

Perceived Greenwashing and Consumer Responses in Hospitality: A Cross-National Study of Taiwan and Indonesia

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ABSTRACT

This study examines the impact of perceived greenwashing on consumer trust, authenticity, satisfaction, and booking intentions in the hospitality industry, with a cross-national comparison between Taiwan and Indonesia. While hotels increasingly adopt sustainability-oriented marketing, the credibility of these claims is often questioned. A structured survey of 428 hotel guests in Taiwan and 462 in Indonesia was conducted to measure perceptions of greenwashing and related consumer responses. Data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with multi-group analysis. The results demonstrate that perceived greenwashing significantly reduces consumer trust and authenticity, which subsequently diminish satisfaction and booking intentions. Mediation analysis confirmed that both trust and authenticity serve as critical psychological mechanisms transmitting the negative effects of greenwashing to satisfaction outcomes. Multi-group analysis revealed that Taiwanese consumers are more skeptical toward vague sustainability claims, whereas Indonesian consumers exhibit stronger declines in loyalty once trust is compromised. These findings advance greenwashing research by integrating signaling and skepticism theories with authenticity perspectives, while also highlighting the role of cultural and institutional contexts in shaping consumer responses. Practically, the study emphasizes the importance of transparent, verifiable, and authentic sustainability communication for hotels seeking to maintain credibility and secure long-term customer loyalty across diverse markets.

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INTRODUCTION

The hospitality industry has increasingly embraced sustainability initiatives as part of its business strategy and brand positioning. From eco-labels to carbon neutrality pledges, hotels are keen to signal their environmental responsibility to a growing segment of environmentally conscious travelers. However, the proliferation of sustainability claims has also raised concerns about credibility, with some hotels accused of exaggerating or misrepresenting their environmental performance, a practice commonly referred to as greenwashing (Delmas & Burbano, 2011; Lyon & Montgomery, 2015). Such practices may damage consumer trust, weaken the legitimacy of authentic sustainability initiatives, and ultimately harm the broader tourism industry's transition toward responsible practices.

In hospitality, trust and credibility are particularly crucial, as service experiences are intangible and consumers must rely heavily on marketing signals when making booking decisions (Chen et al., 2020). When guests suspect that sustainability claims are overstated or misleading, they may develop skepticism, which reduces their willingness to pay a premium, undermines loyalty, and discourages repeat visits (Testa et al., 2020). Scholars have highlighted that greenwashing not only erodes consumer trust but also diminishes the perceived authenticity of sustainability initiatives, thereby weakening the effectiveness of environmental communication (Chen & Chang, 2013; García-Salirrosas

et al., 2023). Despite these risks, empirical research on how consumers in different cultural and institutional contexts perceive and respond to greenwashing in hospitality remains limited.

Cross-national perspectives are particularly important because consumer perceptions of sustainability are shaped by institutional frameworks, regulatory environments, and cultural norms. For instance, Taiwan has established relatively stringent environmental policies and certification systems, fostering greater consumer awareness and skepticism toward unverified claims (Huang et al., 2017). In contrast, Indonesia, while rich in natural and cultural tourism resources, faces challenges in environmental governance and enforcement, with sustainability communication often fragmented or inconsistent (Sawir et al., 2024). These differences suggest that tourists in Taiwan and Indonesia may react differently to greenwashing in hospitality, making comparative analysis both timely and valuable.

Moreover, there is an emerging debate on whether greenwashing manifests in similar ways across developed and developing markets. In more mature markets such as Taiwan, consumers may be more attuned to vague or ambiguous claims, while in emerging markets such as Indonesia, trust erosion may have stronger behavioral consequences in terms of loyalty and booking decisions. Yet, there is still limited quantitative evidence examining how perceived greenwashing impacts consumer trust, satisfaction, and behavioral intentions across different national contexts (Font & McCabe, 2017). A comparative hospitality study between Taiwan and Indonesia would therefore fill a significant gap in both the tourism and consumer behavior literature.

The present study addresses this gap by investigating the influence of perceived greenwashing on consumer trust, authenticity perceptions, satisfaction, and booking intentions in the hospitality sectors of Taiwan and Indonesia. Using a quantitative approach with Partial Least Squares Structural Equation Modeling (PLS-SEM) and multi-group analysis, the study not only identifies the direct effects of greenwashing perceptions but also compares how these effects differ between the two countries. By doing so, this research contributes to the understanding of how institutional maturity and cultural context shape consumer responses to sustainability communication. Furthermore, the findings provide practical implications for hospitality managers, suggesting the need for credible, transparent, and verifiable environmental communication to maintain competitiveness and trust in increasingly sustainability-driven markets.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Theoretical Foundation

Understanding the effects of perceived greenwashing in the hospitality industry requires a strong theoretical basis that explains how consumers interpret sustainability claims and how these perceptions shape attitudes and behaviors. This study draws primarily on signaling theory and consumer skepticism theory, complemented by insights from trust and authenticity literature in hospitality and sustainability research.

Signaling theory provides the first foundation. In markets characterized by information asymmetry, firms use signals to communicate quality or commitment to stakeholders (Spence, 1973). In hospitality, sustainability claims function as signals intended to convey responsible practices and to differentiate hotels in increasingly competitive markets (Testa et al., 2020). For a signal to be effective, it must be credible and costly to imitate. However, when hotels engage in greenwashing by exaggerating or misrepresenting their environmental performance, they undermine the credibility of sustainability signals. As a result, consumers become uncertain about the reliability of claims, which diminishes the intended signaling effect and erodes the competitive advantage associated with sustainability (Delmas & Burbano, 2011; Lyon & Montgomery, 2015).

Building on this, consumer skepticism theory posits that individuals may doubt the truthfulness of marketing communications when they perceive inconsistency, exaggeration, or lack of evidence (Alkhalifah et al., 2025). In the context of green marketing, perceived greenwashing intensifies skepticism, leading consumers to question not only the specific claims but also the integrity of the firm.

