

Article

Environmentally Sustainable Practices and Hotel Performance: Evidence from Malaysia

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Abstract: The hospitality sector is under constant pressure from clients to adopt environmentally friendly practices. Industry reports suggest that customers prefer to stay in hotels that care about the environment. This means that hotels adopting environmentally sustainable practices can attract pro-environment customers and, as a result, improve their overall performance. This study aims to examine the innovation, organization and external environment determinants of adopting sustainable practices in hotel–restaurants and whether these practices affect the overall performance of hotels. Based on a survey of 169 managers of 3- to 5-star-rated hotels, a factor-based Partial Least Squares Structural Equation Modeling was performed. The results suggest that ease-of-use and top management support are the key determinants of adopting sustainable practices, such as support for host communities, waste management and conservation projects. Moreover, this study found that support for host communities and waste management practices influence the overall performance of hotels. This study adds significant insights on environmental practices in hotel–restaurants. These insights have implications for hotel owners and/or managers as well as designing policy interventions to increase the uptake of these practices.

Keywords: environmental; sustainable; practices; adoption; hotel; restaurant; performance; Malaysia

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1. Introduction

Hotels are recognized as one of the highest sectors with excessive consumption of resources in the tourism industry [1]. Environmentally friendly practices, also referred to as green or sustainable practices, are actions that introduce the use of more efficient resources and limit their impact on the environment [2]. The use of energy efficient lighting and the reuse of towels are simple measures that curb this excessive consumption of resources. The hospitality sector is under constant pressure from clients to adopt environmental practices [3]. This is particularly relevant to destinations attracting environmentally concerned customers who have a strong preference for green consumption alternatives [4]. Moreover, the hospitality sector faces regular criticism from governments and stakeholders on environmental degradation [5]. Recognizing the negative impacts of excessive consumption, governments and the hospitality sector need to implement effective measures to protect the environment [3].

Environmental practices can be divided into basic and advanced practices [6]. Basic practices include energy-saving, water-saving and waste management practices, while advanced practices include measuring the firm's carbon footprint and participation in global environmental protection activities, among other practices. These practices have direct and indirect effects on business performance [6,7]. While indirect effects are harder to measure and quantify, direct effects could be either internal or external. Internally, environmental practices enhance the efficiency of hotels by improving energy consumption and waste

management [3]. Externally, sustainable practices can improve a firm's image, satisfying customers and making them more loyal, and improving competitive position [8–10]. Environmental practices can have favorable guest response, such as positive evaluation, increased patronage and greater recommendation [11]. As a result, these practices have been found to positively influence hotel performance [12]. However, firms often face uncertainties with regard to the standards, costs and outcomes associated with these practices. Therefore, it is critical that hotel managers and owners are convinced that these practices are cost-effective and performance-improving exercises [3].

A large body of research has examined the drivers and barriers for sustainable practices in the hospitality sector. Empirical findings suggest that firms in the tourism and hospitality industry adopt sustainable practices due to regulation compliance, cost reduction and meeting stakeholders' demands [13]. Barriers preventing hospitality firms from adopting sustainable practices include maintenance costs, lack of resources, lack of knowledge and skills, uncertainty of outcomes, company culture and lack of institutional support [6]. Besides, contextual barriers, such as pro-growth orientation, lack of social awareness and unfavorable societal attitudes, prevent the tourism industry from adopting these practices [14]. However, it is still not clear what determines the adoption of environmental practices in hospitality firms. Therefore, this study intends to fill this gap by examining the innovation, organization and external environment characteristics of hotel–restaurants embracing environmentally sustainable practices.

Hotel–restaurants have been chosen as the context for this study for several reasons. First, food is the largest waste category in this sector [15]. Thus, examining the adoption of sustainable practices where most waste occurs is warranted. Second, green practices have been examined in either hotels [16] or restaurants [17]. Very limited knowledge exists on the adoption of such practices in hotel–restaurants. This study will add significant insights on environmental practices in hotel–restaurants. Third, evidence on the take-up of such practices in hotel–restaurants is limited, even though restaurants have been encouraged since the 1990s to adopt environmental practices, such as water efficiency, waste reduction and recycling, sustainable furnishings and building materials, sustainable food, and reducing energy, waste, chemicals and pollution [18].

In addition to exploring this vital context (i.e., hotel–restaurants), this study makes several contributions. First, previous empirical studies have focused on either the adoption of sustainability practices [1,19] or the performance effects of environmental practices [20]. This study, however, will cover both areas by looking at the determinants and performance effects of adopting environmentally friendly practices. Second, studies have focused on clients' intentions to visit green hotels [11,21–23] and their willingness to pay [8,22,24]. Limited evidence exists on organizational choices for sustainable practices [25,26]. Thus, this study draws on the diffusion of innovation (DOI) theory to examine the innovation, organization and external environment characteristics of hotel–restaurants adopting these practices. Third, limited studies have examined the adoption of specific environmentally sustainable practices [27]. This study examines the adoption and performance effects of three popular practices, namely: support for host communities; waste management; and conservation projects. Fourth, country differences in adopting sustainable practices have been proven to exist [6], and very little is known about this issue in Asian countries [12]. Thus, this study will provide further empirical evidence on the adoption and performance effects of environmentally sustainable practices in Malaysian hotel–restaurants. Prior to COVID19, the tourism sector in Malaysia contributed around 10.4% to Malaysia's gross domestic product (GDP) and 4.6% of total employment in 2017 according to the World Travel and Tourism Council [28]. The WTTC projected 28.5 million international tourist arrivals in 2018 and nearly 50 million arrivals by 2028.

This study will first review the literature and propose a conceptual framework in Section 2. Then Section 3 will outline the method used for collecting and analyzing the data. After that, Section 4 will present data analysis and results. Section 5 will discuss the results, and Section 6 will conclude with implications, limitations and future research avenues.

