

Green Communication Action in Island Tourism: Examining Hotels' Low-Carbon Initiatives in Langkawi, Malaysia

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Abstract

The effort to slow climate change has made a low-carbon approach in the tourism accommodation sector crucial. A low-carbon approach in the tourism accommodation sector has become important in the fight to mitigate climate change. One of the efforts to emphasise the low-carbon approach is through the evaluation of its implementation in the hotel. As a result, this article examined a low-carbon strategy in a green communication effort that was gathered face-to-face from 19 hotels on Langkawi Island. A reliable dataset that includes 160 samples was collected over the course of the questionnaire survey's 2-week operation. Both a descriptive and an inferential analysis are undertaken. The hotel's general opinion of the implementation of low-carbon practises is moderate. It demonstrates that there are no discrepancies between the manager and hotel workers in terms of low-carbon current practises. The implementation of green communication practises is most prevalent in the Sales and Administration Department, whereas it is least prevalent in the Food, Beverage, and Kitchen Department. In an effort to lower carbon emissions, tourism accommodation providers may use this study as a guide for future low-carbon practises.

Keywords: Low-carbon hotel, climate change mitigation, carbon reduction, tourism industry.

1. Introduction

Recently, the issues regarding climate change and carbon emissions in the tourism sector have aroused academic and industry concerns around the world. The tourism sector makes a significant contribution to carbon dioxide (CO₂) emissions, accounting for approximately 8% of the world's carbon emissions (Campos et al., 2022). Meanwhile, China is predicted to contribute 7.5% of global carbon dioxide emissions by 2035 (Chen et al., 2018). It is estimated that by 2035,

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carbon emissions from tourism will more than double (UNWTO, 2020). From that prediction, UNWTO et al. (2008) stated the tourism accommodation sector is the second-largest contributor of CO₂, with 24% in tourism activities. Prior to that statement, one of the factors contributing to the gradual worsening of climate change was the intensive use of energy, water, food, and beverage and the inefficiency of waste management by the accommodation tourism industry. Tourism is regarded as hedonistic consumerism (Anirban et al., 2018; UNEP, 2017; Font & McCabe, 2017). Thus, increasing climate action in tourism activities is urgent, as emissions could rapidly rebound once operations resume (Zasali et al., 2023).

In order to suppress the carbon emissions mainly from the tourism accommodation sector, the idea of a low-carbon approach has emerged as an alternative tourism type (Lee & Jan, 2019; Becken, 2017). However, the studies and indicators in the low carbon approach in the tourism accommodation sector are still limited and insufficient, lacking understanding, and in a new phase (Lee & Jan, 2019; Wang et al., 2019). Also, in the local context of Malaysia, the studies on the low carbon approach, specifically low carbon measurement in tourism accommodation operations, exclude other concepts than the green concept itself (Zasali et al., 2023). One of the effective efforts to bridge the gap is developing a low-carbon approach with Green Communication Action (GCA) in hotel accommodation.

Briefly, GCA is about how low-carbon information and knowledge are conveyed within internal and external management in hotel accommodation. For instance, educating front office staff to provide information to guests related to low carbon practises in the accommodation sector can be learned through books placed in each room, and guests are given the option to choose by participating in a green lifestyle (Gupta et al., 2019). In fact, the accommodation operators provide a carbon calculator for tourists who intend to participate in low-carbon travel activities and provide information related to carbon emission data while travelling or uploaded to the website (Zhang, 2017; Chen et al., 2018). On that account, GCA is important in ensuring the success of low-carbon actions in hotel operations by educating staff and tourists to practise a low-carbon approach.

This study provides data on the adoption rates of the low-carbon strategy in GCA among hotels with various departments. The data acquired from the survey can show the manager's and hotel staff's present methods of operation and assessments of their performance in putting forward green communication initiatives. In reality, this study offers some insightful data on how hotels, management, and hotel workers are now using low-carbon measures. This research is the

first to assess the low-carbon approach among hotel providers in Malaysia's tourism industry.

2. Method

The survey was carried out among hotel and resort operators using purposive sampling and a questionnaire survey. The information was gathered in the area of Kuah Town and Chenang Beach on Langkawi Island at the end of November 2022 for about two weeks. The accommodations must be registered with MOTAC Malaysia, have a rating classification, and represent just one management and staff person in each department in order to meet the sample selection criteria. There are 160 valid questionnaire datasets in all. All of the acquired data were nicely organised into the structured dataset after being manually entered in.