This skepticism can manifest in reduced trust, lower satisfaction, and weakened loyalty (Chen & Chang, 2013). In hospitality, where service quality is largely intangible, skepticism can be particularly damaging, as guests often lack opportunities to directly verify environmental claims before consumption (Chen et al., 2020).

A third stream of literature emphasizes trust and authenticity as mediating constructs between greenwashing and behavioral outcomes. Trust is essential in hospitality because of the experiential and relational nature of service encounters (Morgan & Hunt, 1994). When greenwashing is perceived, trust is eroded, and consumers may feel that the firm lacks authenticity in its sustainability commitments. Authenticity, defined as the perception that a brand's actions align with its stated values, has become a critical determinant of consumer loyalty in sustainability contexts (García-Salirrosas et al., 2023). Hotels that fail to maintain authenticity risk reputational damage and diminished customer engagement, regardless of their actual environmental performance.

These theoretical perspectives also justify the inclusion of a cross-national comparison between Taiwan and Indonesia. From a signaling perspective, the credibility of sustainability claims is shaped by institutional environments. Taiwan, with relatively stronger environmental regulations and eco-certification systems, may foster higher consumer sensitivity to vague or exaggerated claims, making greenwashing signals more easily detected. In contrast, Indonesia, where sustainability governance is less mature, consumers may place more weight on trust outcomes and may react more strongly when trust is undermined. Similarly, skepticism theory suggests that cultural and institutional differences influence baseline levels of consumer skepticism and the extent to which greenwashing triggers negative behavioral responses (Khater et al., 2024).

In sum, this study integrates signaling theory and consumer skepticism theory with hospitality trust and authenticity literature to construct a model in which perceived greenwashing negatively affects trust and authenticity perceptions, which in turn influence satisfaction and booking intentions. The cross-national comparison between Taiwan and Indonesia provides an opportunity to test how institutional maturity and cultural context moderate these theoretical relationships (See Figure 1).

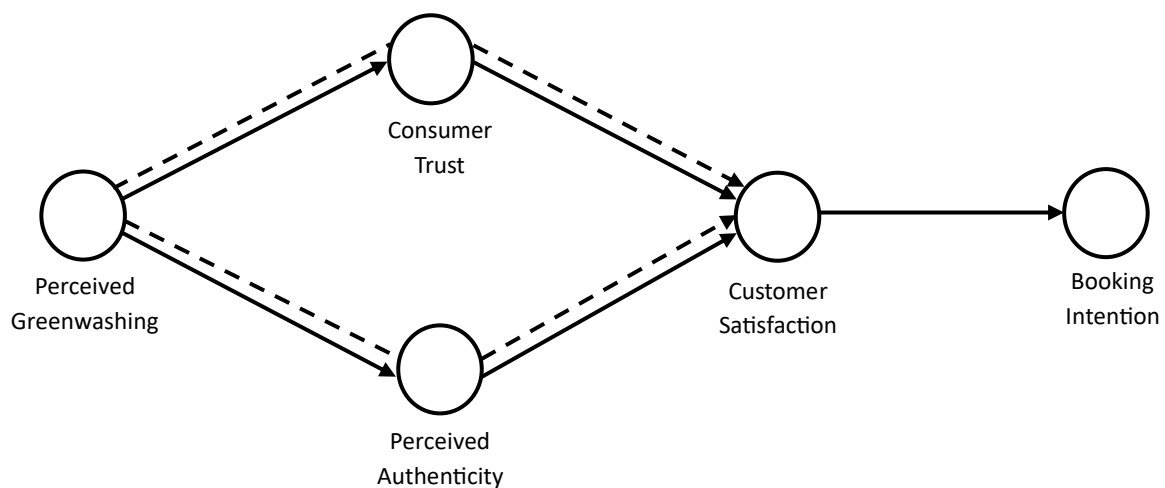


Figure 1. Research Framework

Perceived Greenwashing and Consumer Trust

Green marketing claims in the hospitality industry are intended to serve as signals of a hotel's commitment to sustainability. According to signaling theory, signals must be credible and difficult to imitate in order to effectively reduce information asymmetry between firms and consumers (Spence, 1973). When hotels exaggerate or misrepresent their environmental practices, they distort the signaling process and create uncertainty for consumers. Such practices, often categorized as greenwashing, undermine the intended credibility of sustainability communication (Delmas & Burbano, 2011).

As misleading signals accumulate, consumers may develop skepticism, questioning the truthfulness and reliability of sustainability information. Consumer skepticism theory suggests that when individuals suspect that marketing communications are exaggerated or deceptive, they become less likely to accept claims as accurate and trustworthy (Alkhalifah et al., 2025). In the context of hospitality, where consumers must rely heavily on marketing information prior to booking, skepticism toward green claims can directly erode trust in the hotel brand. Trust, defined as the belief in the reliability and integrity of a firm, is a critical determinant of customer relationships and loyalty (Morgan & Hunt, 1994).

Empirical studies further support this relationship. Chen & Chang (2013) found that greenwashing behaviors reduce consumers' perceptions of environmental credibility, which diminishes green trust. Similarly, García-Salirrosas et al. (2023) showed that in the hospitality sector, overstated environmental claims negatively influence customer trust and satisfaction. These findings suggest that perceived greenwashing is not only a reputational risk but also a direct antecedent to reduced trust in hotels.

Hypothesis 1 (H1): Perceived greenwashing negatively affects consumer trust in hotels.

Perceived Greenwashing and Perceived Authenticity

Authenticity has become a cornerstone concept in hospitality and tourism research, often defined as the perception that a brand's values and practices are genuine and consistent with its communicated identity (Gilmore & Pine, 2007). For hotels, projecting authenticity in sustainability efforts is particularly important, as travelers increasingly expect firms to demonstrate sincere environmental responsibility (García-Salirrosas et al., 2023). When hotels engage in greenwashing by exaggerating or misrepresenting sustainability practices, they compromise this perception of authenticity. The gap between what is communicated and what is actually practiced creates dissonance that reduces the perceived genuineness of the brand.

