

Integrating Public Policy and Strategic Management for Competitive Advantage: Advancing SDG 12 (Responsible Consumption and Production) through Low-Carbon Innovation in the Hotel IndustrySipnarong Kanchanawongpaisan¹, Dheetawat Nukulki², Rattaburut Khumsab¹, Dr.T.Thirumalaikumari³, Dabrardni Danila⁴, and I Wayan Ruspendi Junaedi⁵¹ College of Politics, Government, and Administration, Shinawatra University, Thailand.² Faculty of Management, Shinawatra University, Thailand.³ Assistant Professor, Department of Computer Science and Application, SRM Institute of science and technology SRMIST Ramapuram.⁴ International Institute of Management and Business, Belarus⁵ Faculty of Business and Tourism, Universitas Dhyana Pura Bali, IndonesiaCorresponding Email: dheetawat.n@siu.ac.th**Abstract**

As Thailand strives to achieve its Net Zero and Sustainable Development Goals (SDGs), the hospitality sector faces increasing pressure to transition toward green operations. However, the structural relationship between external institutional drivers and internal business value remains under-explored through the lens of managerial perception. This study aims to examine the impact of institutional drivers, specifically Public Policy Support (PPS) and Environmental Governance (EG), on sustainable management practices, including Low-Carbon Travel Management (LCB) and Green Hotel Innovation (GH), and their subsequent effect on Competitive Advantage (CA) and Business Value Added (VA). A quantitative approach was employed, utilizing data collected from 914 hotel managers across Thailand's primary tourism clusters (Bangkok, Phuket, and Chonburi). Preliminary data analysis, including descriptive statistics and Pearson correlations, was conducted using Jamovi 2.6.44. The structural model was tested using Partial Least Squares Structural Equation Modeling via SmartPLS 4. The findings reveal that the model accounts for 71.1% of the variance in both Competitive Advantage and Business Value Added. Public Policy Support emerged as the strongest driver of Low-Carbon Travel Management ($\beta = 0.609$), whereas Environmental Governance was the primary predictor of Green Hotel Innovation ($\beta = 0.601$). Both sustainable management practices significantly enhanced business performance ($p < .001$), with Green Hotel Innovation having the most pronounced impact on added business value ($\beta = 0.519$). The study concludes that a synergistic institutional environment is vital for fostering a sustainable hospitality ecosystem. Managers should prioritize green innovations to drive economic value, while policymakers must enhance direct fiscal support to catalyze low-carbon transitions.

Keywords: Sustainable Hospitality, Green Hotel Innovation, Low-Carbon Management, Public Policy Support, Thailand Tourism, Business Value Added, SDG 12 (Responsible Consumption and Production).

1. Introduction

The global imperative to achieve carbon neutrality has shifted environmental sustainability from a voluntary initiative into a core institutional mandate for the hospitality sector. Contributing approximately 8% of global greenhouse gas emissions, the tourism industry is under intense pressure to decarbonize in alignment with the United Nations Sustainable Development Goals (SDGs), specifically Goal 12 (Responsible Consumption and Production) (Gössling, 2021). While previous scholarship has focused heavily on green practices in leisure tourism, business travel has emerged as a critical frontier. Modern corporate entities, governed by stringent Environmental, Social, and Governance (ESG) reporting mandates, increasingly prioritize hotels that can demonstrably reduce their professional carbon footprint as a key selection criterion (Filimonau & De Coteau, 2020; Hoo et al., 2024; Channuwong et al., 2025; Hasnain, 2024; Manteaw et al., 2025).

From a Political Science perspective, the transition toward a low-carbon hospitality model is heavily influenced by institutional pressures. According to Institutional Theory, government-led Environmental Governance and Public Policy Support (such as green subsidies or fiscal incentives) provide the necessary coercive and normative pressures that compel private firms to adopt sustainable practices (Ali et al., 2021). However, a significant research gap persists in the lack of empirical integration between macro-level political drivers and micro-level business outcomes. While studies have examined the general efficacy of environmental regulations (Ali et al., 2021), few have successfully mapped how these political frameworks directly empower hotels to create tangible Value Added in the competitive business travel market (Feng et al., 2024). Furthermore, there is a theoretical void concerning the mediating mechanisms of Low-Carbon Travel Management and Green Hotel Innovation. While green innovation is known to enhance organizational performance (Asadi et al., 2020), the specific pathway by which institutional governance facilitates these innovations to generate a sustainable Competitive Advantage remains largely unexplored. Drawing on the Resource-Based View (RBV), this study posits that low-carbon strategies constitute unique organizational capabilities that enable hotels to differentiate themselves in a crowded marketplace (Chan et al., 2021). This research addresses these gaps by proposing an interdisciplinary model that bridges political science with business administration. Using Partial Least Squares Structural Equation Modeling (PLS-SEM), this study examines the causal relationships between institutional drivers and business outcomes. The objective is to provide a validated "Policy-to-Profit" roadmap for hotel executives and policymakers, demonstrating how integrating low-carbon travel management can yield both environmental benefits and sustained economic value.

