influence guest satisfaction, loyalty, and intention to recommend. Energy efficiency, water conservation, and green certification initiatives are pivotal in advancing hotels' sustainability efforts, exerting both direct and indirect effects on guests' perceptions and behaviors. These findings highlight the importance of sustainability practices for hotel operators and how they can affect guests' preferences and loyalty (β =3.082; p=0.002) against green hotels. Due to this statistical result, the H9 hypothesis was accepted. Analysis of the Partial Least Squares Structural Equation Modeling (PLS-SEM) results reveals that green hotel practices influence the constructs' relationships through direct and indirect effects.

Energy efficiency (EE) exerts a moderate positive direct effect on guest satisfaction (GS) (β = 0.137, t = 3.144), indicating that guests value energy-efficient hotel practices. Similarly, water conservation (WC) demonstrates a weaker but significant positive effect on guest satisfaction (β = 0.090, t = 2.497), reflecting guests' positive response to water-saving initiatives. The most substantial direct effect is observed between green certification (GC) and guest satisfaction, with a strong (β = 0.442 and t = 10.842), emphasizing that guests significantly value hotels' eco-friendly certifications.

Guest satisfaction significantly influences both guest loyalty (GL) and the intention to recommend (IR). The direct effect of guest satisfaction on guest loyalty is very strong (β = 0.667, t = 27.418), as is its effect on intention to recommend (β = 0.702, t = 36.902). These strong relationships highlight the critical role of guest satisfaction in fostering loyalty and the likelihood of guests recommending the hotel.

Indirect effects, mediated by guest satisfaction, are also evident. Energy efficiency impacts guest loyalty and the intention to recommend indirectly, with respective path coefficients of β = -0.096 (t = 3.137) and β = -0.091 (t = 3.082). This indicates that while energy efficiency is valued, its impact on loyalty and recommendation primarily operates through guest satisfaction. Water conservation similarly affects both guest loyalty and intention to recommend indirectly through satisfaction, with path coefficients of β = -0.063 (t = 2.465) and β = -0.060 (t = 2.413), respectively. This reveals the role of satisfaction as a mediator in how water-saving measures influence guest behaviors.

Green certification's influence on guest loyalty and intention to recommend is also significantly mediated by guest satisfaction, with indirect path coefficients of β = -0.31 (t = 9.343) for loyalty and β = -0.295 (t = 9.108) for recommendation intention. These substantial indirect effects suggest that the perceived value of green practices enhances guests' overall satisfaction, positively affecting their loyalty and propensity to recommend the hotel.

In summary, the PLS-SEM results highlight the critical mediating role of guest satisfaction. While sustainable practices directly impact guest satisfaction, their effects on guest loyalty and intention to recommend are considerably channeled through the satisfaction guests derive from these eco-friendly hotel practices.

5. Discussion, Conclusions and Implications

This study specifically focuses on the implementation of environmentally friendly practices in the hospitality industry and their effects on consumer behavior, such as satisfaction, loyalty, and intention to recommend. The study results show that energy efficiency, water conservation, and green certificate practices positively affect guest satisfaction, which in turn affects loyalty and intention to recommend towards environmentally friendly hotels. The study provides insights for hospitality businesses to understand the importance of implementing sustainable practices and their potential benefits in terms of customer behavior. Overall, the study contributes to the ongoing discussion of sustainable development and its implementation in the hospitality industry.

It is stated that the hospitality industry is a key element in the tourism industry, and therefore, hotels have a very important position in the protection and preservation of the environment, as they use huge amounts of energy, water and other resources (Erdogan & Baris, 2007). However, eco-friendly hotel practices don't just help protect the environment. For example; It also helps to reduce costs by closing hotel floors in low season. In addition, sustainability is not only focused on the natural environment, but also covers society and the economy. Over the last 20 years, societies have gradually come to recognize the seriousness of environmental degradation, and concern for the environment is not only recognizing it, but is also resorting to important measures that there must be something beyond (Helland & Kaltenborn, 2018). As a result, changes in society's attitudes and consumption behaviors towards businesses that offer environmentally friendly products and/or services have become quite common. Research has revealed that consumers are more likely to have a positive attitude towards companies that are sensitive to environmental issues (Leonidou et al., 2016). Consumers then start to look for and buy green products and/or services through alternatives, and sometimes they may even have the intention to pay more for it (Kang et al., 2012; Sert, 2019). On the other hand, due to the environmental movement, businesses with goods and services have changed their purchasing methods, production processes, operation and marketing procedures to meet the green consumer demand. Regarding the service sector, environmental concerns have spawned and stimulated a growing niche market called the green hotel industry (Chan & Hsu, 2016).