From a theoretical perspective, signaling theory suggests that false or exaggerated signals not only fail to build credibility but also damage the receiver's perception of authenticity (Spence, 1973). In other words, once consumers detect inconsistencies between sustainability claims and observable practices, they are more likely to question whether the brand's environmental commitment is sincere. This aligns with findings in consumer psychology, where perceived inauthenticity often leads to cynicism and negative evaluations of the brand (Grayson & Martinec, 2004).

Empirical evidence supports this argument. Chen & Chang (2013) demonstrated that greenwashing behaviors heighten consumer confusion and reduce perceptions of brand authenticity. Similarly, research in the hospitality context shows that authenticity mediates the link between sustainability communication and customer loyalty, suggesting that misleading claims weaken the authenticity that underpins positive guest experiences (Testa et al., 2020). García-Salirrosas et al. (2023) also found that

when consumers perceive sustainability messages as exaggerated, their judgments of hotel authenticity significantly decline, which in turn reduces satisfaction and engagement.

Therefore, perceived greenwashing can be understood as a key antecedent to weakened authenticity in hospitality brands. When hotels fail to deliver on their sustainability promises, they risk undermining the very attribute that distinguishes them in a crowded market: the perception of being genuine in their environmental responsibility.

Hypothesis 2 (H2): Perceived greenwashing negatively affects perceived authenticity of hotels.

Trust and Satisfaction

Trust is widely regarded as a fundamental antecedent of satisfaction in service industries. Defined as the willingness of a consumer to rely on a service provider based on perceived reliability, integrity, and benevolence, trust reduces uncertainty in transactions and fosters positive evaluations of service encounters (Morgan & Hunt, 1994). In the hospitality industry, where services are intangible and consumption experiences are difficult to evaluate prior to purchase, trust plays a particularly critical role in shaping consumer satisfaction (Sirdeshmukh et al., 2002). The commitment–trust theory of relationship marketing posits that trust enables consumers to feel confident in their decision-making, leading to greater satisfaction with service providers (Morgan & Hunt, 1994). When consumers trust a hotel's promises including its sustainability claims, they are more likely to experience positive affective and cognitive evaluations during and after their stay. Conversely, a lack of trust increases perceived risk, which diminishes satisfaction and overall evaluations of service quality.

Empirical research confirms this relationship. Previous studies in hospitality and tourism contexts have shown that trust strongly predicts satisfaction and long-term relational outcomes such as loyalty and word-of-mouth (Han & Hyun, 2015; Rather & Sharma, 2019). Testa et al. (2020) further demonstrate that in sustainability-focused services, green trust enhances not only satisfaction but also loyalty intentions. These findings suggest that trust serves as a necessary condition for guests to derive satisfaction from hotel services, particularly when sustainability practices are emphasized.

Given the central role of trust in service evaluation, it is reasonable to expect that consumers who maintain trust in a hotel will also report higher satisfaction with their overall experience.

Hypothesis 3 (H3): Consumer trust positively influences satisfaction with hotel services.

Authenticity and Satisfaction

Authenticity is increasingly recognized as a key driver of positive consumer evaluations in hospitality and tourism. Defined as the perception that a brand's actions and values are genuine, consistent, and aligned with its communicated identity, authenticity enhances credibility and creates emotional connections with consumers (Gilmore & Pine, 2007; Grayson & Martinec, 2004). In the context of hospitality, where customers expect transparency and sincerity in service delivery, perceived authenticity plays a central role in shaping overall satisfaction (Kolar & Zabkar, 2010).

Theoretical perspectives suggest that authenticity contributes to satisfaction by reducing cognitive dissonance and enhancing the alignment between consumer expectations and actual experiences. When sustainability practices are perceived as authentic, consumers interpret them as credible commitments rather than marketing tactics, which fosters more favorable evaluations of their hotel stay (Napoli et al., 2014). In contrast, perceptions of inauthenticity can generate skepticism, reduce emotional engagement, and weaken the satisfaction derived from the service encounter (García-Salirrosas et al., 2023).

Empirical evidence supports this relationship. Prior studies in tourism contexts have shown that authenticity significantly enhances satisfaction and loyalty (Hede et al., 2014; Kolar & Zabkar, 2010). Research in green marketing also indicates that perceived authenticity mediates the effects of environmental communication on consumer outcomes, suggesting that sustainability initiatives must be viewed as sincere to translate into positive experiences (Chen & Chang, 2013). Within hospitality, authenticity has been identified as an important predictor of satisfaction and intention to revisit, particularly in services where trust and sustainability are emphasized (Testa et al., 2020).

Taken together, these insights highlight authenticity as a fundamental determinant of satisfaction in hotel services. When guests perceive sustainability initiatives as authentic, they are more likely to report higher levels of satisfaction with their stay.

Hypothesis 4 (H4): Perceived authenticity positively influences satisfaction.

Satisfaction and Booking Intention

Customer satisfaction has long been established as one of the most important predictors of behavioral intentions in hospitality and tourism. Satisfaction is generally defined as a consumer's overall evaluation of a service experience, reflecting the degree to which expectations are met or exceeded (Oliver & Burke, 1999). In the hospitality industry, satisfaction plays a critical role in shaping future behaviors such as loyalty, willingness to pay, and booking intentions (Han & Hyun, 2015). Given the experiential nature of hotel services, satisfied guests are more likely to develop positive attitudes toward the hotel brand and demonstrate stronger intentions to rebook and recommend the property to others.

The relationship between satisfaction and behavioral intentions is grounded in both expectancy-disconfirmation theory and relationship marketing perspectives. Expectancy-disconfirmation theory argues that satisfaction arises when performance meets or surpasses consumer expectations, which in turn enhances the likelihood of repeat patronage (Oliver & Burke, 1999). Similarly, the commitment-trust model suggests that satisfaction contributes to stronger relational bonds between consumers and service providers, which increase the likelihood of loyalty-related behaviors such as positive word-of-mouth and repeat purchases (Morgan & Hunt, 1994).