2. Literature Review and Conceptual Framework Development

Environmental practices in hospitality businesses have been examined using several theories including: theory of reasoned action—TRA [29], or its extended model—the theory of planned behavior—TPB [30]; resource-based view—RBV [31]; value theory [32]; and DOI theory [33]. These theories have been used to explore and examine the motives for environmental practices among consumers and businesses. Using TRA, Chan et al. [34] found that ecological behavior positively influences the intention to implement environmental practices in hotels. Using the TPB, Chen and Tung [35] surveyed 438 hotel employees in Hong Kong and found that consumer environmental concerns influenced their attitudes toward green hotels, subjective norms, perceived behavioral control, which in turn affected their intentions to visit green hotels. Using the RBV, Asadi [20] surveyed 183 hotels in Malaysia and found that environmental regulations, green innovation strategy and green organizational culture influenced green innovation, which in turn influenced social, environmental and economic performance. Using the value theory, Kim and Hall [10] surveyed 476 restaurants in Korea and found that sustainable restaurant practices have a direct influence on behavior to participate in waste reduction and being loyal to sustainable restaurants as well as indirect influence on behavior through hedonic and utilitarian values on waste reduction.

The DOI theory, first published by Rogers in 1962, posited that the decision to adopt or reject an innovation (here: environmentally sustainable practice) depended on the characteristics of the innovation, the adopter (organization) and the social system (environment) [33]. The innovation–organization–environment (IOE) framework has been applied in the hospitality context by Le et al. [36], who examined the adoption of environmental practices in 193 Vietnamese hotels. They found the characteristics of the innovation and the external environment to be highly correlated with the intention to adopt environmentally friendly practices, whereas organization characteristics had a weaker relationship.

Drawing on the DOI theory, the IOE framework integrates three vital contexts to provide a holistic understanding of adopting environmentally sustainable practices. This framework enables us to examine the determinants for adopting sustainable practices. Although a number of studies have explored the determinants of adopting sustainable practices in hospitality firms [25,26], this study tests the application of the IOE framework in the adoption of sustainable practices in hotel–restaurants. Moreover, it will examine the effect of adopting these practices on hotel performance. The proposed conceptual framework is shown in Figure 1.

2.1. Environmentally Sustainable Practices

Support for host community, waste management and conservation projects are amongst the popular sustainable practices in hotels [27]. Hotels are confronted with intense pressure to protect the environment through supporting host communities. According to Lee and Park [37], hotels tend to improve the wellbeing of communities by undertaking projects where they operate. Supporting communities can fulfill hotels' corporate social responsibility [27]. Hotels around the world show this support by using local materials, purchasing from local sources and improving the lives of local residents by ploughing back profit [27]. In addition, minimizing waste, especially food waste, is considered a vital environmental practice as it represents the largest waste category in hospitality firms. Filimonau and De Coteau [15] suggested that hospitality businesses should focus on three stages of operation: pre-kitchen; kitchen; and post-kitchen. Hotels engaged in waste management tend to compost waste, implement recycling programs and reuse papers, cans, bottles and plastic [27]. Moreover, the use of energy-efficient bulbs, towel reuse and water conservation are some of the environmental measures in the hotel industry [4]. Hotels involved in conservation projects use energy-efficient equipment and products, install water-efficient devices and equipment, and advocate environmental standards for suppliers [27].

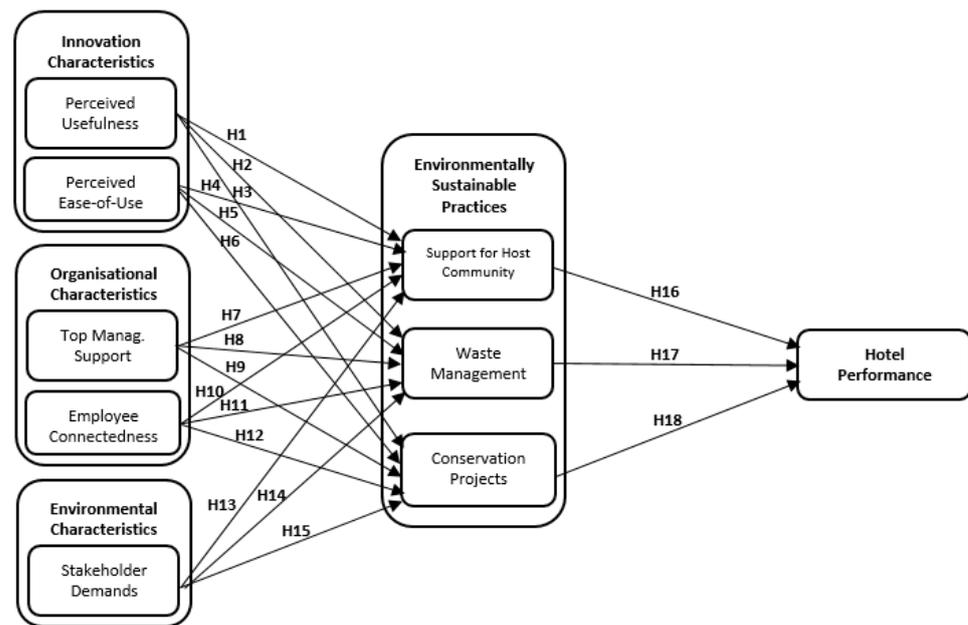


Figure 1. Proposed conceptual framework.

2.2. Innovation Characteristics

Like many other innovations, the characteristics of sustainable practices determine their adoption. Among these characteristics are perceived usefulness and perceived ease of use. Le et al. [36] found innovation characteristics to be the most influential factors in adopting environmental practices. A study of green practices in restaurants found that innovation characteristics influence attitudes, which in turn influence behavioural intentions to adopt green practices in restaurants [38]. These practices are more likely to be adopted when hotel–restaurants perceive these practices to offer advantages over existing practices. Some of these advantages are improving energy efficiency and waste management [3], enhancing customer loyalty [10] and increasing customers’ willingness to pay premium for green initiatives [22]. Moreover, these practices are less likely to be adopted if they are perceived to be complex. Simplicity was found as one of the most predictive factors of sustainability innovation in North American hotels and ski resorts [26]. Perceived usefulness and perceived ease of use are advocated to positively influence the adoption of environmental practices. Therefore, the following hypotheses are proposed:

Hypothesis 1 (H1). *Perceived usefulness positively affects the adoption of support for host community practice in hotel–restaurants.*

Hypothesis 2 (H2). *Perceived usefulness positively affects the adoption of waste management practice in hotel–restaurants.*

Hypothesis 3 (H3). *Perceived usefulness positively affects the adoption of conservation projects practice in hotel–restaurants.*