5.1 *Theoretical Implications*

This study significantly contributes to the theoretical landscape of sustainable tourism and hospitality management by providing empirical evidence on how green hotel practices (GHP) influence guest behavioral intentions through the Theory of Planned Behavior (TPB) lens. The study effectively applies the Theory of Planned Behavior (TPB) to green hospitality in Turkey, an emerging market, filling a gap in the literature that has largely focused on Western contexts. It confirms TPB's relevance in explaining environmentally conscious consumer behavior, showing that positive attitudes toward green practices (e.g., energy efficiency, water conservation, green certifications) significantly influence guest satisfaction. This satisfaction mediates loyalty and

recommendation intentions, highlighting the TPB's attitude component as a key driver of pro-environmental behavior in hospitality, extending its utility beyond traditional consumer settings.

The study advances the Theory of Planned Behavior (TPB) by examining the under-researched mediating role of guest satisfaction in linking green hospitality practices (GHP) to behavioral outcomes and addresses a gap noted in previous research (Han et al., 2018; Zhang et al., 2018). Significant mediating effects (H6–H11) highlight satisfaction as a key psychological mechanism through which GHP fosters loyalty and recommendation intentions. This enriches the TPB by showing how cognitive evaluations (satisfaction) transform positive attitudes toward sustainability into actionable behaviors and provides a deeper understanding of decision-making in green hospitality contexts.

This study addresses a research gap by examining the distinct effects of specific green hotel practices (GHP), namely energy efficiency, water conservation, and green certifications, and comparing their effect sizes (Clark et al., 2023). Green certifications show a stronger impact on guest satisfaction (β = 0.442) compared to energy efficiency (β = 0.137) and water conservation (β = 0.090), indicating that visible and verifiable sustainability credentials resonate more strongly with guests. These findings contribute to the Theory of Planned Behavior (TPB) framework by explaining how different sustainability initiatives shape consumer perceptions and provide a refined perspective on the role of GHP in green hospitality.

The focus of this study on Türkiye highlights the moderating effect of different cultural values such as collectivism and religious beliefs in increasing the effectiveness of green hotel practices (Pekerşen and Canöz, 2022; Rixos Sustainability Report, 2023). These findings question the universal applicability of Western-centric models and support the need for culturally tailored adaptations of the Theory of Planned Behavior (TPB) in sustainable tourism research. Future studies could investigate how cultural dimensions interact with TPB constructs to shape green consumer behavior in various markets.

In conclusion, this study enhances the theoretical framework of sustainable hospitality by validating and extending the Theory of Planned Behavior (TPB), emphasizing the mediating role of guest satisfaction, and underscoring the value of culturally nuanced and practice-specific analyses. It paves the way for future research to investigate longitudinal effects and cross-cultural variations in green consumer behavior, strengthening the theoretical foundation for sustainable tourism studies.

5.2 Practical Implications

This study provides practical insights for hotel managers and policymakers seeking to advance sustainability and guest engagement in the hospitality sector. The significant positive effects of green hotel practices—energy efficiency, water conservation, and green certifications—on guest satisfaction, loyalty, and recommendation intention highlight the strategic value of embedding sustainable practices in hotel operations. Managers can prioritize initiatives that resonate most with guests, particularly green certifications (β = 0.442), which demonstrated the strongest influence on satisfaction (Ocke & Teixeira, 2024). Adopting and prominently communicating certifications such as LEED or Green Star can foster guest trust and enhance perceived value, as these credentials signal a credible commitment to environmental sustainability (Seele & Gatti, 2017).