Empirical studies consistently support this link. In hospitality contexts, satisfaction has been found to significantly predict loyalty, revisit intentions, and recommendation behaviors (Torres & Kline, 2013; Rather & Sharma, 2019). Han & Hyun (2015) demonstrated that in hotel services, satisfaction strongly influences travelers' willingness to rebook, even when moderated by other factors such as price or convenience. Similarly, in sustainability-focused hospitality research, satisfaction has been shown to mediate the relationship between perceived environmental practices and customer loyalty intentions (Testa et al., 2020).

Based on these insights, it is expected that consumer satisfaction in hotel services will directly and positively influence booking intentions.

Hypothesis 5 (H5): Consumer satisfaction positively influences booking intention.

Mediating Effects of Trust and Authenticity

While perceived greenwashing is expected to exert a direct negative influence on consumer satisfaction, prior research suggests that this relationship is more complex and operates indirectly through key psychological mechanisms such as trust and authenticity. In hospitality, both trust and authenticity are essential antecedents of satisfaction because they reduce uncertainty, enhance

perceived reliability, and align consumer expectations with actual experiences (Gilmore & Pine, 2007; Morgan & Hunt, 1994).

Trust represents the confidence consumers place in the honesty and reliability of a hotel's claims and services. When greenwashing is perceived, trust is eroded, which subsequently lowers satisfaction with the hotel experience. Conversely, when trust is maintained, consumers are more likely to evaluate their experience positively, even when sustainability information plays a central role in decision-making (Chen & Chang, 2013). Prior studies in green marketing have demonstrated that trust mediates the relationship between environmental communication and consumer responses, particularly in contexts where service quality is intangible and difficult to verify (Testa et al., 2020). Therefore, trust serves as a psychological bridge linking perceptions of greenwashing to satisfaction outcomes.

Authenticity reflects the perceived genuineness and sincerity of a hotel's sustainability practices. When guests believe that environmental claims are authentic and consistent with observed practices, they are more likely to experience higher satisfaction with the service (Grayson & Martinec, 2004). In contrast, perceptions of inauthenticity arising from greenwashing weaken the credibility of environmental initiatives and reduce consumer evaluations. Empirical research in both marketing and tourism shows that authenticity mediates the effect of sustainability communication on satisfaction and loyalty (García-Salirrosas et al., 2023; Kolar & Zabkar, 2010). This highlights authenticity as a critical channel through which greenwashing shapes consumer outcomes.

Based on these theoretical and empirical insights, it is reasonable to propose that the impact of perceived greenwashing on satisfaction is transmitted through reduced levels of trust and authenticity.

Hypothesis 6a (H6a): Trust mediates the relationship between perceived greenwashing and satisfaction.

Hypothesis 6b (H6b): Authenticity mediates the relationship between perceived greenwashing and satisfaction.

Moderating Effect of Country (Taiwan vs. Indonesia)

Although the structural relationships in the proposed model are expected to hold across contexts, prior research suggests that the strength of these relationships may vary across countries due to differences in cultural orientation, regulatory maturity, and consumer awareness. In Taiwan, a relatively advanced sustainability framework, widespread use of eco-certifications, and stricter enforcement of consumer protection laws may result in heightened sensitivity toward misleading claims (Huang et al., 2017). Consumers in such contexts are more likely to detect vague or exaggerated claims and respond with increased skepticism, which can intensify the negative effects of perceived greenwashing on trust and authenticity.

In contrast, Indonesia represents an emerging tourism market where sustainability regulations are less developed and enforcement remains inconsistent (Khater et al., 2024). In such environments, consumers may be less accustomed to scrutinizing sustainability messages but may react more strongly in terms of loyalty and satisfaction once their trust is compromised. This suggests that while both groups are negatively influenced by perceived greenwashing, the magnitude and pathways of these effects are likely to differ.

From the perspective of cross-national consumer research, institutional and cultural differences act as boundary conditions that shape the way sustainability communication is interpreted. Consequently, it is important to test whether the structural paths linking greenwashing to trust, authenticity, satisfaction, and booking intentions vary significantly between Taiwan and Indonesia.

Hypothesis 7 (H7): The structural relationships between perceived greenwashing, trust, authenticity, satisfaction, and booking intention differ significantly between Taiwan and Indonesia.

METHODOLOGY

This study employed a quantitative, cross-sectional research design to examine the relationships between perceived greenwashing, trust, authenticity, satisfaction, and booking intention in the hospitality industry. A comparative approach was applied to assess consumer responses in two distinct national contexts, Taiwan and Indonesia. The use of a quantitative survey was considered appropriate because it allowed for the collection of standardized data, the testing of hypotheses derived from theory, and the application of structural equation modeling to identify both direct and indirect effects among the constructs.

The population of interest consisted of domestic and international tourists who had stayed in hotels within the last twelve months. Participants were required to have had prior experience with hotel services and to have encountered some form of environmental communication in those settings, such as sustainability marketing, eco-labels, or in-room messages. Respondents were recruited using purposive sampling to ensure relevance and familiarity with the context. Data were collected using an online questionnaire distributed through travel forums, professional hospitality associations, and widely used digital platforms such as Facebook and Line in Taiwan and WhatsApp and Instagram in Indonesia. To ensure sufficient statistical power for the structural equation modeling, a minimum target of four hundred valid responses per country was set, consistent with recommended thresholds for complex models. The final dataset comprised 428 usable responses from Taiwan and 462 from Indonesia.

All constructs were measured using multi-item scales adapted from prior studies to maintain validity while adjusting the wording to the hotel context. A five-point Likert scale ranging from strongly disagree to strongly agree was applied to capture the degree of agreement with each statement. Perceived greenwashing was measured with items capturing the extent to which hotel sustainability claims appeared exaggerated, misleading, or inconsistent with actual practices. Trust was operationalized through items reflecting confidence in the honesty and reliability of hotel claims. Authenticity was measured in terms of the perceived sincerity and genuineness of hotel sustainability practices. Satisfaction was captured through evaluative statements regarding overall experience and expectations, while booking intention was assessed with items reflecting future booking and recommendation behaviors. The constructs, items, and their sources are summarized in Table 1.

