

Evaluating the Effectiveness of Sustainable Management Practices in Promoting Eco-Friendly Initiatives in the Hospitality Industry

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Abstract

The hotel sector encounters increasing demand to implement sustainable management methods to reduce environmental consequences while preserving competitiveness. The study examines the efficacy of environmentally sustainable efforts, specifically their impact on consumer perceptions and corporate sustainability. The main aim is to assess the influence of sustainable management methods on the environmental footprint of hospitality enterprises and explore consumer preferences for eco-friendly hotels. Data was obtained using a mixed-method approach and structured questionnaires. The results validate that sustainable methods markedly diminish environmental effect and improve customer happiness, demonstrating a favorable association between eco-friendly activities and consumer loyalty. The study emphasizes the financial and reputational advantages of sustainability, underscoring the necessity for hotels to incorporate eco-friendly practices into their operations. Nonetheless, constraints such as geographic breadth and dependence on self-reported data indicate the necessity for more extensive investigation. Future research should investigate the impact of future technologies such as AI, IoT, and block chain on improving sustainability initiatives. The study enhances the existing knowledge on sustainable hotel management and offers insights for industry stakeholders seeking to reconcile environmental responsibility with commercial success.

Keywords: Sustainable hospitality, eco-friendly hotels, customer perceptions, green initiatives, environmental management

1. INTRODUCTION

The "green" or "sustainable" problem in the hotel industry has been the challenge to satisfy companies that aim at eco-consciousness with environmentally friendly accommodations. This has prompted hotel customers to be more conscious of the environmental effects that the industry has caused. The study comprehends consumer perceptions of these initiatives, focusing on the development of travellers' pro-environmental intents within a green hotel setting, revealing that customer pro-environmental intention, a crucial factor for attracting certain passengers, may be predicted. It has been confirmed that customers are influenced while engaging with eco-friendly accommodations [1].

An ecological hotel's services and facilities are created with the main focus on addressing the climate change issue by reducing carbon emissions, using energy more efficiently, and introducing new technologies that are environment friendly [2]. The green hotels often observe environmental laws and

adopt sustainability practices in their business [3]. The hotel industry is moving towards the ecological path for various reasons, including stricter governmental policies, community energy saving, and legal issues. Along the same lines, green hotels that practice unleashing eco-friendly methods in their daily routine are normally better off client-wise than those hospitality organizations that do not. The hotel sector utilizes substantial natural resources, such as water and electricity, and produces significant waste. Consequently, hotels must alleviate this environmental load as an aspect of their corporate social responsibility [4]. The motivations for adopting environmentally sustainable practices encompass financial advantages, enhanced staff dedication, increased consumer loyalty, and the organization's goodwill.

The hotel industry has undergone a major change in the past ten years when it comes to environmental matters. The main environment-friendly methods include the efficient use of water and energy, the recycling of goods, and the preservation of air quality. Hotels can be characterized as being "green" by using water and energy-saving methods that ensure indoor air quality and cutting water and land pollution through recycling and product reuse. The superior facilities and services associated with sustainable hotel practices, such as green open spaces, landscaping, and the provision of smoking rooms, are positively correlated with customer satisfaction and the intention of guests to return [5]. A significant number of hotels are utilizing durable service goods instead of throwaway products, raising consumer awareness regarding recycled products and promoting linen reuse programs. Hotels are incorporating sustainability measures that include green walls to clean the air, natural fibres for bed linens, and designated recycling bins in hotel rooms.

Further measures incorporate changes like LED bulbs, using recycled papers, goods, and furniture, so they also use non-toxic cleaning agents and eco-friendly cleaning agents, as well as locally sourced organic vegetables free from pesticides or fertilizers. Eco-friendly hotels are not only environmentally friendly but also cost-efficient. Green hotel practices have the potential to uplift the company's reputation following the public spotlight on the conservation of the natural environment, and in addition to that, it can attract those people who are environmentally concerned. Only hotels that continuously engage in green practices notably outshine their rivals as they are more likely to experience long-term prosperity [6].