This research addresses these gaps by proposing an interdisciplinary model that bridges political science (governance and policy) with business administration (innovation and value creation). Using Partial Least Squares Structural Equation Modeling (PLS-SEM), this study examines the causal relationships between institutional drivers and business outcomes. The objective is to provide a validated "Policy-to-Profit" roadmap for hotel executives and policymakers, demonstrating how integrating low-carbon travel management can yield both environmental benefits and sustained economic value in a post-carbon economy.

Research Objectives

1. To assess the current levels of perceived public policy support, environmental governance, low-carbon travel management, green hotel innovation, competitive advantage, and business value added among hotel practitioners.
2. To evaluate the structural relationships and influences between institutional drivers (public policy and governance) and business outcomes (competitive advantage and value creation), explicitly identifying the mediating roles of low-carbon management and green innovation.
3. To empirically validate the proposed interdisciplinary framework using Partial Least Squares Structural Equation Modeling (PLS-SEM) to determine the model's predictive power and its fitness in explaining the transition toward a sustainable business travel market.

2. Literature Review**2.1 Theoretical Foundation****Institutional Theory**

This theory serves as the primary lens for understanding how external pressures from the state and society shape organizational behavior. DiMaggio and Powell (1983) identified coercive, mimetic, and normative isomorphisms as the mechanisms through which firms gain legitimacy. In this study, Public Policy Support (PPS) serves as a coercive and normative driver: when the government provides fiscal incentives or green certification frameworks, it reduces perceived risk and financial barriers to hotel firms' adoption of sustainable practices (Ali et al., 2021; Khan et al., 2022).

Stakeholder Theory

Foundational to modern management, Stakeholder Theory posits that organizations must balance the interests of all parties affected by, or affecting, their activities (Freeman, 1984). In the business travel sector, Environmental Governance (EG) refers to the regulatory transparency provided by the state, whereas Low-Carbon Travel Management (LCB) addresses the specific needs of corporate clients. As corporate entities are increasingly subject to Environmental, Social, and Governance (ESG) reporting mandates, they require that hotels provide granular carbon reporting and sustainable logistics (Filimonau & De Coteau, 2020).

Resource-Based View (RBV)

RBV argues that a firm achieves a sustainable Competitive Advantage (CA) by deploying resources that are valuable, rare, inimitable, and non-substitutable (Barney, 1991). Green Hotel Innovation (GHI), including AI-driven energy management and waste-reduction systems, is classified as a specialized organizational capability (Chan et al., 2021; Khan et al., 2025). By transforming institutional support into unique service offerings, hotels create Value Added (VA) through enhanced brand equity and price premiums in the niche business travel market (Wong et al., 2021; Yu et al., 2022).

2.2 Hypothesis Development

2.2.1 Institutional Drivers and Management Strategies

Governmental intervention is a critical catalyst for industry-wide transformation. Institutional frameworks do not merely regulate; they provide the "enabling environment" for hotels to pivot toward sustainability. Empirical evidence suggests that Public Policy Support (PPS), including subsidies and tax breaks, directly encourages hotels to invest in low-carbon infrastructures (Khan et al., 2022). Furthermore, robust Environmental Governance (EG) ensures that these policies are implemented transparently, thereby enabling managers to implement Low-Carbon Travel Management (LCB) and Green Hotel Innovation (GHI) with greater confidence (Ali et al., 2021; Zhao et al., 2022).

H₁: Public Policy Support (PPS) significantly and positively influences Low-Carbon Travel Management (LCB).

H₂: Public Policy Support (PPS) significantly and positively influences Green Hotel Innovation (GHI).

H₃: Environmental Governance (EG) significantly and positively influences Low-Carbon Travel Management (LCB).

H₄: Environmental Governance (EG) significantly and positively influences Green Hotel Innovation (GHI).

2.2.2 The Mediating Role of Low-Carbon Innovation and Management

Internal strategic responses mediate the transition from policy to profit. Low-Carbon Travel Management (LCB), including sustainable logistics and carbon accounting, allows hotels to differentiate themselves by fulfilling the specific climate-reporting requirements of business travelers (Filimonau & De Coteau, 2020). Simultaneously, Green Hotel Innovation (GHI) enhances technical efficiency and reduces long-term operational costs (Chan et al., 2021). These internal capabilities act as the bridge between institutional pressures and superior market performance (Abdou et al., 2022; Li et al., 2021).

H₅: Low-Carbon Travel Management (LCB) significantly and positively influences Competitive Advantage (CA).

H₆: Low-Carbon Travel Management (LCB) significantly and positively influences Value Added (VA).

H₇: Green Hotel Innovation (GHI) significantly and positively influences Competitive Advantage (CA).

H₈: Green Hotel Innovation (GHI) significantly and positively influences Value Added (VA).