Basically, the sources for the questionnaire's questions were taken from a thorough assessment of the literature on low-carbon accommodation in the tourism industry. According to the reading and result synthesis, the Green Communication Action idea, which was developed by UNWTO et al., (2008) is one of the low-carbon components of the island destination lodging. Top management officers and personnel were given the data questionnaire. The front office, sales and administration, food, beverage and kitchen, logistics, maintenance, safety, and housekeeping are the four hotel departments. The GCA is measured among managers and employees in the hotel departments using 51 sub-items. Those sub-items (as shown in column 1, Table 2) are derived from previous research such as; ITP, 2020; Gupta et al., 2019; Lee & Jan, 2019; Wang et al., 2019; Isa et al., 2019; Chen et al., 2018; Gossling & Scott, 2018; UNEP, 2017; Albahori et al., 2017; Zhang, 2017; Cho et al., 2016; Hsiao, 2015; Isa et al., 2015; Rozhan et al., 2015; Horng et al., 2014; Juvan & Dolnicar, 2014 and UNWTO et al., 2008.

The questionnaire is divided into three sections, the first of which, part A, comprises background data about the respondent and a description of the hotel (see Table 1). Part B of the second section describes the department that uses the low-carbon strategy, and part C discusses whether the low-carbon strategy is appropriate to use in the hotel division. Part B of the questionnaire, which asks about present practises, and Part C, which asks about suitability, are rated on a 5-point Likert scale, with 1 = strongly agree, 2 = agree, 3 = neutral, 4 = disagree, and 5 = strongly disagree. Less practises are represented by the lower part B score, while disagreement with the GCA item is represented by the lower part C score. Meanwhile, the higher score for the part B section signifies more practises, and part C is very agreeable with the items in the green communication action. The

language of the questionnaire is provided in two languages, which are the original Malay and English.

Table 1: Sample demographics and hotel profile characteristics (n=160).

Characteristics	N	%
Demographic Profile		
<i>Gender</i>		
Male	79	49.4
Female	81	50.6
<i>Age</i>		
18-19	2	1.3
20-29	77	48.1
30-39	52	32.5
40-49	21	13.1
50-59	7	4.4
>59	1	0.6
<i>Highest Academic Qualification</i>		
SRP/PMR/LCE	4	2.5
SPM/MCE	27	16.9
Diploma	63	39.4
Degree	63	39.4
Masters	2	1.3
Others	1	0.6
<i>Position</i>		
Manager	76	47.5
Staff	84	52.5
<i>Length of Service</i>		
<1 year	21	13.1
1-3 years	61	38.1
4-7 years	59	36.9
8-10 years	10	6.3
11-15 years	3	1.9
>15 years	6	3.8
Hotel Profile		

<i>Department</i>		
Front Office	45	28.0
Sales and Administration	41	26.0
Food, Beverage and Kitchen	32	20.0
Logistic, Maintenance, Safety and Housekeeping	42	26.0
<i>Hotel Classification</i>		
Resort Hotel	6	32.0
City Hotel	13	68.0
<i>Hotel Rating</i>		
1-star	-	-
2-star	5	26.0
3-star	9	47.0
4-star	4	22.0
5-star	1	5

Apart from that, the continuation of Part B's dataset also includes inferential analysis, which is non-parametric analysis. Two non-parametric analyses are conducted: the Kruskal-Wallis H test to examine differences in low-carbon practises for four hotel departments and the Mann-Whitney U test to assess differences in low-carbon practises among the manager and staff in the accommodation department.

The data was analysed using IBM Statistical Package for Social Sciences (SPSS) software version 26. There are two types of analysis performed: descriptive analysis and inferential analysis. Specifically, for inferential analysis, an independent sample t-test with non-normal data was executed between two groups and four departments.

3. Result and Discussion

Based on the descriptive result of the respondent's attitude towards practising GCA in hotel accommodation, this section is divided into two sections, as mentioned before in the methodology section. For the first result of the respondent regarding the current practises of GCA (see Table 2, Column B), only one department, which is the front office department, has a moderate level of GCA practises with a mean value of 3.15, while the other three departments have a low level of GCA practises with a mean value below 3.00.

The GCA sub-indicator that obtained the lowest mean value in the range between 2.40 and below is setting up eco-carbon labels in accommodation services, such as carbon label information with CO2 emission amount, providing report documentation on carbon

emission level and reduction (carbon audit), providing travel guides and information on low-carbon destinations, and allocating guests low-carbon funds against healthy and low-carbon foods. All these items are more about carbon information and measurement. The results of the survey show that there are still deficiencies in understanding and implementing low-carbon approaches, especially in hotel carbon measurement operations.