To enhance the effectiveness of energy efficiency and water conservation practices, hotels should prioritize their visibility and appeal to guests. For example, deploying motion-sensor lighting or keycard-activated power systems, coupled with clear signage or guest education programs, can emphasize their environmental benefits, as evidenced by the study's findings on informational training (Table 3). Likewise, water conservation initiatives, such as towel and linen reuse programs, can be promoted through culturally tailored messaging, particularly in collectivist societies like Turkey, where social proof and community-oriented appeals resonate strongly (Pekerşen & Canöz, 2022). Furthermore, training staff to serve as sustainability ambassadors can significantly boost guest satisfaction in the Turkish context (Rixos Sustainability Report, 2023).

The mediating role of guest satisfaction (H6–H11) suggests that hotels should prioritize guest experience in their sustainability strategies. Creating positive experiences with environmentally friendly practices can encourage loyalty and support word-of-mouth recommendations, which are critical for competitive advantage in the tourism industry. For example, offering organic or locally sourced products can increase the hedonic value of guest experience, consistent with the findings of the study on the utilitarian and hedonic drivers of satisfaction (Ozturk et al., 2016). Hotels can also develop loyalty programs that reward guests who participate in green initiatives, such as fewer bed linen changes, to strengthen attitudinal loyalty.

This study highlights the importance of policy support for the adoption of green certifications and sustainable practices in Türkiye's hospitality sector, which accounts for 12% of the national GDP (TUIK, 2023). Offering incentives such as tax breaks or subsidies for hotels seeking eco-certification can accelerate the sector's transition to sustainability and reflect global preferences where 78% of travelers prefer eco-certified accommodations (Booking.com, 2023). Furthermore, policymakers can partner with industry stakeholders to create standardized sustainability metrics, increase transparency, and reduce the risk of greenwashing that erodes guest trust (Zhang et al., 2018).

In conclusion, this study offers a strategic framework for hotel managers to incorporate green practices, emphasizing certifications, guest engagement, and staff training to boost satisfaction and loyalty. For policymakers, it highlights the need to cultivate a supportive regulatory environment to advance sustainable tourism, particularly in emerging markets like Türkiye, where cultural nuances enhance the impact of green initiatives.

6. Limitations and Directions for Future Studies

Some limitations can be mentioned in the scale formation process related to environmentally friendly hotel practices. While there are dozens of eco-friendly practices in the hospitality industry, this research focuses on specific practices that guests can directly experience and be involved in. This is because there are many practices that guests may not notice during their stay, making it difficult to measure their attitudes. In other words, the limitations of our scale arise from the fact that no measurable behavior will occur in these cases. Of course, other methods can be used to research different practices. Additionally, the viewpoints of managers regarding practices that are not directly related to guests or their attitudes will also be important from different perspectives.

While existing research often focuses on the immediate perceptions and behavioral intentions of guests in response to green hotel practices, there is a significant gap in understanding the long-term effects of these practices. Most studies in this field are cross-sectional, providing a snapshot of guest attitudes and intentions at a single point in time. However, the sustainability of these attitudes and the enduring influence of green practices on guest loyalty and satisfaction remain underexplored. A longitudinal study would offer insights into how guests' perceptions and behavioral intentions evolve over time after experiencing green practices in hotels. Such a study could investigate whether initial positive responses lead to sustained behavioral changes, such as repeat bookings, long-term loyalty, and continuous engagement in green practices beyond the hotel context. It could also explore whether and how the novelty effect of green practices wears off over time or if it integrates more deeply into the guest's value system. This gap is crucial for understanding the actual efficacy of green initiatives in the hospitality sector over the long term. It would provide hotel managers and policymakers with data on the longevity of their sustainability efforts' impact, guiding them in developing strategies that attract guests initially and foster long-term loyalty and commitment to sustainability. Future research could include longitudinal studies to assess the long-term impact of green hotel practices on guest behavior or cross-cultural comparisons to determine whether sustainability preferences vary across different markets.

In addition, researchers can regularly test behaviors against practices by including environmentally friendly accommodation practices that were not included in this study. Furthermore, they can research the differences in behavioral intention between green hotel practices that hotel guests can or cannot experience. This has been put forward as an unknown factor in some studies, as well as in this study. It is important to keep in mind that the satisfaction measurement in this study is conditional on the experience of these practices. Additionally, it is necessary to examine different perspectives on green hotel practices. This study was conducted from the perspective of the consumer, but the final decision makers regarding such applications are in the accommodation sector. More research is needed, particularly on the barriers to implementing environmentally friendly hotel practices.

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Credit author statement

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