Hypothesis 4 (H4). *Perceived ease-of-use positively affects the adoption of support for host community practice in hotel–restaurants.*

Hypothesis 5 (H5). *Perceived ease-of-use positively affects the adoption of waste management practice in hotel–restaurants.*

Hypothesis 6 (H6). *Perceived ease-of-use positively affects the adoption of conservation projects practice in hotel–restaurants.*

2.3. Organization Characteristics

Environmentally sustainable practices are also influenced by the characteristics of the organization adopting these practices. These characteristics include top management support and employee connectedness. Wang et al. [16] claim that top managers are key decision-makers, who are able to align eco-initiatives with the strategic vision, pursue environmental opportunities, mobilize the necessary resources and enforce an environmentally friendly culture. They found that top managers' attitudes drive eco-innovations in hotels. Furthermore, employee connectedness has been included as an organizational factor influencing the implementation of eco-friendly practices in Malaysian restaurants [25]. Employee connectedness refers to their engagement with sustainability practices for better management of resources. Thus, the following hypotheses are proposed:

Hypothesis 7 (H7). *Top management support positively affects the adoption of support for host community practice in hotel–restaurants.*

Hypothesis 8 (H8). *Top management support positively affects the adoption of waste management practice in hotel–restaurants.*

Hypothesis 9 (H9). *Top management support positively affects the adoption of conservation projects practice in hotel–restaurants.*

Hypothesis 10 (H10). *Employee connectedness positively affects the adoption of support for host community practice in hotel–restaurants.*

Hypothesis 11 (H11). *Employee connectedness positively affects the adoption of waste management practice in hotel–restaurants.*

Hypothesis 12 (H12). *Employee connectedness positively affects the adoption of conservation projects practice in hotel–restaurants.*

2.4. Environment Characteristics

The external forces can help or hinder the adoption of sustainability practices in hotel–restaurants. One of these forces is stakeholder demands. Kasim and Ismail [25] claim that one of the barriers to implementing environmental practices is low customer and community demands. According to Le et al. [36], perceived competitive rivalry was found to be the most significantly correlated factor with the likelihood of adopting sustainable practices. They suggested that hospitality firms are more likely to adopt sustainable practices when they have a better understanding of their customer demands. Therefore, customer demands affect the adoption of environmentally friendly practices.

Hypothesis 13 (H13). *Stakeholder demands positively affect the adoption of support for host community practice in hotel–restaurants.*

Hypothesis 14 (H14). *Stakeholder demands positively affect the adoption of waste management practice in hotel–restaurants.*

Hypothesis 15 (H15). *Stakeholder demands positively affect the adoption of conservation projects practice in hotel–restaurants.*

2.5. Hotel Performance

Performance of tourism is measured through efficiency, productivity and competitiveness [39]. Wang et al. [16] found that eco-innovation practices are positively linked to organizational performance. Empirical studies have shown that eco-innovations, such as LED lamps and solar panels, improve financial and operational performance [40,41]. In a

qualitative study of Spanish and Chilean hotels, Alonso-Almeida et al. [6] found that sustainable practices influence human resources, internal operations and external perceptions. Green innovation was found to lead to social, environmental and economic performance of hotels in Malaysia [20]. Thus, hotel performance is affected by the adopted environmentally sustainable practices.

Hypothesis 16 (H16). *Support for host community practice positively affects hotel performance.*

Hypothesis 17 (H17). *Waste management practice positively affects hotel performance.*

Hypothesis 18 (H18). *Conservation projects practice positively affects hotel performance.*

3. Research Method

3.1. Procedure and Sampling

This study adopts a positivist research philosophy using a quantitative approach through the collection of data from a self-administered questionnaire survey. To empirically test the proposed hypotheses, the survey instrument was developed in English and distributed to hotel managers both online and through paper-copies delivered to hotels. Only 3- to 5-star-rated hotels were targeted because they tended to have food and beverage departments. According to the Ministry of Tourism, Arts and Culture, there are 629 hotels (3–5-star-rated) across 14 states in Malaysia [42]. Data was collected from 11 states across Malaysia, namely: Johor; Kedah; Kelantan; Malacca; Negeri Sembilan; Penang; Perak; Sabah; Sarawak; Selangor; and Terengganu.

A pilot study was conducted to check for face validity, to reduce any measurement errors and to identify any ambiguities and misconceptions in the survey instrument. Following Nunnally's [43] recommendation, the pilot involved 30 hotel managers. Based on the pilot study results, minor adjustments were made to the instrument to make it clearer to the respondents. The reliability and validity of the items were measured using Cronbach's alpha (α) and corrected item–total correlation. Reliability analysis indicated highly reliable nine latent variables, and corrected item–total correlations were appropriate.

A convenience sampling technique was employed to increase the response rate. This technique is widely used in tourism and hospitality studies [44]. A total of 169 responses were collected, accounting for 26% of the total sample. Table 1 shows the sample characteristics. The sample is predominantly hotels located in urban areas (72%) and part of a chain (69%). One-half of the sample is 3-star rated hotels, and nearly one-half of the sample (48%) has been operating in the last 10 years. One-half of the sample is hotels with less than 150 rooms, 36% has 150 to 300 rooms and 14% has more than 300 rooms. In terms of size, the sample had 3% micro hotels (1–10 employees), 45% small hotels (11–50 employees), 43% medium hotels (50–250 employees) and 9% large hotels (more than 250 employees).

3.2. Measures

Environmentally sustainable practices were measured using Mensah and Blankson's [27] environmental performance indicators. Specifically, support for host community, waste management and conservation projects were measured using three items for each indicator. The instrument for measuring the innovation characteristics were adapted from the work of Karagozoglu and Lindell [45] and McCabe [46]. Perceived usefulness was measured using three items, while perceived ease-of-use was measured using two items. Adapting the measures used by Kasim and Ismail [25], organizational characteristics were measured using three items for top management support and three items for employee connectedness. As the external environment characteristic, stakeholder demands were measured using three items adapted from [25]. Hotel performance was measured using four items adapted from the work of Cvelbar and Dwyer [47]. Participants responded to the question using a 5-point Likert-type scale of 1 (strongly disagree) to 5 (strongly agree). The measures used are detailed in Appendix A.