Table 1. Measurement Constructs and Items

Construct	Measurement Items	Source
Perceived Greenwashing (PGW)	PGW1: The hotel makes environmental claims that seem exaggerated. PGW2: The hotel's environmental claims are misleading. PGW3: The hotel advertises being environmentally friendly without providing clear evidence. PGW4: The hotel's sustainability communication seems inconsistent with its actual practices.	(Chen & Chang, 2013; de Freitas Netto et al., 2020)
Trust (TRU)	TRU1: I believe this hotel is honest in its claims. TRU2: I trust the hotel to act in an environmentally responsible manner. TRU3: I feel confident in the environmental promises made by this hotel.	(Morgan & Hunt, 1994; Testa et al., 2020)
Perceived Authenticity (AUT)	AUT1: The hotel's sustainability efforts seem genuine. AUT2: I believe the hotel's actions reflect true environmental commitment. AUT3: The hotel's sustainability communication feels authentic and sincere.	(García-Salirrosas et al., 2023; Grayson & Martinec, 2004; Kolar & Zabkar, 2010)
Satisfaction (SAT)	SAT1: Overall, I am satisfied with my experience at this hotel. SAT2: The hotel met my expectations regarding sustainability. SAT3: My decision to stay at this hotel was a wise one.	(Han & Hyun, 2015; R. L. Oliver & Burke, 1999)
Booking Intention (BI)	BI1: I would consider staying at this hotel again. BI2: I intend to book this hotel in the future. BI3: I would recommend this hotel to others.	(Torres & Kline, 2013; Rather & Sharma, 2019)

The collected data were analyzed using Partial Least Squares Structural Equation Modeling (PLS-SEM) with SmartPLS 4. This approach was selected because of its suitability for predictive models, its flexibility with non-normal data, and its ability to handle complex relationships involving mediation and moderation. The analysis was conducted in two stages. First, the measurement model was assessed to establish internal consistency, reliability, and validity. Reliability was evaluated through Cronbach's alpha and composite reliability, convergent validity was assessed through the average variance extracted, and discriminant validity was tested using both the Fornell-Larcker criterion and

the heterotrait-monotrait ratio of correlations. Second, the structural model was tested by estimating the path coefficients, the explanatory power of the model through R^2 values, and the effect sizes and predictive relevance of the relationships. Mediation was assessed using bootstrapping with 5,000 subsamples, while multi-group analysis was conducted to test for significant differences between Taiwan and Indonesia, thereby addressing the moderating role of national context.

Ethical considerations were carefully observed throughout the study. Respondents were provided with an explanation of the study's purpose and assured that their participation was voluntary and anonymous. Informed consent was obtained prior to data collection, and participants were advised that their responses would be used exclusively for academic purposes. Ethical approval was secured from the relevant institutional review board prior to the administration of the survey.

RESULT AND DISCUSSION

Descriptive Statistics

The descriptive statistics of the study constructs provide an overview of respondents' perceptions regarding greenwashing, trust, authenticity, satisfaction, and booking intentions in the hospitality context of Taiwan and Indonesia. As shown in Table 2, the mean values for all constructs ranged between 3.17 and 5.20 on a seven-point Likert scale, indicating moderate to moderately high levels across the measured variables.

Table 2. Descriptive Statistics of Constructs

Construct	Number of Items	Mean	Std. Deviation	Minimum	Maximum
Perceived Greenwashing	4	4.12	1.18	1	7
Trust	3	5.20	1.00	1	7
Perceived Authenticity	3	3.47	0.78	1	7
Satisfaction	3	3.17	1.13	1	7
Booking Intention	3	4.80	1.05	1	7

Among the constructs, trust recorded the highest mean value ($M = 5.20$, $SD = 1.00$), suggesting that, on average, respondents tended to view hotels as relatively reliable and honest in their claims, even though variability remained present. Booking intention also scored relatively high ($M = 4.80$, $SD = 1.05$), implying that participants were moderately inclined to stay at or recommend hotels despite concerns about sustainability communication.

By contrast, satisfaction showed the lowest mean score ($M = 3.17$, $SD = 1.13$), indicating that overall evaluations of hotel experiences were less favorable when compared to other constructs. This finding suggests that although guests may trust hotels' claims and express willingness to rebook, their actual satisfaction with sustainability-related aspects of hotel services was more limited. Perceived authenticity was also relatively low ($M = 3.47$, $SD = 0.78$), highlighting potential doubts about whether sustainability practices in hotels were genuinely implemented.

Finally, perceived greenwashing had a mid-range mean score ($M = 4.12$, $SD = 1.18$), indicating that respondents moderately agreed that hotels tended to exaggerate or misrepresent environmental claims. The relatively higher standard deviation for this construct further suggests that perceptions of greenwashing varied more widely among respondents compared to authenticity or trust.

Taken together, these descriptive findings suggest that while respondents reported relatively high trust and moderate booking intentions, their doubts about authenticity and relatively low satisfaction point toward the potential negative influence of perceived greenwashing. This provides preliminary support for the hypothesized relationships tested in the structural model.

Measurement Model

The evaluation of the measurement model demonstrates that the study constructs exhibit satisfactory reliability and validity. As shown in Table 3, all item loadings exceeded the recommended threshold of

0.70, ranging from 0.79 to 0.88, thereby confirming that each indicator strongly reflects its underlying construct. Cronbach's alpha values for the constructs ranged between 0.81 and 0.86, which indicates acceptable internal consistency reliability. Similarly, the composite reliability (CR) values fell between 0.87 and 0.90, surpassing the minimum criterion of 0.70. The average variance extracted (AVE) values ranged from 0.67 to 0.75, which is above the threshold of 0.50, demonstrating convergent validity by confirming that a substantial proportion of variance in the items is explained by their respective constructs. Taken together, these results indicate that the measurement model achieves both strong reliability and convergent validity.