1.1.Eco-friendly attributes and sustainability

Eco-friendly methods are essential for mitigating negative environmental impacts and promoting future sustainability. The term eco is an abbreviation for ecology, and friendly denotes a favorable relationship with the environment. A lodging establishment that adheres to ecological principles, such as the recycling of services and goods, guest participation in sustainability initiatives, and the implementation of effective management systems to promote environmental stewardship and integrate sustainability into decision-making processes, is referred to as a green hotel [3]. The term eco-friendly encompasses several terms, including "environmentally friendly," "green," and "sustainable," to promote their environmentally conscious image [7].

Therefore, the phrase eco-friendly hotel is used interchangeably with environmentally friendly, green, or sustainable hotel. The presence of a favorable correlation between hotels implementing green practices and elevated visitor satisfaction and inclinations to remain. Online review platforms such as TripAdvisor enable consumers to assess and share their experiences. In the context of hotel accommodations, patrons exhibit caution over environmental concerns, and their ethical self-identity influences their intents to remain. Green practices are more pronounced in hotels with a higher star rating. Another noteworthy finding was the recognition of interior air quality as the most appreciated eco-friendly characteristic by

consumers, potentially enhancing the attractiveness of hotels in the future [8]. Although, eco-friendly hotels are founded on sustainable infrastructure, conservation of natural resources, environmentally responsible services and products, and preservation of the environment.

1.2.Sustainability in the Restaurant Industry

Establishments that emphasize environmental sustainability have garnered heightened focus in scholarly discourse and are typically referred to as “ecological” or “green” restaurants [9]. While an exact description of sustainable restaurants remains elusive, they are typically acknowledged for their ecologically sensitive operations that harmonize economic viability with ecological responsibility.

The substantial and ongoing expansion of the restaurant business has resulted in increasing environmental apprehensions. The sector has several issues, including excessive energy and water usage, significant quantities of non-recyclable garbage and food waste [10]. Consequently, there is an increased emphasis on implementing ecologically and economically sustainable practices in restaurants.

Restaurants are using several strategies, like decreasing “energy and water usage, limiting food waste, utilizing renewable energy sources, and procuring foods locally” to tackle these difficulties. The dispositions and actions of restaurant management and workers are important to the effectiveness of these procedures. The attitudes and leadership of senior management are essential for promoting environmental commitment and sustainable practices [11].