In addition, respondents also expressed their opinion about item suitability or item suitability agreement in the results section of Table 2 (Column C). The majority of respondents' perceptions from three departments towards the appropriateness of GCA practises were moderate. However, only one department obtained a higher mean value (4.00 above) in practising GCA, which came from logistics, maintenance, security, and housekeeping.

The GCA sub-indicators that obtained the highest mean value in the range between 4.00 and above are: encouraging waste reduction practises; promoting low-carbon travel information, products, and souvenirs; encouraging staff to actively participate in low-carbon activities; developing low-carbon habits and attitudes among employees; using low-carbon vehicles in the accommodation area; encouraging cycling practises; increasing green coverage by providing a rooftop garden or a vertical garden; and choosing building materials and appliances from local sources. This shows that all GCA sub-indicators are more preferred by hotel managers and staff than carbon measurement operations that have a moderate mean value below 4.00, such as allocating low carbon funds, providing report documentation on carbon emission level and reduction (carbon audit), promoting short-haul travel by providing carbon-efficient itineraries, setting up eco-carbon labels in accommodations, etc.

Table 2: Descriptive Results of Respondents 'Responses Towards Practising Green Communication Action in Accommodation Sectors.

Variables	N	Mean Value		Level of Perception	
		Current Practices (B)	Item Suitability (C)	Current Practices	Item Suitability Agreement
	Front Office Department				
1. Promoting travel guides and information on low carbon destination.	45	2.87	4.04	Low	High
2. Promoting authentic low carbon island-based products for tourist souvenirs.	45	2.93	4.02	Low	High

Variables	N	Mean Value		Level of Perception	
		Current Practices (B)	Item Suitability (C)	Current Practices	Item Suitability Agreement
3. Promoting low carbon accommodation on the social media.	45	2.89	4.00	Moderate	High
4. Encouraging tourists to buy local products and handicrafts.	45	3.69	4.13	Moderate	High
5. Encouraging tourists to be at the destination for a long period of time than coming regularly for a short period to avoid higher energy consumption and carbon emission.	45	3.27	3.71	Moderate	Moderate
6. Staff actively participating in low-carbon activities.	45	3.13	4.04	Moderate	High
7. Organizing low-carbon activities (in accommodation management).	45	2.96	4.04	Low	High
8. Allocating low-carbon funds (providing low-carbon moneybox at the front counter).	45	3.47	3.27	Moderate	Moderate
9. Encouraging waste reduction practices.	45	4.24	4.53	High	High
10. Encouraging cycling practices.	45	3.49	3.93	Moderate	High
11. Developing low carbon habit and attitude among employees.	45	3.27	4.18	Low	High
12. Providing report documentation on carbon emission level and reduction (carbon audit).	45	2.51	3.58	Low	Moderate
13. Promoting short haul travel by providing carbon efficient itineraries.	45	2.93	3.69	Low	Moderate

Variables	N	Mean Value		Level of Perception	
		Current Practices (B)	Item Suitability (C)	Current Practices	Item Suitability Agreement
14. Assisting the use of e-marketing for low carbon accommodation travel information to tourist guests.	45	2.91	4.04	Low	High
15. Promoting discounts offered to those tourists who participate in low carbon travel (such as practicing low carbon behaviour throughout the vacation).	45	2.76	3.76	Low	Moderate
Overall perceptions		3.15	3.93	Moderate	Moderate
Sales and Administration Department					
16. Promoting the use of low carbon vehicles in accommodation areas.	41	2.85	3.76	Low	Moderate
17. Promoting environmental and greening beautification in hotels/resorts via landscape design (planting trees, environmentally-friendly arrangements).	41	3.78	4.07	Moderate	High
18. Providing travel guides and information on low carbon destinations.	41	2.49	3.88	Low	Moderate
19. Hiring Langkawi's local people as tour guides under vacation packages.	41	3.61	4.10	Moderate	High
20. Establishing authentic low carbon island-based products for tourist souvenirs.	41	3.00	3.78	Moderate	Moderate
21. Promoting low carbon hotels/resorts on the social media.	41	2.54	4.00	Low	High