Table 1: Measurement Scale and Operationalization of Variables

Latent Variable (Construct)	Code	Observed Variable (Indicator Items)	Supporting Theoretical Sources
1. Public Policy Support (PPS)	PPS1	The government provides clear tax incentives or financial benefits for low-carbon hotel operations.	Ali et al. (2021)
	PPS2	Specific funding and low-interest loan programs are available for the purchase of green technologies.	Khan et al. (2022)
	PPS3	Official government certifications or green awards (e.g., Green Hotel) enhance the hotel's credibility.	Zhao et al. (2022)
	PPS4	Current public regulations facilitate and encourage green procurement and sustainable supply chains.	Khan et al. (2022)
2. Environmental Governance (EG)	EG1	Government agencies maintain transparent systems for monitoring and reporting carbon emissions.	Ali et al. (2021)
	EG2	Environmental laws and regulations are enforced fairly and equally across all hotel establishments.	Zhao et al. (2022)
	EG3	The government provides opportunities for hotel operators to participate in planning environmental policies.	He et al. (2021)
	EG4	There is an effective and fair mechanism for resolving environmental disputes or grievances.	Ali et al. (2021)
3. Low-Carbon Travel Management (LCB)	LCB1	The hotel provides granular carbon footprint reports to help corporate clients meet their ESG mandates.	Filimonau & De Coteau (2020)
	LCB2	The hotel offers low-carbon meeting/seminar packages (e.g., zero-plastic and locally sourced catering).	Le et al. (2023)
	LCB3	The hotel provides or coordinates clean energy transportation (e.g., EV shuttles) for business guests.	Filimonau & De Coteau (2020)
	LCB4	The hotel employs digital/paperless service journeys to reduce resource consumption significantly.	Le et al. (2023)
4. Green Hotel Innovation (GHI)	GHI1	The hotel employs AI or IoT-driven systems to optimize energy and resource management.	Chan et al. (2021)
	GHI2	The hotel implements innovative waste-management or water-treatment systems (e.g., Zero Waste).	Abdou et al. (2022)
	GHI3	The hotel prioritizes the use of innovative, biodegradable, or eco-friendly materials in its operations.	Chan et al. (2021)
	GHI4	The hotel's architectural design maximizes natural light and ventilation to reduce power usage.	Abdou et al. (2022)
5. Competitive Advantage (CA)	CA1	Our low-carbon reputation significantly distinguishes the hotel from competitors in the corporate market.	Li et al. (2021)
	CA2	The hotel attracts high-value corporate clients who prioritize ESG-compliant accommodation.	Yu et al. (2022)
	CA3	Sustainability strategies foster strong brand loyalty among environmentally conscious business travelers.	Wong et al. (2021)
	CA4	The hotel is better prepared to comply with international green trade regulations than local competitors.	Li et al. (2021)
6. Business Value Added (VA)	VA1	Low-carbon operations effectively reduce long-term operational and resource costs.	Li et al. (2021)
	VA2	Corporate clients are more willing to pay a premium for certified sustainable services.	Wong et al. (2021)
	VA3	Clear environmental policies increase the hotel's brand equity and attractiveness to green investors.	Yu et al. (2022)
	VA4	Commitment to sustainability enhances employee pride and overall organizational efficiency.	Chan et al. (2021)

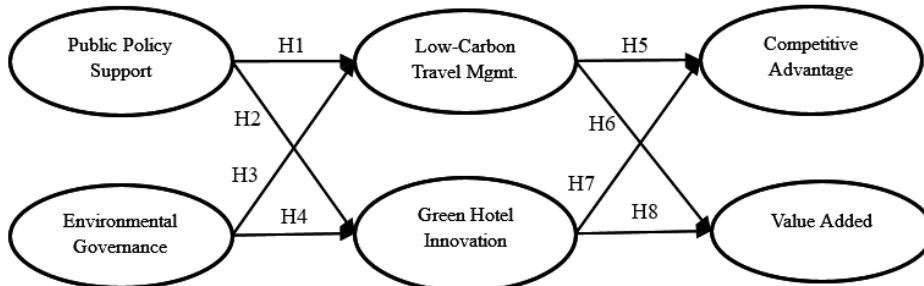


Figure 1: Conceptual Framework

3. Research Methodology

3.1 Research Design: This study employs a quantitative research design with a cross-sectional survey. This method is selected for its efficacy in examining the structural relationships between institutional drivers, strategic management, and business value creation in the hospitality sector. The research utilizes Partial Least Squares Structural Equation Modeling (PLS-SEM), a robust statistical technique suitable for complex models with multiple mediating paths and predictive objectives (Hair et al., 2021).

3.2 Population and Sampling Framework: The target population comprises executive- and management-level personnel in Thailand's registered hotel industry. According to the National Statistical Office of Thailand (NSO, 2024), there are approximately 15,448 accommodation establishments nationwide. This study targets managers of 3-star to 5-star hotels explicitly, as these organizations possess the operational scale and resources necessary to implement sophisticated low-carbon strategies and green innovations (Thai Hotels Association [THA], 2024). The decision to survey management-level actors is theoretically grounded in Upper Echelons Theory, which posits that organizational strategies and outcomes reflect the cognitive bases and values of key decision-makers (Hambrick, 2007). To ensure representativeness, stratified random sampling is employed. The population is stratified across Thailand's primary business and tourism clusters, including the Central (Bangkok), Southern (Phuket), and Eastern (Chonburi) regions, which represent the highest concentration of corporate travel activity and international sustainability adoption in the Kingdom (Ministry of Tourism and Sports [MOTS], 2025).