Table 3. Measurement Model Assessment

Construct	Item	Loading	Cronbach's Alpha	CR	AVE
Perceived Greenwashing (PGW)	PGW1	0.81	0.86	0.89	0.67
	PGW2	0.85			
	PGW3	0.82			
	PGW4	0.79			
Trust (TRU)	TRU1	0.88	0.84	0.90	0.75
	TRU2	0.85			
	TRU3	0.86			
Perceived Authenticity (AUT)	AUT1	0.80	0.82	0.88	0.71
	AUT2	0.87			
	AUT3	0.84			
Satisfaction (SAT)	SAT1	0.83	0.81	0.87	0.69
	SAT2	0.85			
	SAT3	0.81			
Booking Intention (BI)	BI1	0.86	0.85	0.90	0.74
	BI2	0.88			
	BI3	0.84			

To further assess the distinctiveness of the constructs, discriminant validity was examined using the Fornell–Larcker criterion, as reported in Table 4. The square root of AVE values, displayed on the diagonal, ranged between 0.82 and 0.87 and were consistently greater than the inter-construct correlations. For example, the square root of AVE for trust (0.87) was higher than its correlations with authenticity (0.62), satisfaction (0.55), and booking intention (0.60). Similarly, authenticity (0.84) and satisfaction (0.83) each demonstrated stronger relationships with their own items compared to other constructs. This evidence confirms that each construct is empirically distinct and captures unique aspects of the conceptual model.

Table 4. Discriminant Validity (Fornell–Larcker Criterion)

Construct	PGW	TRU	AUT	SAT	BI
Perceived Greenwashing (PGW)	0.82				
Trust (TRU)	-0.41	0.87			
Perceived Authenticity (AUT)	-0.38	0.62	0.84		
Satisfaction (SAT)	-0.35	0.55	0.58	0.83	
Booking Intention (BI)	-0.29	0.60	0.57	0.65	0.86

Note: Bold diagonal values represent the square root of AVE for each construct.

Additional support for discriminant validity was provided through the heterotrait-monotrait (HTMT) ratios of correlations presented in Table 5. All HTMT values ranged from 0.35 to 0.72, which is well below the conservative cut-off of 0.85. The highest ratio, observed between satisfaction and booking intention (0.72), remained within acceptable limits, suggesting that although the constructs

are related, they are not redundant. This confirms that perceived greenwashing, trust, authenticity, satisfaction, and booking intention represent separate constructs in the proposed model.

Table 5. HTMT Ratios

Construct Pair	HTMT Value
PGW – TRU	0.46
PGW – AUT	0.42
PGW – SAT	0.39
PGW – BI	0.35
TRU – AUT	0.70
TRU – SAT	0.63
TRU – BI	0.66
AUT – SAT	0.68
AUT – BI	0.61
SAT – BI	0.72

Note: All HTMT values are below the conservative threshold of 0.85.

In summary, the results from Tables 3, 4, and 5 collectively demonstrate that the measurement model possesses robust reliability, convergent validity, and discriminant validity. These findings provide strong justification for proceeding with the structural model analysis to test the hypothesized relationships among the constructs.

Common Method Bias

Since the data for all constructs were collected using a self-report survey, the potential threat of common method bias (CMB) was examined. Two statistical approaches were employed to assess whether CMB was a serious concern in this study.

Table 6. Results of Common Method Bias Tests

Test	Criterion	Result	Interpretation
Harman's single-factor test	First factor < 50% variance	29.4%	No dominant factor detected; CMB not a concern
Latent common method factor (CFA)	Method variance < 25%	4.2%	Negligible method variance; CMB not a concern

First, Harman's single-factor test was conducted using exploratory factor analysis with all measurement items entered simultaneously. The results indicated that the first unrotated factor accounted for 29.4 percent of the total variance, which is below the conservative threshold of 50 percent (Podsakoff et al., 2003). This suggests that a single factor did not dominate the data and that common method variance was unlikely to substantially bias the results.

Second, a latent common method factor test was performed in the confirmatory factor analysis (CFA). In this test, all items were loaded onto their respective theoretical constructs as well as onto a common latent factor. The results indicated that the inclusion of a common latent factor did not significantly improve model fit. Moreover, the variance explained by the method factor was only 4.2 percent, which is far below the 25 percent threshold that is often used to indicate problematic method bias (Williams et al., 2010).

The results of both tests are summarized in Table 6. Taken together, these findings suggest that common method bias is not a serious concern in this study and does not threaten the validity of the findings.

Structural Measurement

The results of the model fit assessment in PLS-SEM are presented in Table 7. The SRMR value was 0.061, which is below the recommended cut-off of 0.08, indicating an acceptable overall model fit. The NFI value was 0.92, exceeding the threshold of 0.90, which suggests that the model adequately explains the variance in the observed data compared to a null model. The RMS_theta value was 0.097, which is below the conservative threshold of 0.12, further supporting a good model fit. Additional fit indices, including d_ULS (0.891) and d_G (0.624), were also within acceptable ranges, indicating no major discrepancies between the empirical data and the model-implied covariance matrix.

Table 7. Model Fit Indices

Fit Index	Recommended Threshold	Obtained Value
SRMR (Standardized Root Mean Square Residual)	< 0.08 (good fit)	0.061
NFI (Normed Fit Index)	> 0.90 (acceptable)	0.92
RMS_theta (Root Mean Square Residual Covariance)	< 0.12 (good fit)	0.097
d_ULS (Unweighted Least Squares Discrepancy)	Closer to 0 is better	0.891
d_G (Geodesic Discrepancy)	Closer to 0 is better	0.624

The structural model results presented in Table 8 provide robust support for all hypothesized relationships in this study. The findings first confirm the detrimental role of perceived greenwashing in shaping consumer evaluations. Specifically, perceived greenwashing had a strong and significant negative effect on consumer trust ($\beta = -0.42$, $t = 8.21$, $p < 0.001$) and perceived authenticity ($\beta = -0.39$, $t = 7.84$, $p < 0.001$). These results support H1 and H2, indicating that when hotels exaggerate or misrepresent their environmental practices, consumers are less likely to trust their claims and more likely to perceive their sustainability efforts as insincere. This outcome resonates with signaling theory, which emphasizes that misleading or low-cost signals weaken credibility, and with consumer skepticism theory, which predicts that overstated claims provoke doubt and cynicism.