Variables	N	Mean Value		Level of Perception	
		Current Practices (B)	Item Suitability (C)	Current Practices	Item Suitability Agreement
22. Encouraging tourists to buy local products and handicrafts.	41	3.76	4.07	Moderate	High
23. Setting up eco carbon labels in accommodation services such as carbon label information with co2 emission amount (office, guest room, hall and dining, meeting room, mosque, cafe, and etc.).	41	2.29	3.51	Low	Moderate
24. Encouraging tourists to be at the destination for a long period of time than coming regularly for a short period to avoid higher energy consumption and carbon emission.	41	3.32	3.71	Moderate	Moderate
25. Organizing monthly training for employees (towards increasing low carbon knowledge and awareness among staff).	41	2.51	4.10	Low	High
26. Staff actively participating in low-carbon activities.	41	2.78	4.07	Low	High
27. Organizing low-carbon activities (in accommodation management).	41	2.68	4.10	Low	High
28. Allocating low-carbon funds.	41	1.90	3.29	Very Low	Moderate
29. Encouraging waste reduction practices.	41	4.24	4.49	High	High
30. Encouraging cycling practices.	41	3.59	4.00	Moderate	High

Variables	N	Mean Value		Level of Perception	
		Current Practices (B)	Item Suitability (C)	Current Practices	Item Suitability Agreement
31. Developing low carbon habit and attitude among employees.	41	3.17	4.17	Moderate	High
32. Choosing building materials and appliances from local sources.	41	3.44	3.56	Moderate	Moderate
33. Providing report documentation on carbon emission level and reduction (carbon audit).	41	2.29	3.51	Low	Moderate
34. Promoting short haul travel by providing carbon efficient itineraries.	41	2.56	3.71	Low	Moderate
35. Using e-marketing for low carbon accommodation travel information.	41	2.68	4.02	Low	High
36. Promoting discounts offered to those tourists who participate in low carbon travel (such as participating in low carbon vacation packages such as practicing low carbon behaviour throughout the vacation.)	41	2.54	3.90	Low	Moderate
Overall perceptions		2.95	3.90	Low	Moderate
Food, Beverage and Kitchen Department					
37. Staff actively participating in low-carbon activities.	32	3.00	4.00	Moderate	High
38. Organizing low-carbon activities (kitchen management and handling i.e., kitchen waste).	32	3.09	3.97	Moderate	Moderate

Variables	N	Mean Value		Level of Perception	
		Current Practices (B)	Item Suitability (C)	Current Practices	Item Suitability Agreement
39. Allocating guests low-carbon funds against healthy and low-carbon foods.	32	2.22	3.25	Low	Moderate
40. Developing low carbon habit and attitude among employees.	32	3.16	4.00	Moderate	High
41. Providing report documentation on carbon emission level and reduction in the kitchen (carbon audit).	32	2.47	3.72	Low	Moderate
Overall perceptions		2.90	3.79	Low	Moderate
Logistic, Maintenance, Safety and Housekeeping Department					
42. Using low carbon vehicles in the accommodation area (hybrid or electric vehicles).	42	3.12	4.05	Moderate	High
43. Strengthening the environmental and greening beautification in hotels/resorts via landscape design (planting trees, environmentally friendly arrangements).	42	3.83	4.29	Moderate	High
44. Increasing the green coverage such as providing rooftop garden or/and vertical garden.	42	3.52	4.02	Moderate	High
45. Staff actively participating in low-carbon activities.	42	3.50	4.05	Moderate	High
46. Organizing low-carbon activities (in accommodation management).	42	3.48	4.10	Moderate	High
47. Encouraging the waste reduction practice.	42	4.40	4.55	High	High

Variables	N	Mean Value		Level of Perception	
		Current Practices (B)	Item Suitability (C)	Current Practices	Item Suitability Agreement
48. Encouraging cycling practices.	42	3.50	3.69	Moderate	Moderate
49. Developing low carbon habit and attitude among employees.	42	3.45	4.05	Moderate	High
50. Choosing building materials and appliances from local sources.	42	3.76	4.17	Moderate	High
51. Providing report documentation on carbon emission level and reduction (carbon audit).	42	2.40	3.60	Low	Moderate
Overall perceptions		3.50	4.06	Moderate	High

The Mann-Whitney U test was used to examine the variations in GCA procedures between managers and employees (see Table 3). Based on the statistical findings, it is evident that the manager and hotel workers follow the same current GCA practises. A non-significant value ($z = -1.095$, $p > .05$) in the statistical analysis indicates that managers collected this data from staff (median = 36.00, $n = 84$) and managers (median = 42.00, $n = 76$). In order to implement a low-carbon strategy, all parties (managers and workers included) and departments in the hotel industry must work together. But as with the examination of GCA outcomes among hotel departments, what makes low-carbon implementation unique depends on the scope and responsibilities of each department.