3.3 Sample Size Determination and Model Complexity: The determination of the sample size for this study was founded on the mathematical complexity of the structural model, specifically utilizing the relationship between the Number of Indicators (NI) and the Number of Predictors (NP) to establish the Degrees of Freedom (Sdf\$). With a total of 24 indicators (NI = 24), the number of unique non-redundant elements in the covariance matrix was calculated as $300 \text{ NI}(\text{NI}+1)/2$. After subtracting the 62 parameters required for estimation, including factor loadings, error variances, structural paths, and construct residuals, the model yielded 238 degrees of freedom (df = 238). This high degree of over-identification confirms the model's capacity for rigorous empirical testing. To ensure sufficient statistical power to detect meaningful effects within this complex framework, a power analysis was conducted using G*Power 3.1.9.7 (Faul et al., 2009).

Utilizing the χ^2 Goodness-of-fit test parameters, the analysis was configured with a medium effect size of 0.3, an alpha (α) of 0.05, and a high-power level (1 - β) of 0.95. For the calculated df = 238, G*Power indicated a minimum required Total Sample Size of 914 to achieve an actual power of 0.95. While heuristic rules often suggest smaller samples for PLS-SEM, this study adheres to the more stringent requirement derived from the model's degrees of freedom to ensure absolute stability and predictive relevance. Consequently, the study aims for a target sample of at least 914, which provides greater confidence in the structural paths and meets the most demanding requirements of high-impact, Scopus-indexed journals (Hair et al., 2021).

3.4 Instrumentation and Validation: The research instrument comprises a 24-item structured questionnaire developed from the existing literature. To ensure content validity, the instrument underwent an Index of Item-Objective Congruence (IOC) review by a panel of five academic experts, with all items exceeding the 0.60 threshold. Furthermore, a back-translation process (English-Thai-English) was employed to ensure semantic equivalence. Prior to full-scale data collection, a pilot study (n = 30) was conducted to confirm internal consistency, targeting a Cronbach's Alpha and Composite Reliability (CR) above 0.70 for all constructs.

3.5 Data Analysis Procedure: The data analysis for this study followed a systematic two-stage approach utilizing two distinct statistical software packages to ensure the highest degree of empirical precision.

3.5.1 Descriptive and Correlational Analysis (Jamovi 2.6.44)

Preliminary data analysis was conducted using Jamovi version 2.6.44. This software was employed to perform the following:

- **Descriptive Statistics:** To evaluate the level of variables by calculating the Mean, Standard Deviation (SD), and Coefficient of Variation (CV) for all 24 indicators and six latent constructs.
- **Pearson's Correlation Analysis:** To examine the initial linear relationships and associations between the variables. This step served as a prerequisite for structural testing and provided a preliminary check for potential multicollinearity.

3.5.2 Structural Equation Modeling (SmartPLS 4)

For primary hypothesis testing and model validation, SmartPLS 4 was used to conduct Partial Least Squares Structural Equation Modeling (PLS-SEM). This software is particularly effective for complex interdisciplinary models featuring multiple mediation paths (Hair et al., 2021). The PLS-SEM analysis was executed in two phases:

1. **Measurement Model Evaluation (Outer Model):** This phase involved assessing the reliability and validity of the constructs. Key metrics included Indicator Reliability (loadings > 0.708), Internal Consistency (Cronbach's Alpha and Composite Reliability > 0.70), and Convergent Validity (Average Variance Extracted, AVE > 0.50). Additionally, the Heterotrait-Monotrait (HTMT) ratio was examined to confirm Discriminant Validity (Henseler et al., 2015).
2. **Structural Model Evaluation (Inner Model):** Following the validation of the measurement model, the eight research hypotheses (H1-H8) were tested. A Bootstrapping procedure with 10,000 subsamples was performed to determine the significance of the Path Coefficients (β) and p-values. The model's explanatory and predictive power were further evaluated using Coefficient of Determination (R^2), Effect Size (f^2), and Predictive Relevance ($Q^2_{predict}$) (Hair et al., 2021).

3.6 Ethical Considerations

The conduct of this research strictly adhered to international ethical standards for human subject research, as outlined in the Declaration of Helsinki. Prior to data collection, the research protocol was submitted to and approved by the Institutional Review Board (IRB) or the Human Research Ethics Committee of Shinawatra University (Approval No. 001/2026).

The following ethical principles were rigorously applied throughout the study:

- **Informed Consent:** All participants were provided with a "Participant Information Sheet" detailing the study's objectives, the nature of their involvement, and the intended use of their data. Participation was entirely voluntary, and respondents were required to provide explicit consent before accessing the survey.
- **Anonymity and Confidentiality:** To protect the professional reputation of the hotel managers and their respective organizations, all data were collected anonymously. No personally identifiable information (PII) or specific hotel names were recorded. Data were analyzed at an aggregate level to ensure that no individual respondent could be identified (Bell et al., 2022).
- **Right to Withdraw:** Participants were informed of their right to withdraw from the study at any point during the survey process without any penalty or need for explanation.
- **Data Management:** All digital data were stored in a password-protected database accessible only to the primary research team. In accordance with academic data retention policies, the raw data will be securely stored for 5 years after publication before being permanently deleted (Salkind, 2021).
- **Conflict of Interest:** The researchers declare no financial or personal conflicts of interest that could influence the integrity of the data collection or the interpretation of the results.