Table 1. Sample characteristics.

Characteristic		Number = 169	%
Location	Urban	121	72
	Suburban	35	21
	Rural	13	8
Hotel Rating	3-star-rated hotels	84	50
	4-star-rated hotels	55	33
	5-star-rated hotels	30	18
Number of years in operation	0–10	81	48
	11–30	68	40
	More than 30	20	12
Type of Hotel	Chain	117	69
	Independent	52	31
Number of Hotel Rooms	Under 150	85	50
	150–300	61	36
	More than 300	23	14
Number of employees	1–10	5	3
	11–50	76	45
	50–250	73	43
	More than 250	15	9

4. Data Analysis and Results

In this study, Partial Least Squares Structural Equation Modeling (PLS-SEM) was employed using WarpPLS 7.0 [48]. Recently, however, PLS methods faced many criticisms due to being composite-based rather than factor-based [48]. This study uses a factor-based PLS. This technique suits the analysis of complex models [49]. This study investigates the associations between nine latent variables (i.e., 18 hypotheses) with at least two items.

4.1. Measurement Model

To assess the quality of the measurement model, the validity and reliability for all constructs are examined. Initially, construct validity is assessed through exploratory factor analysis using principal component analysis with Varimax rotation. As a result, nine variables were extracted from the analysis. Items that cross-loaded were excluded until parsimonious variables were obtained. Construct validity was further examined using confirmatory factor analysis. The results of this analysis can be found in Appendix A with skewness and kurtosis data.

For internal reliability, Cronbach's alpha (α) and composite reliability coefficients (SCR) for all constructs are greater than 0.7. As shown in Table 2, individual factor loadings are greater than 0.6, indicating sufficient convergent validity. Moreover, average variance extracted (AVE) values are above the acceptable level of 0.5. All variables had variance inflation factor (VIF) values of less than the threshold of 3.3, suggesting the absence of both common method bias and multicollinearity [50]. Finally, Harman's single-factor test was performed to assess common method variance's impact, and no single factor was found to explain more than one-half of the variance.

Table 2. Loading of indicator variables, reliability and convergent validity.

Construct	Items	Loading	Error	α	SCR	AVE	VIF
Perceived usefulness	PU1	0.664	0.067	0.834	0.833	0.631	1.489
	PU2	0.728	0.066				
	PU3	0.960	0.063				
Perceived ease-of-use	PEOU1	0.768	0.066	0.795	0.798	0.665	1.456
	PEOU2	0.860	0.064				
Top management support	TMS1	0.733	0.066	0.820	0.825	0.615	1.863
	TMS2	0.901	0.064				
	TMS3	0.704	0.066				
Employee connectedness	EC1	0.890	0.064	0.896	0.897	0.744	1.978
	EC2	0.890	0.064				
	EC3	0.806	0.065				
Stakeholder demands	SD1	0.999	0.062	0.906	0.882	0.717	1.394
	SD2	0.760	0.066				
	SD3	0.757	0.066				
Support for host community	SHC1	0.731	0.066	0.871	0.873	0.698	2.352
	SHC2	0.822	0.065				
	SHC3	0.941	0.063				
Waste management	WM1	0.999	0.062	0.891	0.893	0.741	1.468
	WM2	0.880	0.064				
	WM3	0.670	0.067				
Conservation projects	CP1	0.938	0.063	0.942	0.942	0.845	1.441
	CP2	0.899	0.064				
	CP3	0.920	0.063				
Hotel performance	HP1	0.999	0.062	0.930	0.926	0.759	1.907
	HP2	0.880	0.064				
	HP3	0.803	0.065				
	HP4	0.786	0.065				

For discriminant validity, the square root AVEs were measured to assess whether the measures are internally consistent and not representing other variables. Table 3 shows that all construct correlations are lower than the square root of AVE for their respective construct. However, Henseler et al. [51] criticize Fornell and Larcker's [52] measures, arguing that it does not indicate the lack of discriminant validity proposing an alternative method, multi-trait–multi-method matrix: the hetero-trait–mono-trait (HTMT) ratio of correlations. Thus, Table 4 shows the values of HTMT ratios. All constructs have values less than 0.85, indicating satisfactory discriminant validity.

Table 3. Discriminant validity (correlations and square root AVEs).

Constructs	1	2	3	4	5	6	7	8	9
1. Perceived usefulness	(0.794)								
2. Perceived ease-of-use	0.405	(0.815)							
3. Top management support	0.333	0.268	(0.784)						
4. Employee connectedness	0.404	0.367	0.610	(0.863)					
5. Stakeholder demands	0.409	0.271	0.260	0.422	(0.847)				
6. Support for host community	0.386	0.481	0.517	0.452	0.327	(0.836)			
7. Waste management	0.313	0.322	0.366	0.358	0.252	0.512	(0.861)		
8. Conservation projects	0.236	0.329	0.352	0.374	0.315	0.475	0.404	(0.919)	
9. Hotel performance	0.429	0.372	0.469	0.482	0.370	0.626	0.387	0.318	(0.871)

Table 4. Hetero-trait–mono-trait (HTMT) ratios of correlation.

Constructs	1	2	3	4	5	6	7	8	9
1. Perceived usefulness									
2. Perceived ease-of-use	0.431								
3. Top management support	0.321	0.297							
4. Employee connectedness	0.405	0.381	0.640						
5. Stakeholder demands	0.521	0.292	0.279	0.404					
6. Support for host community	0.341	0.449	0.510	0.466	0.318				
7. Waste management	0.290	0.311	0.335	0.347	0.199	0.534			
8. Conservation projects	0.241	0.331	0.370	0.379	0.279	0.468	0.390		
9. Hotel performance	0.425	0.359	0.491	0.480	0.387	0.620	0.372	0.298	

4.2. Structural Model

The model satisfies all fit and quality indices [48]. Henseler et al. [51] suggested the use of the standardized root mean square residual (SRMR) for model fit. The SRMR value of ≤ 0.1 is considered as an acceptable model fit. The model SRMR is 0.081, implying an acceptable estimate for model fit.