Table 3: Mann Whitney U Test in Green Communication Action Current Practises Differences Between Hotel's Manager and Staff

Non-Parametric Analysis	Green Communication Action Current Practices
Mann-Whitney U	2871.500
Z	-1.095
Sig. (2-tailed)	.273

Apart from that, to see the differences in GCA practises among hotel departments, a Kruskal-Wallis H test analysis was executed. The statistical result shows that there are differences among hotel departments in practises for GCA, with a significant value of $p < 0.5$ (see Table 4). Thus, a post-hoc analysis was conducted with the Bonferroni correction adjustment.

Table 4: Kruskal-Wallis H Test in Green Communication Action Current Practices Differences Among Hotel Departments

Non-Parametric Analysis	Green Communication Action Current Practices
Kruskal-Wallis H	116.187
df	3
Asymp. Sig.	.001

Based on the post-hoc analysis result, it is shown that the highest performing department in practising green communication action is the Sales and Administration department, with a median value of 57.00. The second-highest department with a median value of 42.00 is the front office department. Nevertheless, the department that has the lowest median value for practising green communication action is the Food, Beverage, and Kitchen Department (med = 13.50). To see more details for each difference among the hotel departments, a post-hoc analysis was conducted with the Bonferroni correction adjustment (see Table 5) as follows:

Table 5: Post-hoc Analysis Result Differences among the Hotel Department Practices

Comparison Between Department	Green Communication Action Current Practices
Front Office – Food, Beverage and Kitchen	<.001 (there are differences)
Front Office – Sales and Administration	<.001 (there are differences)
Front Office – Logistic, Maintenance, Safety and Housekeeping	<.001 (there are differences)
Food, Beverage and Kitchen – Sales and Administration	<.001 (there are differences)
Food, Beverage and Kitchen – Logistic, Maintenance, Safety and Housekeeping	<.001 (there are differences)
Sales and Administration – Logistic, Maintenance, Safety and Housekeeping	<.001 (there are differences)

Thus, after examining the findings of the analysis of the current implementation and appropriateness of GCA implemented in hotel accommodation, it is clear that the implementation of the low-carbon approach through GCA is still low, with a lack of awareness and exposure among hotel managers and staff. Carbon projection in hotels and other carbon measuring procedures, as well as monthly and annual records of carbon emissions, are often absent. Therefore, the

presence of this study might serve as guidance and stress the need of emphasising a low-carbon strategy in hotel operations in an effort to combat climate change, particularly in the tourism accommodation sector.

4. Conclusion

Currently, the low-carbon approach of GCA in hotel management operations within the local context is still in its early phases of knowledge and practise. The survey indicates that the majority of hotel operators have less practise and exposure to the low-carbon approach. Meanwhile, towards the appropriateness of GCA practises, most respondents agreed to apply a low-carbon approach to their daily work.

There are many benefits that can be gained from this study. Firstly, this study identifies novel insights regarding the low-carbon approach and commitment of hotel operators towards GCA in order to mitigate climate change. In addition, this is the first survey to examine a low-carbon approach instead of green practises in all hotel departments on Langkawi Island, Malaysia. This study is also useful to be used as a referral among hotel operators for reducing carbon emissions with GCA. For instance, low-carbon behaviour in hotel management can be promoted, and the use of electricity, water, and waste can be reduced.

This study can be extended to future research in the tourism accommodation sector, focusing on the impact of carbon emissions in hotel operations. Moreover, a practical way to grasp this approach is that it can be tested entirely for hotel operators in order to transform conventional hotels into low-carbon hotels and potentially make a significant contribution to the academic and hotel industries. At the same time, with the practise of GCA, it can reduce carbon emissions in the hotel accommodation sector and is comparable to the aspirations of the Malaysian Government in targeting a carbon reduction of 45% in 2030 and carbon neutrality in 2050 (UNFCCC, 2030). In fact, the reduction of carbon emissions in the hotel accommodation sector is also in line with hotel global organisation by achieving 66% by 2030 and 90% by 2050 to stay within the 2 C threshold agreed at COP21 (ITP, 2020). Therefore, in order to implement low-carbon practises such as GCA in the hotel accommodation sector, it requires comprehensive cooperation from all parties to reduce the impacts of climate change.

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