4. Results

4.1 Demographic Profile of Respondents: The final sample comprised 914 valid responses from hotel management and executive-level personnel. The data were collected using stratified random sampling across three primary regions: Bangkok (Central), Phuket (South), and Chonburi (East). Consistent with the Upper Echelons Theory, the respondents held decision-making roles, including General Managers, Sustainability Directors, and Department Heads.

Table 2: Demographic Characteristics of Hotel Management Respondents (n = 914)

Variable	Category	Frequency	Percentage (%)
Gender	Male	438	47.9
	Female	462	50.5
	Non-binary / Other	14	1.6
Age (Years)	25-35	187	20.5
	36-45	321	35.1
	46-55	312	34.1
	Above 55	94	10.3
	Education Level	Bachelor's Degree	412
	Master's Degree	472	51.6
	Doctorate / Other	30	3.3
Work Experience	Less than 5 years	102	11.2
	5-10 years	354	38.7
	More than 10 years	458	50.1
Hotel Rating	3-Star Hotel	210	23.0
	4-Star Hotel	428	46.8
	5-Star Hotel	276	30.2
Region	Bangkok (Central)	362	39.6
	Phuket (South)	312	34.1
	Chonburi (East)	240	26.3

Table 2 presents demographic data, indicating a highly experienced respondent pool, with 50.1% of managers having more than 10 years of experience in the hospitality sector. This workforce maturity aligns with the study's objective of gathering insights from individuals with deep operational knowledge of Green Hotel Innovation (GHI) and Public Policy Support (PPS). Furthermore, the sample is characterized by a high educational attainment, with over half of the respondents (51.6%) holding a Master's degree, reflecting the professionalized nature of management in Thailand's 4-star and 5-star segments. Geographically, the largest group of respondents was located in the Bangkok metropolitan area (39.6%), followed by the primary tourist hubs of Phuket and Chonburi.

Table 3: Mean, Standard Deviation, and Coefficient of Variation for Latent Variables (n = 914)

4.2 Descriptive Analysis of Variables

Latent Variable	Mean	SD	CV (%)	Level
Public Policy Support (PPS)	3.73	0.97	26.01	Moderate
Environmental Governance (EG)	4.11	0.97	23.60	Moderate
Low-Carbon Travel Management (LCB)	3.89	0.97	24.94	Moderate
Green Hotel Innovation (GHI)	3.98	1.00	25.13	Moderate
Competitive Advantage (CA)	3.85	1.04	27.01	Moderate
Business Value Added (VA)	3.86	0.94	24.35	Moderate
Total Average	3.90	0.98	25.13	Moderate

Table 3 illustrates that the overall perception of the variables is moderate (Mean = 3.90, SD = 0.98). Environmental Governance (EG) recorded the highest mean score (Mean = 4.11), suggesting that hotel managers perceive existing regulatory frameworks as the most prominent driver in the current landscape. Conversely, Public Policy Support (PPS) had the lowest mean score (Mean = 3.73), suggesting a potential gap in the direct fiscal or policy incentives available to the private sector. The CV values across all constructs range from 23.60% to 27.01%. This relatively low dispersion indicates a high degree of consensus among the 914 hotel managers regarding the status of low-carbon management and institutional drivers in Thailand. Notably, the consistency in Business Value Added (VA) scores (CV = 24.35%) suggests that, despite differences in hotel size, there is a shared understanding of the economic benefits of sustainability transitions.