Table 5 presents a summary of the results. Innovation, organization and external environment characteristics explained 44%, 23% and 25% of variance in support for the host community, waste management and conservation projects, respectively ($R^2 = 0.44, 0.23$ and 0.25), and these environmental practices explained 42% of variance in hotel performance ($R^2 = 0.42$). Moreover, the effect sizes (f^2) will be used to evaluate the extent of the effect of the latent variables. The effect sizes 0.02, 0.15 and 0.35 were used as indicators for small, medium and large effects, respectively [48].

As anticipated, innovation characteristics were found to affect environmentally sustainable practices. This study found support for H1, H4, H5, and H6. Perceived usefulness was found to be associated with support for the host community ($\beta = 0.152, p < 0.021, f^2 = 0.065$ [small effect]). Moreover, perceived ease-of-use was associated with all three environmentally sustainable practices: support for the host community ($\beta = 0.290, p < 0.001, f^2 = 0.141$ [medium effect]); waste management ($\beta = 0.171, p < 0.011, f^2 = 0.056$ [small effect]); and conservation projects ($\beta = 0.201, p < 0.004, f^2 = 0.067$ [small effect]). In addition, organizational characteristics were found to influence environmentally sustainable practices. Top management support was associated with all three environmentally sustainable practices (H7, H8 and H9): support for the host community ($\beta = 0.336, p < 0.001, f^2 = 0.177$ [medium effect]); waste management ($\beta = 0.198, p < 0.004, f^2 = 0.073$ [small effect]); and conservation projects ($\beta = 0.195, p < 0.005, f^2 = 0.069$ [small effect]). However, employee connectedness was not found to positively influence waste management (t-value is less than the two-tailed tests value of 1.960). Thus, H11 is not supported. Moreover, stakeholder demands were found to be associated with conservation projects ($\beta = 0.192, p < 0.064, f^2 = 0.064$ [small effect]). Thus, H15 is supported. Finally, environmentally sustainable practices were found to influence hotel overall performance. Support for the host community and waste management influence hotel performance ($\beta = 0.529, p < 0.001, f^2 = 0.335$ [large effect] and $\beta = 0.131, p < 0.041, f^2 = 0.055$ [small effect]), respectively. Both H17 and H18 are supported.

Table 5. Synopsis of the results.

Path	Coefficient	p-Value	Effect Size	t-Values	Outcomes
Innovation characteristics and environmentally sustainable practices					
H1: Perceived usefulness → Support for the host community	0.152 *	0.021	0.065	2.044	Supported
H2: Perceived usefulness → Waste management	0.111	0.071	0.036	1.478	Rejected
H3: Perceived usefulness → Conservation projects	0.016	0.416	0.004	0.213	Rejected
H4: Perceived ease-of-use → Support for the host community	0.290 ***	<0.001	0.141	4.011	Supported
H5: Perceived ease-of-use → Waste management	0.171 **	0.011	0.056	2.297	Supported
H6: Perceived ease-of-use → Conservation projects	0.201 **	0.004	0.067	2.722	Supported
Organization characteristics and environmentally sustainable practices					
H7: Top management support → Support for the host community	0.336 ***	<0.001	0.177	4.684	Supported
H8: Top management support → Waste management	0.198 **	0.004	0.073	2.685	Supported
H9: Top management support → Conservation projects	0.195 **	0.005	0.069	2.638	Supported
H10: Employee connectedness → Support for the host community	0.082	0.140	0.040	1.084	Rejected
H11: Employee connectedness → Waste management	0.119 *	0.058	0.045	1.581	Rejected
H12: Employee connectedness → Conservation projects	0.118	0.060	0.044	1.567	Rejected
Environmental characteristics and environmentally sustainable practices					
H13: Stakeholder demands → Support for the host community	0.048	0.266	0.016	0.626	Rejected
H14: Stakeholder demands → Waste management	0.060	0.214	0.016	0.793	Rejected
H15: Stakeholder demands → Conservation projects	0.192 **	0.005	0.064	2.595	Supported
Environmentally sustainable practices and Hotel performance					
H16: Support for the host community → Hotel Performance	0.529 ***	<0.001	0.335	7.679	Supported
H17: Waste management → Hotel Performance	0.131 *	0.041	0.055	1.747	Supported
H18: Conservation projects → Hotel Performance	0.086	0.129	0.033	1.135	Rejected

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$.

5. Discussion

This study aimed to examine the innovation, organization and external environment determinants of adopting sustainable practices in hotel–restaurants and whether these practices affect the overall performance of hotels. The results suggest that ease-of-use and top management support are the key determinants of adopting sustainable practices, such as support for host communities, waste management and conservation projects. Moreover, this study found that support for host communities and waste management practices influence the overall performance of hotels.

All of the examined environmentally sustainable practices have been found to be influenced by two key determinants: ease-of-use (innovation characteristic) and top management support (organization characteristic). The results indicate that the more these practices are perceived to be easy to implement, the more likely that hotel–restaurants will be willing to adopt them. Smerecnik and Andersen [26] found simplicity to be the most predictive determinant of sustainability innovation in North American hotels and ski resorts. Furthermore, the results of this study are different from that of previous studies [36], which found organization characteristics to be less correlated with the adoption of

environmentally sustainable practices in hotels. Top managers advocating practices that are environmentally friendly within the hotel will increase the rate of their adoption. This is in line with Wang et al.'s [16] study; they found the pro-environment attitude of top managers to influence hotel's eco-innovation practice. Another significant result is that support for host community has been found to be associated with perceived usefulness (innovation characteristic), while conservation projects were associated with stakeholder demands (environment characteristic). The former could be due to the visibility of the benefits on local residents from using local materials and purchasing from local sources. The latter could be due to responding to external pressure from pro-environment clients who are unwilling to stay in hotels that do not support conservation [4].

However, perceived usefulness has been found to be insignificantly associated with waste management and conservation projects. This could be due to the well-established benefits related to these two practices. Moreover, employee connectedness has not been found to be associated with any of the environmental practices. One explanation for these insignificant associations could be that these practices are influenced by top management support instead of employee engagement. In addition, stakeholder demands have been found to be insignificantly associated with support for the host community and waste management. One explanation is that hotel managers may focus more on the conservation projects as they have short-term cost implications, whereas support for the host community and waste management are for the long run.