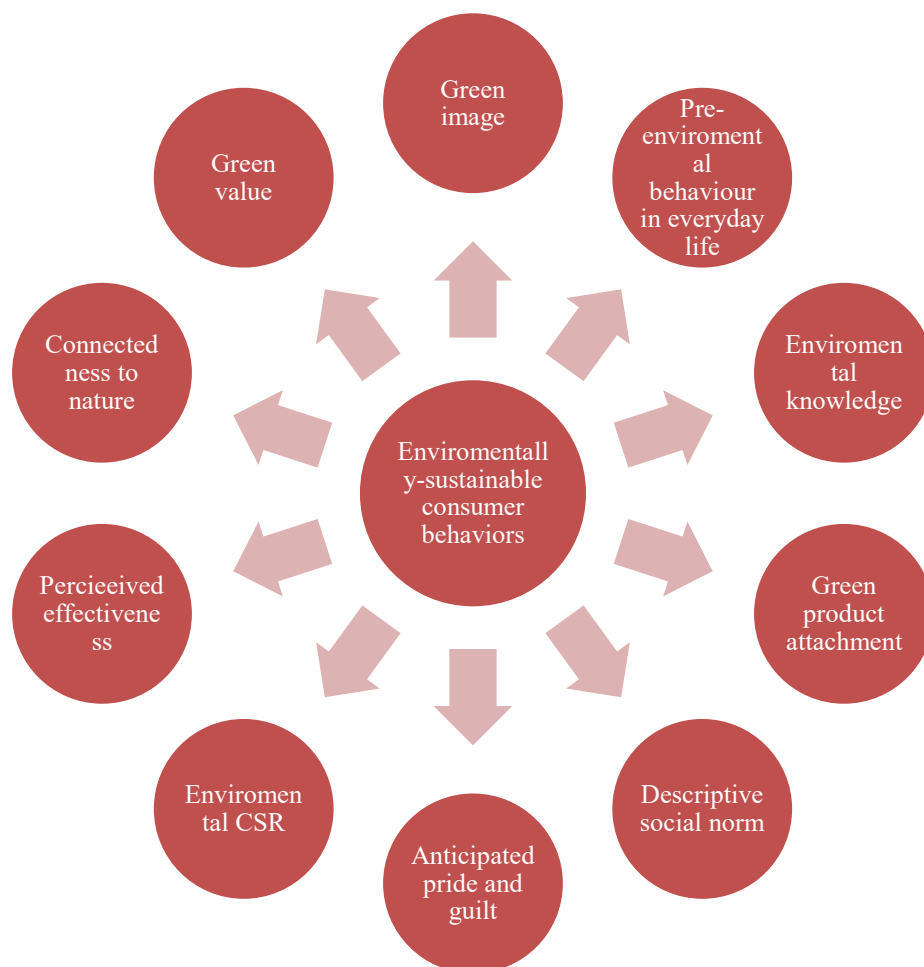


Figure 1: Key drivers of environmentally sustainable consumer behaviours.

Source: Han, (2021).

Within the hotel industry, the objective of this study is to ascertain the effectiveness of sustainable management techniques in the process of enhancing green initiatives. The purpose of this study is to explore the degree to which ecological conservation strategies, such as water management, waste reduction, and energy conservation, are impacting the environmental aspect of various approaches that are optimised for conservation. There has been a discussion over the approaches that are used in the optimisation and pollution-free sourcing, which includes the green purchase of date items and the ecological conservation that takes precedence above operational efficiency. During the course of the research, in-depth information will be provided about the ways in which the hotel industry may improve its environmental performance. This can be accomplished not only by reducing waste, but also by using water-saving technology, all without having a negative impact on economic success. As a result of the research, industry participants will be able to implement the most successful sustainable techniques, such as new suggestions, and establish a sustainable company for other entrepreneurs.

2. Literature review

Kholijah, S. (2024) [12] examined the economic and environmental advantages of sustainable practices within the hotel and tourist sector. A comprehensive examination of the literary work, case studies, and empirical evidence provided insights into the effects of these practices. Study indicated that sustainable practices resulted in cost reductions, improved efficiency, novel income streams, and heightened customer loyalty, while simultaneously diminishing environmental impact through decreased resource utilization and waste production.

Elshaer, I. A., et al., (2023) [13] examined the significance of workers' pro-environmental actions in enhancing “green management practices (GMPs) in small- and medium-sized firms (SMEs)” in developing nations. Data had been gathered from middle managers at hotels and travel agencies through a self-administered survey and had been analyzed using Smart PLS-SEM. The study indicated that Good Manufacturing Practices (GMPs) positively influenced environmental, economic, and social results, with employee engagement amplifying these impacts, underscoring the necessity of cultivating a culture of sustainability.

Lagun, K. (2023) [14] examined sustainable techniques within the hospitality sector and analyzed their social, environmental, and economic advantages. Data had been gathered through case studies and a literature study. The study demonstrated that sustainable measures, including resource conservation and waste minimization, improved environmental outcomes and supported the enduring profitability of eco-friendly hotels, addressing the increasing need for sustainability in tourism.

Xess, A., et al., (2021, August) [15] examined the Customer and staff perceptions of environmentally sustainable technology in the hotel sector. Data had been gathered via questionnaires that evaluated consumer behavior and employee satisfaction. The study indicated that implementing eco-friendly procedures enhanced consumer and employee satisfaction, providing long-term advantages to hotels by appealing to environmentally concerned patrons and promoting employee involvement in sustainability efforts.

Meeroff, D. E., et al., (2020)[16] examined the determinants that affected the efficacy of sustainability efforts in the hospitality industry. Data had been gathered through case studies of the participating hotels. The study indicated that techniques such as minimization of waste, optimization of energy efficiency, and water conservation produced environmental, economic, and social advantages. Challenges in obtaining

management support and connecting everyday operations with sustainability objectives were recognized as significant barriers to effective implementation.