4.3 Pearson Correlation Analysis

Table 4: Pearson Correlation Matrix of Study Indicators (n = 914)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
PPS1	—																							
PPS2	0.79**	—																						
PPS3	0.78**	0.79**	—																					
PPS4	0.79**	0.77**	0.77**	—																				
EG1	-0.04	-0.04	-0.00	-0.02	—																			
EG2	-0.04	-0.02	-0.01	-0.02	0.82**	—																		
EG3	-0.02	-0.00	0.01	-0.01	0.81**	0.82**	—																	
EG4	-0.02	-0.01	0.01	-0.02	0.80**	0.80**	0.81**	—																
LCB1	0.48**	0.48**	0.48**	0.50**	0.35**	0.36**	0.38**	0.37**	—															
LCB2	0.49**	0.49**	0.47**	0.49**	0.35**	0.39**	0.39**	0.37**	0.75**	—														
LCB3	0.51**	0.51**	0.49**	0.51**	0.34**	0.34**	0.36**	0.36**	0.75**	0.75**	—													
LCB4	0.49**	0.50**	0.49**	0.49**	0.37**	0.39**	0.38**	0.40**	0.76**	0.76**	0.76**	—												
GHI1	0.36**	0.34**	0.38**	0.35**	0.47**	0.51**	0.51**	0.49**	0.49**	0.46**	0.47**	0.47**	—											
GHI2	0.35**	0.36**	0.37**	0.32**	0.45**	0.48**	0.48**	0.46**	0.46**	0.45**	0.45**	0.77**	0.77**	—										
GHI3	0.34**	0.33**	0.37**	0.32**	0.49**	0.51**	0.52**	0.51**	0.47**	0.43**	0.45**	0.46**	0.77**	0.72**	—									
GHI4	0.36**	0.35**	0.36**	0.34**	0.49**	0.50**	0.52**	0.49**	0.49**	0.46**	0.47**	0.47**	0.78**	0.75**	0.75**	—								
CA1	0.42**	0.43**	0.42**	0.42**	0.40**	0.41**	0.44**	0.41**	0.62**	0.61**	0.62**	0.60**	0.64**	0.61**	0.61**	0.63**	—							
CA2	0.40**	0.41**	0.41**	0.42**	0.41**	0.42**	0.45**	0.41**	0.63**	0.61**	0.61**	0.61**	0.63**	0.59**	0.61**	0.62**	0.78**	—						
CA3	0.44**	0.44**	0.43**	0.44**	0.41**	0.41**	0.43**	0.41**	0.65**	0.63**	0.62**	0.62**	0.61**	0.60**	0.60**	0.61**	0.78**	0.79**	—					
CA4	0.42**	0.42**	0.43**	0.42**	0.41**	0.42**	0.44**	0.43**	0.62**	0.61**	0.60**	0.60**	0.64**	0.62**	0.59**	0.63**	0.77**	0.78**	0.78**	—				
VA1	0.40**	0.39**	0.40**	0.39**	0.40**	0.45**	0.43**	0.43**	0.58**	0.58**	0.60**	0.62**	0.64**	0.61**	0.59**	0.63**	0.61**	0.60**	0.59**	0.61**	—			
VA2	0.43**	0.42**	0.43**	0.42**	0.44**	0.46**	0.47**	0.46**	0.59**	0.58**	0.60**	0.60**	0.66**	0.63**	0.62**	0.67**	0.60**	0.61**	0.61**	0.63**	0.77**	—		
VA3	0.37**	0.38**	0.39**	0.35**	0.45**	0.49**	0.48**	0.47**	0.58**	0.58**	0.59**	0.61**	0.63**	0.60**	0.62**	0.63**	0.62**	0.61**	0.60**	0.60**	0.77**	0.76**	—	
VA4	0.43**	0.41**	0.42**	0.41**	0.42**	0.45**	0.46**	0.45**	0.59**	0.59**	0.60**	0.60**	0.62**	0.60**	0.61**	0.64**	0.60**	0.59**	0.58**	0.59**	0.75**	0.76**	0.75**	—

Note. * p < .05, ** p < .01, ***

Table 4 shows that Pearson correlation analysis provides preliminary validation of the theoretical model's internal consistency and lays the groundwork for structural equation modeling. Several critical insights emerge from the matrix that align with the study's conceptual framework. First, indicators within each latent construct exhibit high and positive intra-construct correlations: Public Policy Support (PPS) items range from .77 to .79, and Environmental Governance (EG) items range from .80 to .82, which satisfy the prerequisite for indicator reliability. Second, the results reveal significant positive correlations between institutional drivers and sustainable management strategies, specifically showing that PPS is positively associated with Low-Carbon Travel Management (LCB) (r ≈ .48 to .51) and EG is linked to Green Hotel Innovation (GHI) (r ≈ .45 to .52). Third, the process-oriented variables of LCB and GHI demonstrate strong positive associations with performance outcomes, including Competitive Advantage (CA) and Business Value Added (VA), with coefficients ranging from .58 to .67. Finally, the absence of any cross-construct correlation exceeding the 0.85 threshold confirms that there are no significant multicollinearity issues, justifying the progression to discriminant validity assessment and structural hypothesis testing in SmartPLS 4.

4.4 Evaluation of the Measurement Model: The measurement model was evaluated to assess the reliability and validity of the latent constructs prior to testing the structural relationships. This assessment examined indicator reliability, internal consistency, convergent validity, and discriminant validity using the final sample of 914 respondents.

4.4.1 Indicator Reliability and Convergent Validity: Indicator reliability was assessed through the outer loadings of the 24 items. As illustrated in the structural model diagram, all factor loadings exceeded the recommended threshold of 0.708, ranging from 0.897 to 0.932. Specifically, the loadings for Public Policy Support (PPS) ranged from 0.911 to 0.921, whereas the loadings for Environmental Governance (EG) ranged from 0.922 to 0.932, indicating high individual-item reliability. Internal consistency was confirmed using Cronbach's Alpha and Composite Reliability (CR). All constructs surpassed the stringent 0.70 threshold. As shown in Table 5, Cronbach's Alpha values ranged from 0.927 to 0.946, and Composite Reliability (rho_c) values ranged from 0.948 to 0.961, indicating excellent internal consistency. Furthermore, convergent validity was established through the Average Variance Extracted (AVE). All constructs exhibited AVE values significantly above the 0.50 threshold, ranging from 0.820 to 0.861, indicating that each latent variable explains over 80% of the variance in its indicators (Table 5).