Another significant result of this study is that two of the examined practices, namely support for host community and waste management, have been found to affect the overall performance of hotels. This is in line with the findings of recent studies [16,20]. The effect is much more prominent (large) from support for host community. This implies that hotels considering improvement in their performance should give more attention to implementing support for host community practice compared with waste management. However, conservation projects were found to be a practice that does not significantly affect the overall performance of hotels. This could be because conservation projects are perceived by hotel managers to be costly and therefore not contributing to the overall performance since replacing hotel equipment and products with energy-efficient ones as well as requiring suppliers to adhere to environmental standards may incur more costs and limit supplier choices.

6. Conclusions

This study examines the innovation, organization and external environment determinants of adopting sustainable practices in hotel–restaurants and whether these practices affect the overall performance of hotels. Based on the PLS-SEM analysis of 169 responses from managers of 3- to 5-star-rated hotels, the results suggest that ease-of-use and top management support are the key determinants of adopting sustainable practices, such as support for host communities, waste management and conservation projects. Moreover, this study found that support for host communities and waste management practices influence the overall performance of hotels. These significant insights have implications for hotel owners and/or managers as well as designing policy interventions to increase the uptake of these practices.

6.1. Theoretical and Practical Implications

This study supports the application of IOE framework to examine the determinants of adopting environmentally sustainable practices among hotel–restaurants. Unlike previous studies [36], the results of this study indicate a shift in hotel managers' perceptions as organizational characteristics are found to be associated with sustainable practices. Moreover, this study shows that, depending on the environmental practice being examined, different innovation, organization and external environment characteristics influence hotel owners' and/or managers' perceptions of adopting specific environmental practices. Thus, IOE framework provides a useful overarching theoretical guidance to examine the adoption

of environmentally sustainable practices. Furthermore, this study does not only examine the determinants of adopting sustainable practices but also looks at the effect of embracing these practices on the overall performance of hotels. The results suggest that some of these practices are significantly linked to hotel performance. This adds important empirical insights to the question of whether these practices really matter. Practical implications of this study relate to environmental policy design and the business case for adopting these practices. Governments keen to raise the uptake of these practices among hotels should consider targeting owners and/or top managers with incentives and programs that show what these practices can do for their hotels. In addition, owners and/or managers who are not willing to adopt these practices can be targeted with a business case for implementing these practices by highlighting the returns that can be generated from adopting these practices. Hotel owners and/or managers aiming to improve their business performance need to adopt two practices, namely support for the host community and waste management. To adopt these practices, owners and/or top managers need to make it easier to adopt these practices by using local materials, purchasing from local resources, composting of waste, recycling programs, and reusing of papers, cans, bottles and plastic.

6.2. Limitations and Future Research

This study has a number of limitations. First, although IOE framework has been a useful theoretical underpinning for examining the determinants of environmentally sustainable practices, individual characteristics of hotel owners and/or managers have been disregarded. Future studies could expand on the results of this study by examining the individual characteristics, such as gender, age, education level and entrepreneurial orientation, among other characteristics. Moreover, it will be interesting to examine other motives of adopting environmental practices. Second, this study provides empirical evidence on the adoption of environmental practices in Malaysian hotels. Future studies may choose to examine individual, innovation, organization and external environment characteristics in other hospitality firms or other countries. Third, this study only examined three popular environmentally friendly practices, namely support for host community, waste management and conservation projects. Future studies should examine other basic and advanced environmental practices. Fourth, although the sample size was adequate for this study, findings with larger samples might differ. Finally, this study used cross-sectional data to infer the causal relationships. Future studies can determine causal links using longitudinal datasets.

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Appendix A

Table A1. Construct Measures, and Confirmatory Factor Analysis.

Construct [Studies]	Measures (Items)	Mean	Std. Dev.	Skewness	Kurtosis
Perceived usefulness [45]	PU1: These practices result in dramatic improvement in overall financial performance.	3.55	0.837	0.024	0.035
	PU2: These practices result in very extensive positive change in the cost position relative to key competitors.	3.67	0.835	−0.319	0.228
	PU3: These practices result in much stronger reputation with customers.	3.86	0.819	−0.654	1.182
Perceived ease-of-use [46]	PEOU1: These practices need high investment.	3.84	0.833	−0.254	−0.248
	PEOU2: These practices require large consequential adjustment.	3.92	0.841	−0.753	2.055
Top management support [25]	TMS1: I am concerned about the preservation of the environment.	4.22	0.719	−0.451	−0.610
	TMS2: I consider environment preservation to be an important aspect of their life.	4.27	0.762	−0.913	1.026
	TMS3: I consider myself educated about environmental issues.	4.03	0.790	−0.786	1.001
Employee connectedness [25]	EC1: The training at this establishment includes environmental awareness.	3.85	0.877	−0.777	1.615
	EC2: We include environmental awareness in the training projects.	3.93	0.870	−0.904	1.987
	EC3: I would encourage employees' involvement in the process of establishing Environmental Management Systems.	3.95	0.865	−0.914	2.084
Stakeholder demands [25]	SD1: Our guests demand that we run an environmentally friendly restaurant.	3.58	0.949	−0.508	0.532
	SD2: The community that we are based in demands that we run an environmentally friendly restaurant.	3.58	0.917	−0.520	0.199
	SD3: I feel that the community that we are in is generally an environmentally aware community.	3.54	0.988	−0.519	0.006
Support for host community [27]	SHC1: Use of local materials.	4.09	0.789	−0.686	0.223
	SHC2: Purchases from local sources.	4.06	0.792	−0.324	−0.765
	SHC3: Improvement of lives of local residents by ploughing back profit.	4.00	0.824	−0.453	−0.402
Waste management [27]	WM1: Composting of waste.	3.87	0.961	−0.632	0.228
	WM2: Implementation of recycling program.	3.99	0.994	−0.970	0.753
	WM3: Reuse of papers, cans, bottles and plastic.	4.04	0.909	−0.901	0.856
Conservation projects [27]	CP1: Use of energy-efficient equipment and products.	3.34	1.190	−0.508	−0.405
	CP2: Installation of water-efficient devices and equipment.	3.42	1.188	−0.626	−0.071
	CP3: Prescription of environmental standards for suppliers.	3.49	1.140	−0.574	−0.122
Hotel performance [47]	HP1: Improve relationships with the local community.	4.24	0.752	−0.943	1.406
	HP2: Increase customer satisfaction.	4.13	0.776	−0.463	−0.529
	HP3: Give marketing advantage over competitors.	4.21	0.741	−0.453	−0.754
	HP4: Increase profitability.	4.22	0.777	−0.800	0.648