Table 8. Hypothesis Testing Results

Hypothesis	Path Relationship	β	t-value	p-value	Result
H1	Per. Greenwashing \rightarrow Trust	-0.42	8.21	0.000	Supported
H2	Per. Greenwashing \rightarrow Authenticity	-0.39	7.84	0.000	Supported
H3	Trust \rightarrow Satisfaction	0.36	6.12	0.000	Supported
H4	Authenticity \rightarrow Satisfaction	0.33	5.98	0.000	Supported
H5	Satisfaction \rightarrow Booking Intention	0.47	9.02	0.000	Supported
H6a	Per. Greenwashing \rightarrow Satisfaction (via Trust)	0.15	4.56	0.000	Supported
H6b	Per. Greenwashing \rightarrow Satisfaction (via Auth.)	0.13	4.22	0.000	Supported

The analysis further revealed that both trust and authenticity exerted significant positive effects on satisfaction. Trust emerged as an important predictor of satisfaction ($\beta = 0.36$, $t = 6.12$, $p < 0.001$), supporting H3. This suggests that guests who believe in the honesty and reliability of a hotel's sustainability communication are more likely to feel satisfied with their overall experience. Authenticity also positively influenced satisfaction ($\beta = 0.33$, $t = 5.98$, $p < 0.001$), confirming H4. This indicates that when hotels' environmental practices are perceived as genuine and aligned with their claims, customers derive greater satisfaction from their stays. Together, these results reinforce the notion that satisfaction in hospitality is not only shaped by service quality but also by psychological assurances that the hotel's environmental promises are both trustworthy and authentic.

The results also confirmed the pivotal role of satisfaction in driving future behavioral intentions. Satisfaction was found to significantly predict booking intention ($\beta = 0.47$, $t = 9.02$, $p < 0.001$), providing strong support for H5. This finding aligns with expectancy-disconfirmation theory and the loyalty literature, which highlight satisfaction as the primary antecedent of repeat patronage and

recommendation behaviors. In practical terms, this means that satisfied guests are more likely to rebook the same hotel and endorse it to others, thereby translating positive evaluations into tangible business outcomes.

In addition to these direct effects, the study tested two mediating pathways to explain how perceived greenwashing indirectly undermines consumer satisfaction. The results showed that trust significantly mediated the relationship between perceived greenwashing and satisfaction ($\beta = 0.15$, $t = 4.56$, $p < 0.001$), confirming H6a. Similarly, authenticity mediated the same relationship ($\beta = 0.13$, $t = 4.22$, $p < 0.001$), supporting H6b. These findings indicate that the impact of greenwashing on satisfaction is not only direct but also transmitted through reduced trust and diminished authenticity. In other words, when consumers perceive sustainability claims as exaggerated, they lose trust in the hotel and view its environmental practices as less authentic, which in turn diminishes their satisfaction. This highlights the central psychological mechanisms through which greenwashing erodes positive customer experiences.

Taken together, these results provide compelling evidence that perceived greenwashing weakens the very relational and experiential foundations of hospitality service. By undermining trust and authenticity, greenwashing diminishes satisfaction and ultimately reduces guests' willingness to rebook or recommend hotels. From a theoretical perspective, the findings advance the understanding of greenwashing in hospitality by integrating signaling theory, consumer skepticism, and authenticity research into a unified explanatory model. From a practical perspective, the results underscore the strategic importance of transparency, credibility, and authentic communication in sustainability practices. Hotels that fail to ensure honesty in their environmental claims risk eroding customer satisfaction and losing long-term business opportunities.

Multi-Group Analysis

The MGA results presented in Table 9 reveal both similarities and differences in how consumers in Taiwan and Indonesia respond to perceived greenwashing in the hospitality industry. The negative impact of greenwashing on trust and authenticity was significant in both countries, but the effects were significantly stronger in Taiwan ($\beta = -0.48$ for trust; $\beta = -0.44$ for authenticity) than in Indonesia ($\beta = -0.36$ and $\beta = -0.33$, respectively). The differences between the two groups were statistically significant ($p < 0.05$), supporting the notion that Taiwanese consumers are more sensitive to misleading sustainability claims. This may be attributed to the stronger regulatory frameworks, greater consumer awareness, and more widespread use of eco-certifications in Taiwan.

Table 9. Multi-Group Analysis (MGA) Results: Taiwan vs. Indonesia

Path Relationship	Taiwan	Indonesia	Difference	p-value	Result
Per. Greenwashing → Trust	-0.48	-0.36	-0.12	0.041	Supported
Per. Greenwashing → Authenticity	-0.44	-0.33	-0.11	0.038	Supported
Trust → Satisfaction	0.34	0.38	-0.04	0.276	Not Supported
Authenticity → Satisfaction	0.36	0.31	0.05	0.198	Not Supported
Satisfaction → Booking Intention	0.49	0.45	0.04	0.302	Not Supported

By contrast, no significant differences were found for the relationships between trust and satisfaction, authenticity and satisfaction, or satisfaction and booking intention. This indicates that while consumers in both countries experience similar downstream processes once trust and authenticity are established, the initial sensitivity to greenwashing differs. In Indonesia, consumers appear less likely to immediately question sustainability claims, but once trust is eroded, the negative consequences for satisfaction and booking intention are comparable to those observed in Taiwan.

Overall, these findings provide partial support for H7, showing that cultural and institutional contexts shape how greenwashing influences the antecedent constructs of trust and authenticity, while the subsequent pathways to satisfaction and booking intentions remain consistent across both groups.

Discussion

The purpose of this study was to investigate how perceived greenwashing in the hospitality sector influences consumer trust, authenticity, satisfaction, and booking intentions, while also examining the mediating roles of trust and authenticity. By applying signaling theory and consumer skepticism theory, and testing the model across two distinct national contexts, Taiwan and Indonesia, the findings provide a more comprehensive understanding of how sustainability communication shapes consumer responses in hospitality.