Table 5: Construct Reliability and Convergent Validity Results (n = 914)

Construct	Cronbach's α	CR (rho_a)	CR (rho_c)	AVE
Competitive Advantage (CA)	0.936	0.936	0.954	0.839
Environmental Governance (EG)	0.946	0.947	0.961	0.861
Green Hotel Innovation (GH)	0.928	0.928	0.949	0.822
Low-Carbon Travel Management (LCB)	0.927	0.927	0.948	0.820
Public Policy Support (PPS)	0.937	0.937	0.955	0.841
Business Value Added (VA)	0.929	0.929	0.950	0.825

4.4.2 Discriminant Validity

To ensure that each construct is empirically distinct, discriminant validity was assessed using the Heterotrait-Monotrait (HTMT) ratio. According to current standards, HTMT values should be below 0.85 for strict discriminant validity.

Table 6: Discriminant Validity Results (HTMT Ratio Matrix)

Construct	CA	EG	GH	LCB	PPS	VA
Competitive Advantage (CA)						
Environmental Governance (EG)	0.531					
Green Hotel Innovation (GH)	0.799	0.631				
Low-Carbon Travel Management (LCB)	0.804	0.474	0.614			
Public Policy Support (PPS)	0.546	0.028	0.457	0.643		
Business Value Added (VA)	0.782	0.576	0.824	0.784	0.524	

Table 6 revealed that all HTMT values ranged from 0.028 to 0.824. All values are well below the 0.85 threshold, confirming that discriminant validity is fully established and that each construct represents a unique concept within the model. Notably, the very low correlation between PPS and EG ($r = 0.028$) indicates that these two institutional drivers are largely independent in Thai hotel managers' perceptions.

4.5 Evaluation of the Structural Model

4.5.1 Explanatory Power (R²) and Predictive Relevance (Q²)

The model's explanatory power was assessed using the coefficient of determination (R²). As shown in the R-square Overview, the model explains 71.1% of the variance in both Competitive Advantage (CA) and Business Value Added (VA) (R² = 0.711), which is considered substantial in social science research. The variance explained for Low-Carbon Travel Management (LCB) and Green Hotel Innovation (GH) was 56.8% and 54.3%, respectively.

Furthermore, the model's predictive relevance was evaluated using the Stone-Geisser Q² statistic via a blindfolding procedure. According to the Construct cross-validated redundancy results, all endogenous constructs exhibited Q² values significantly above zero: CA (0.592), VA (0.583), LCB (0.463), and GH (0.443). These values confirm that the model possesses strong predictive relevance for all endogenous variables.

4.5.2 Hypothesis Testing and Path Analysis

The eight hypotheses were tested using a bootstrapping procedure with 10,000 subsamples. The results, summarized in Table 7, indicate that all proposed structural relationships are positive and statistically significant at the $p < .001$ level.

Table 7: Structural Model Path Coefficients and Hypothesis Testing Results (n = 914)

Hyp.	Path	Path Coeff. (β)	p-value	Result
H1	Public Policy Support → LCB	0.609	<.001	Supported
H2	Public Policy Support → GH	0.439	<.001	Supported
H3	Environmental Governance → LCB	0.457	<.002	Supported
H4	Environmental Governance → GH	0.601	<.001	Supported
H5	LCB → Competitive Advantage	0.481	<.001	Supported
H6	LCB → Business Value Added	0.431	<.003	Supported
H7	GH → Competitive Advantage	0.471	<.001	Supported
H8	GH → Business Value Added	0.519	<.003	Supported

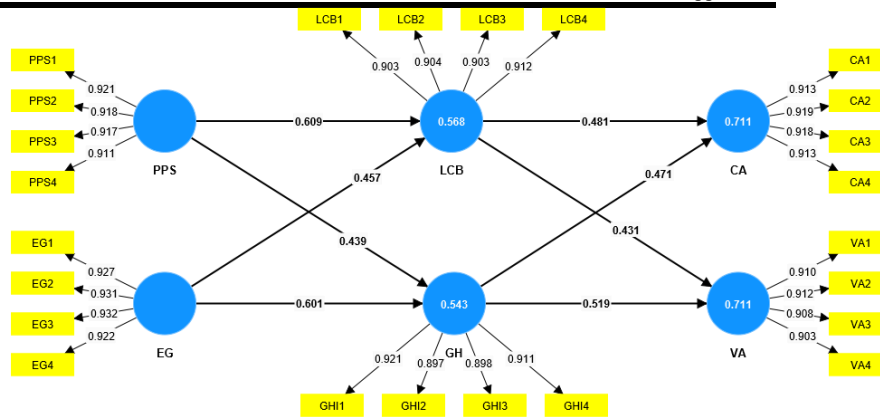


Figure 2: Measurement model

Figure 2, illustrated in the Structural Model diagrams, shows that the strongest institutional driver of LCB is Public Policy Support ($\beta = 0.609$). In contrast, Environmental Governance is the primary driver of Green Hotel Innovation ($\beta = 0.601$). In terms of performance outcomes, Green Hotel Innovation exhibits a slightly greater impact on Business Value Added ($\beta = 0.519$) than on Competitive Advantage ($\beta = 0.471$). Conversely, Low-Carbon Travel Management is a stronger predictor of Competitive Advantage ($\beta = 0.481$) than of Business Value Added.