References

1. Mak, A.H.; Chang, R.C. The Driving and Restraining Forces for Environmental Strategy Adoption in the Hotel Industry: A Force Field Analysis Approach. *Tour. Manag.* **2019**, *73*, 48–60. [CrossRef]
2. García-Granero, E.M.; Piedra-Muñoz, L.; Galdeano-Gómez, E. Eco-Innovation Measurement: A Review of Firm Performance Indicators. *J. Clean. Prod.* **2018**, *191*, 304–317. [CrossRef]
3. Kularatne, T.; Wilson, C.; Månsson, J.; Hoang, V.; Lee, B. Do environmentally sustainable practices make hotels more efficient? A study of major hotels in Sri Lanka. *Tour. Manag.* **2019**, *71*, 213–225. [CrossRef]
4. Han, H.; Hyun, S.S. What influences water conservation and towel reuse practices of hotel guests? *Tour. Manag.* **2018**, *64*, 87–97. [CrossRef]
5. Hathroubi, S.; Peypoch, N.; Robinot, E. Technical efficiency and environmental management: The Tunisian case. *J. Hosp. Tour. Manag.* **2014**, *21*, 27–33. [CrossRef]
6. Alonso-Almeida, M.; Robin, C.F.; Pedroche, M.S.C.; Astorga, P.S. Revisiting Green Practices in the Hotel Industry: A Comparison between Mature and Emerging Destinations. *J. Clean. Prod.* **2017**, *140*, 1415–1428. [CrossRef]
7. Llach, J.; Perramon, J.; Alonso-Almeida, M.M.; Bagur-Femenias, L. Joint Impact of Quality and Environmental Practices on Firm Performance in Small Service Businesses: An Empirical Study of Restaurants. *J. Clean. Prod.* **2013**, *44*, 96–104. [CrossRef]
8. Namkung, Y.; Jang, S. Effects of Restaurant Green Practices on Brand Equity Formation: Do Green Practices Really Matter? *Int. J. Hosp. Manag.* **2013**, *33*, 85–95. [CrossRef]
9. Perramon, J.; Alonso-Almeida, M.M.; Llach, J.; Bagur-Femenias, L. Green Practices in Restaurants: Impact on Firm Performance. *Oper. Manag. Res.* **2014**, *7*, 212. [CrossRef]
10. Kim, M.J.; Hall, C.M. Can Sustainable Restaurant Practices Enhance Customer Loyalty? The Roles of Value Theory and Environmental Concerns. *J. Hosp. Tour. Manag.* **2020**, *43*, 127–138. [CrossRef]
11. Teng, C.-C.; Lu, A.C.C.; Huang, T.-T. Drivers of Consumers' Behavioral Intention toward Green Hotels. *Int. J. Contemp. Hosp. Manag.* **2018**, *30*, 1134–1151. [CrossRef]
12. Aboelmegeed, M. Direct and Indirect Effects of Eco-Innovation, Environmental Orientation and Supplier Collaboration on Hotel Performance: An Empirical Study. *J. Clean. Prod.* **2018**, *184*, 537–549. [CrossRef]
13. Tzschentke, N.; Kirk, D.; Lynch, P.A. Reasons for Going Green in Serviced Accommodation Establishments. *Int. J. Contemp. Hosp. Manag.* **2004**, *16*, 116–124. [CrossRef]
14. Kasim, A. Corporate Environmentalism in the Hotel Sector: Evidence of Drivers and Barriers in Penang, Malaysia. *J. Sustain. Tour.* **2007**, *15*, 680–699. [CrossRef]
15. Filimonau, V.; Delysia, A. Food Waste Management in Hospitality Operations: A Critical Review. *Tour. Manag.* **2019**, *71*, 234–245. [CrossRef]
16. Wang, Y.; Font, X.; Liu, J. Antecedents, Mediation Effects and Outcomes of Hotel Eco-Innovation Practice. *Int. J. Hosp. Manag.* **2020**, *85*, 102345. [CrossRef]
17. Liu, K.N.; Hu, C.; Lin, M.C.; Tsai, T.I.; Xiao, Q. Brand Knowledge and Non-Financial Brand Performance in the Green Restaurants: Mediating Effect of Brand Attitude. *Int. J. Hosp. Manag.* **2020**, *89*, 102566. [CrossRef]
18. Green Restaurant Association. 2019. Available online: <https://www.dinegreen.com/> (accessed on 20 September 2019).
19. Novacka, L.; Pícha, K.; Navratil, J.; Topaloglu, C.; Švec, R. Adopting Environmentally Friendly Mechanisms in the Hotel Industry: A Perspective of Hotel Managers in Central and Eastern European Countries. *Int. J. Contemp. Hosp. Manag.* **2019**, *31*, 2488–2508. [CrossRef]
20. Asadi, S.; Pourhashemi, S.O.; Nilashi, M.; Abdullah, R.; Samad, S.; Yadegaridehkordi, E.; Aljojo, N.; Razali, N.S. Investigating Influence of Green Innovation on Sustainability Performance: A Case on Malaysian Hotel Industry. *J. Clean. Prod.* **2020**, *258*, 120860. [CrossRef]
21. Eid, R.; Agag, G.; Shehawy, Y.M. Understanding Guests' Intention to Visit Green Hotels. *J. Hosp. Tour. Res.* **2021**, *45*, 494–528. [CrossRef]
22. Balaji, M.S.; Jiang, Y.; Jha, S. Green Hotel Adoption: A Personal Choice or Social Pressure? *Int. J. Contemp. Hosp. Manag.* **2019**, *31*, 3287–3305. [CrossRef]
23. Choi, H.; Jang, J.; Kandampully, J. Application of the Extended VBN Theory to Understand Consumers' Decisions about Green Hotels. *Int. J. Hosp. Manag.* **2015**, *51*, 87–95. [CrossRef]
24. Kang, K.H.; Stein, L.; Heo, C.Y.; Lee, S. Consumers' Willingness to Pay for Green Initiatives of the Hotel Industry. *Int. J. Hosp. Manag.* **2012**, *31*, 564–572. [CrossRef]
25. Kasim, A.; Ismail, A. Environmentally Friendly Practices among Restaurants: Drivers and Barriers to Change. *J. Sustain. Tour.* **2012**, *20*, 551–570. [CrossRef]
26. Smerecnik, K.R.; Andersen, P.A. The Diffusion of Environmental Sustainability Innovations in North American Hotels and Ski Resorts. *J. Sustain. Tour.* **2011**, *19*, 171–196. [CrossRef]
27. Mensah, I.; Blankson, E.J. Determinants of Hotels' Environmental Performance: Evidence from the Hotel Industry in Accra, Ghana. *J. Sustain. Tour.* **2013**, *21*, 1212–1231. [CrossRef]
28. World Travel & Tourism Council. *Travel and Tourism Economic Impact 2018: Malaysia*; World Travel & Tourism Council: London, UK, 2018.
29. Ajzen, I.; Fishbein, M. *Understanding Attitudes and Predicting Social Behavior*; Prentice-Hall: Englewood-Cliffs, NJ, USA, 1980.