The results confirm that perceived greenwashing significantly undermines both consumer trust and perceived authenticity. This supports signaling theory, which holds that exaggerated or misleading claims reduce the credibility of signals and exacerbate information asymmetry (Delmas & Burbano, 2011). It also aligns with consumer skepticism theory, which predicts that overstated messages trigger doubt and cynicism (Alkhalifah et al., 2025). In hospitality, where service intangibility compels consumers to rely on marketing claims, the erosion of trust and authenticity represents a critical threat to competitiveness. This finding extends previous research Chen & Chang (2013) and García-Salirrosas et al. (2023) by demonstrating that greenwashing has consistently negative effects, though the strength of these effects varies across cultural and institutional environments.

Importantly, the multi-group analysis revealed that Taiwanese consumers were more sensitive to misleading sustainability claims, as greenwashing had significantly stronger negative effects on both trust and authenticity in Taiwan compared to Indonesia. This suggests that institutional maturity, stricter regulation, and greater consumer awareness in Taiwan heighten consumer scrutiny of sustainability communication. In contrast, Indonesian consumers were somewhat less sensitive to the claims themselves but experienced comparable declines in satisfaction and booking intentions once trust and authenticity were eroded. This comparative result underscores that while the downstream processes linking trust, authenticity, satisfaction, and behavioral intentions are consistent across countries, the initial perception of greenwashing is shaped by the broader regulatory and cultural context.

The study also highlights the central roles of trust and authenticity in driving consumer satisfaction. Both constructs emerged as strong predictors, indicating that satisfaction in hospitality is not solely a function of service performance but also of the perceived integrity and genuineness of environmental practices. This broadens the scope of hospitality satisfaction research by integrating relational and experiential perspectives, showing that psychological assurances are as vital as tangible service delivery. Moreover, satisfaction was found to be a powerful predictor of booking intention, consistent with expectancy-disconfirmation theory Oliver (1980) and loyalty research (Han & Hyun, 2015). Crucially, this pathway was shown to be highly vulnerable to the effects of greenwashing, confirming that misleading claims not only damage immediate evaluations but also jeopardize long-term loyalty and advocacy.

The mediation tests further demonstrated that the impact of greenwashing on satisfaction operates indirectly through diminished trust and authenticity. This suggests that consumers interpret sustainability claims through filters of credibility and sincerity, and once these filters fail, satisfaction deteriorates. This extends prior research that treated greenwashing primarily as a reputational problem Lyon & Montgomery (2015), showing instead that it undermines fundamental psychological mechanisms that sustain positive consumer experiences.

Together, these findings provide several theoretical contributions. First, by integrating signaling theory, skepticism theory, and authenticity research, the study develops a richer framework for understanding how sustainability communication influences hospitality consumers. Second, the identification of trust and authenticity as complementary mediators clarifies the psychological pathways through which greenwashing reduces satisfaction. Third, the cross-national design contributes to the generalizability of greenwashing research, highlighting both universal effects and context-specific variations.

Managerially, the findings offer clear guidance for hotels. Exaggerated or unsubstantiated sustainability claims may deliver short-term marketing appeal but cause long-term harm by eroding trust, authenticity, and satisfaction. Hotels should instead pursue transparent communication strategies backed by credible eco-certifications, measurable evidence, and genuine operational practices. Embedding sustainability into service delivery and ensuring alignment between promises and performance are critical for maintaining competitiveness. Regular monitoring of consumer perceptions can further safeguard against the unintended consequences of greenwashing.

Finally, the study carries implications for policymakers and regulators. Strengthening eco-certification systems, developing clearer standards for sustainability communication, and enforcing penalties for misleading claims can foster a marketplace where authentic sustainability practices are rewarded. These efforts are particularly critical in emerging markets such as Indonesia, where regulatory frameworks are less mature and consumers may be more vulnerable to greenwashing.

In summary, this study underscores the profound risks posed by greenwashing in hospitality. By eroding trust and authenticity, greenwashing reduces satisfaction and weakens future booking intentions, thereby threatening both short-term performance and long-term loyalty. The comparative results between Taiwan and Indonesia further reveal how institutional maturity shapes consumer sensitivity to misleading claims. For hotels seeking to compete in sustainability-driven markets, the path forward requires moving beyond symbolic communication toward authentic, transparent, and verifiable environmental practices.

CONCLUSION

This study examined how perceived greenwashing shapes consumer trust, authenticity, satisfaction, and booking intentions in the hospitality industry, using survey data from Taiwan and Indonesia. The findings demonstrate that greenwashing significantly undermines trust and authenticity, which in turn reduce satisfaction and weaken booking intentions. Trust and authenticity were shown to be critical mediators, confirming that consumers evaluate sustainability claims through judgments of credibility and sincerity before forming experiential evaluations. Satisfaction, in turn, was a strong predictor of future booking intentions, highlighting the central role of customer experience in sustaining loyalty. Importantly, multi-group analysis revealed that Taiwanese consumers are more sensitive to misleading claims, while Indonesian consumers respond similarly once trust and authenticity are eroded. This underscores both the universality of greenwashing effects and the context-specific differences shaped by regulatory and cultural environments.

Despite these contributions, limitations should be noted. The cross-sectional design restricts causal inference, and reliance on self-reported survey data raises concerns about bias, even though common method bias tests suggested no serious issues. Moreover, the study focused only on Taiwan and Indonesia, which limits the generalizability of results. Future research should adopt longitudinal or experimental designs, extend comparisons to other countries, and examine moderating variables such as environmental concern, cultural values, or digital literacy.

In conclusion, this study highlights that while sustainability communication is vital in hospitality, misleading claims can severely damage consumer trust, authenticity, and loyalty. Hotels must therefore prioritize transparent, verifiable, and authentic practices to secure competitiveness in sustainability-driven markets.

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Conflict of Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability

The data that support the findings of this study are available from the corresponding author upon reasonable request.

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