5. Discussion

The findings of this study provide robust empirical evidence for the structural relationships between institutional drivers, sustainable management practices, and business performance in the Thai hospitality sector. All eight hypotheses were supported at a high level of significance ($p < .001$), with the model explaining a substantial 71.1% of the variance in Competitive Advantage (CA) and Business Value Added (VA). These results align with the core tenets of the Upper Echelons Theory, suggesting that the external institutional environment significantly shapes managerial strategic choices.

5.1 The Role of Institutional Drivers on Sustainable Management: A primary contribution of this research is the identification of a “dual-pathway” to sustainability. The strong relationship between Public Policy Support (PPS) and Low-Carbon Travel Management (LCB) ($\beta = 0.609$) reinforces previous studies suggesting that direct government incentives and fiscal policies are the most effective catalysts for logistical and operational shifts in the private sector. This finding is consistent with the work of Al-Ghazali et al. (2022) and Imran et al., who argued that policy interventions reduce the perceived risk of adopting green practices. Conversely, the significant impact of Environmental Governance (EG) on Green Hotel Innovation (GH) ($\beta = 0.601$) highlights the role of regulatory frameworks in driving technological change. This aligns with Porter's Hypothesis, which posits that well-designed environmental regulations can spur innovation that may ultimately offset compliance costs. Our results align with recent findings by Chen et al. (2023), who noted that, in emerging markets, strict governance is a stronger driver of innovation than voluntary initiatives.

5.2 Sustainable Practices as Drivers of Business Performance: The significant paths from LCB and GH to both CA and VA confirm that sustainability is a strategic imperative for the modern hospitality industry. The path from Green Hotel Innovation (GH) to Business Value Added (VA) was strong ($\beta = 0.519$), indicating that innovation yields tangible economic benefits through energy savings and enhanced brand equity. This finding supports the findings of Inoue and Lee (2021), Kenikasahmanworakhun et al., (2025), who observed that green initiatives in the hotel sector lead to superior long-term financial performance. Interestingly, Low-Carbon Travel Management (LCB) showed a stronger association with Competitive Advantage (CA) ($\beta = 0.481$) than with VA. This implies that while low-carbon logistics improve a hotel's market positioning and differentiation, consistent with Resource-Based View (RBV) principles, their immediate financial impact may be less pronounced than that of direct technological innovations. These results provide a nuanced understanding of how different sustainable strategies yield varied performance outcomes.

5.3 Theoretical and Managerial Implications : Theoretically, this study advances the literature by integrating institutional theory with the Upper Echelons perspective, demonstrating that managers' cognitive base is not a closed system but is highly responsive to policy and governance signals. Managerially, the results suggest that hotel executives in Thailand should prioritize high-visibility green innovations to drive immediate business value. Furthermore, the moderate level of policy support indicated in the descriptive results suggests a need for closer collaboration between the private sector and the Ministry of Tourism and Sports to bridge the policy-practice gap.

6. Conclusion

This study concludes that a synergistic institutional environment, characterized by strong policy support and transparent environmental governance, is essential for fostering a sustainable hospitality ecosystem in Thailand. Based on the analysis of 914 managers, the research demonstrates that sustainable practices are not merely cost-increasing activities but are vital drivers of competitive advantage and business value. As Thailand moves toward its Net Zero targets, the integration of innovation and low-carbon management will remain the cornerstone of a resilient tourism industry.

7. Suggestions

The empirical evidence from this study yields several strategic recommendations to enhance the sustainability and competitiveness of the Thai hospitality industry.

7.1 Suggestions for Policy Makers

- **Enhance Targeted Fiscal Incentives:** Given that Public Policy Support (PPS) is the primary driver of Low-Carbon Travel Management (LCB) ($\beta = 0.609$), the government should introduce specific tax rebates or subsidies for hotels that implement carbon-offset programs and green logistics.
- **Standardize Green Governance Frameworks:** Since Environmental Governance (EG) significantly triggers Green Hotel Innovation (GH) ($\beta = 0.601$), policymakers should establish a unified “Green Certification” standard that rewards hotels for technological innovation, making compliance a driver of growth rather than a burden.
- **Regional Sustainability Hubs:** Policy support should be decentralized to focus on high-density clusters such as Bangkok, Phuket, and Chonburi, creating regional sustainability networks where hotels can share low-carbon resources and best practices.

7.2 Suggestions for Hotel Managers

- **Prioritize High-Impact Innovations:** Managers should focus on Green Hotel Innovation as it yields the highest impact on Business Value Added ($\beta = 0.519$). Investing in energy-efficient IoT systems and sustainable waste management provides the fastest return on investment.
- **Leverage Sustainability for Differentiation:** Since LCB is a strong predictor of Competitive Advantage ($\beta = 0.481$), hotels should market their low-carbon travel options to environmentally conscious travelers to differentiate themselves in the highly competitive Thai market.
- **Invest in Human Capital:** Consistent with Upper Echelons Theory, hotels should provide specialized sustainability training for mid-to-senior management to bridge the gap between institutional policy and daily operations.

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