30. Ajzen, I. The Theory of Planned Behavior. *Organ. Behav. Hum. Decis. Process.* **1991**, *50*, 179–211. [[CrossRef](#)]
31. Wernerfelt, B. A Resource-based View of the Firm. *Strateg. Manag. J.* **1984**, *5*, 171–180. [[CrossRef](#)]
32. Babin, B.J.; Darden, W.R.; Griffin, M. Work and/or Fun: Measuring Hedonic and Utilitarian Shopping Value. *J. Consum. Res.* **1994**, *20*, 644–656. [[CrossRef](#)]
33. Rogers, E.M. *Diffusion of Innovations*; Simon and Schuster: Stoughton, MA, USA, 2010.
34. Chan, E.S.; Hon, A.H.; Chan, W.; Okumus, F. What Drives Employees' Intentions to Implement Green Practices in Hotels? The Role of Knowledge, Awareness, Concern and Ecological Behaviour. *Int. J. Hosp. Manag.* **2014**, *40*, 20–28. [[CrossRef](#)]
35. Chen, M.F.; Tung, P.J. Developing an Extended Theory of Planned Behavior Model to Predict Consumers' Intention to Visit Green Hotels. *Int. J. Hosp. Manag.* **2014**, *36*, 221–230. [[CrossRef](#)]
36. Le, Y.; Hollenhorst, S.; Harris, C.; McLaughlin, W.; Shook, S. Environmental Management: A Study of Vietnamese Hotels. *Ann. Tour. Res.* **2006**, *33*, 545–567. [[CrossRef](#)]
37. Lee, S.; Park, S. Do Socially Responsible Activities Help Hotels and Casinos Achieve Their Financial Goals? *Int. J. Hosp. Manag.* **2009**, *28*, 105–112. [[CrossRef](#)]
38. Chou, C.J.; Chen, K.S.; Wang, Y.Y. Green Practices in the Restaurant Industry from an Innovation Adoption Perspective: Evidence from Taiwan. *Int. J. Hosp. Manag.* **2012**, *31*, 703–711. [[CrossRef](#)]
39. Sainaghi, R.; Phillips, P.; Zavarrone, E. Performance measurement in tourism firms: A content analytical meta-approach. *Tour. Manag.* **2017**, *59*, 36–56. [[CrossRef](#)]
40. Alonso-Almeida, M.D.M.; Rocafort, A.; Borrajo, F. Shedding Light on Eco-Innovation in Tourism: A Critical Analysis. *Sustainability* **2016**, *8*, 1262. [[CrossRef](#)]
41. Bagur-Femenias, L.; Celma, D.; Patau, J. The Adoption of Environmental Practices in Small Hotels: Voluntary or Mandatory? An Empirical Approach. *Sustainability* **2016**, *8*, 695. [[CrossRef](#)]
42. Official Portal of the Ministry of Tourism Arts and Culture. 2017. Available online: <http://www.motac.gov.my/en/> (accessed on 20 September 2019).
43. Nunnally, J.C. *Psychometric Theory 3E*; Tata McGraw-Hill Education: New York, NY, USA, 1994.
44. Salem, I.E.; Elbaz, A.M.; Elkhwesky, Z.; Ghazi, K.M. The COVID-19 Pandemic: The Mitigating Role of Government and Hotel Support of Hotel Employees in Egypt. *Tour. Manag.* **2021**, *85*, 104305. [[CrossRef](#)]
45. Karagozoglu, N.; Lindell, M. Environmental Management: Testing the Win-Win Model. *J. Environ. Plan. Manag.* **2000**, *43*, 817–829. [[CrossRef](#)]
46. McCabe, D.L. Buying Group Structure: Construction at the Top. *J. Mark.* **1987**, *51*, 89–98. [[CrossRef](#)]
47. Cvelbar, L.K.; Dwyer, L. An Importance–Performance Analysis of Sustainability Factors for Long-Term Strategy Planning in Slovenian Hotels. *J. Sustain. Tour.* **2013**, *21*, 487–504. [[CrossRef](#)]
48. Kock, N. *WarpPLS User Manual: Version 7.0*; Script Warp Systems: Laredo, TX, USA, 2020.
49. Henseler, J.; Ringle, C.M.; Sinkovics, R.R. The Use of Partial Least Squares Path Modeling in International Marketing. In *New Challenges to International Marketing*; Emerald Group Publishing Limited: Bradford, UK, 2009; pp. 277–319.
50. Kock, N.; Lynn, G.S. Lateral Collinearity and Misleading Results in Variance-Based SEM: An Illustration and Recommendations. *J. Assoc. Inf. Syst.* **2012**, *13*, 25–38. [[CrossRef](#)]
51. Henseler, J.; Ringle, C.M.; Sarstedt, M. A New Criterion for Assessing Discriminant Validity in Variance-Based Structural Equation Modeling. *J. Acad. Mark. Sci.* **2015**, *43*, 115–135. [[CrossRef](#)]
52. Fornell, C.; Larcker, D.F. Evaluating Structural Equation Models with Unobservable Variables and Measurement Error. *J. Mark. Res.* **1981**, *48*, 39–50. [[CrossRef](#)]

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