Tiwari, S., et al., (2020) [17] examined eco-friendly practices at star-rated hotels in Lucknow and identified the obstacles of implementation. Data had been gathered using a standardized questionnaire that was administered to hotel personnel. The study indicated that methods such as waste management, sewage treatment, and energy-efficient lighting were extensively implemented. Nonetheless, a considerable obstacle was the substantial initial capital necessary for establishing sustainable systems, which impeded the widespread adoption of green technology.

Research on sustainable management practices (SMPs) in the hotel sector reveals significant findings, with Kholijah (2024) underscoring the incorporation of renewable energy and intelligent technology to enhance long-term economic competitiveness. Elshaer et al. (2023) investigate the significance of workers' pro-environmental actions in SMEs, whereas Xess et al. (2021) demonstrate that eco-friendly activities enhance consumer and staff satisfaction. Tiwari et al. (2020) note issues such as substantial initial investment expenditures associated with the implementation of sustainable practices, especially in star-rated hotels. Notwithstanding these findings, deficiencies persist in comprehending the obstacles encountered by SMEs in developing nations, the significance of staff training, and the enduring impacts of sustainable efforts on operational efficiency and consumer loyalty. Additional study is required to evaluate the incorporation of sustainability into routine operations and its wider effects across other hotel classifications.

3. Material and methods

This study, titled "Evaluating the Effectiveness of Sustainable Management Practices in Combating Eco-Friendly Initiatives in the Hospitality Industry," utilizes both qualitative and quantitative methods. Conducted in Delhi NCR, the target population comprises hotel managers, administrators, and customers, with a sample size of 150 selected through stratified random sampling. The research design is descriptive and exploratory, using a structured questionnaire to gather data on sustainable practices, customer perceptions, and eco-friendly initiatives. Statistical analysis is performed using MS Excel and SPSS, applying mean, standard deviation, and regression techniques to examine the relationship between sustainable practices and environmental outcomes in the hospitality sector.

3.1. Research objectives

- To examine the impact of sustainable management practices on the environmental footprint of hospitality businesses.
- To investigate customer perceptions toward eco-friendly initiatives in the hospitality sector.

3.2. Hypothesis

H1: Sustainable management practices have a significant impact on the environmental footprint of hospitality businesses.

H2: Customer perceptions significantly influence the adoption of eco-friendly initiatives in the hospitality sector.

4. Result

Table 1: Demographic Characteristics

Sr. No.	Demographic Characteristics		N	%
1	Gender	Female	73	48.7

		Male	77	51.3
2	Age Group	20–30 years	41	27.3
		31–40 years	35	23.3
		41–50 years	41	27.3
		51 years and above	33	22.0
3	Educational Qualification	Diploma in Hospitality Management	41	27.3
		Bachelor's Degree	59	39.3
		Master's Degree	41	27.3
		Ph.D.	9	6.0
4	Years of Experience in the Hospitality Industry	Less than 5 years	43	28.7
		5–10 years	34	22.7
		11–15 years	32	21.3
		More than 15 years	41	27.3
5	Type of Hospitality Business	Budget Hotel	26	17.3
		3 Star Hotel	47	31.3
		4 Star Hotel	62	41.3
		5 Star Hotel	15	10.0

Table 1 of the demographic breakdown of the study sample (N=150) showed that there was almost equal gender, with 51.3% male and 48.7% female. The age range was fairly well distributed, with the largest segment in the 20–30 years (27.3%) and 41–50 years (27.3%) brackets, followed by 31–40 years (23.3%) and 51 years and older (22.0%). With regard to educational levels, the majority of respondents possessed a bachelor's degree (39.3%) and a master's degree (27.3%), while 6.0% possessed a Ph.D. and 27.3% had held a diploma in Hospitality Management. With regard to work experience, 28.7% possessed less than 5 years, followed by 27.3% with over 15 years, and the rest of the respondents were fairly evenly distributed in 5–10 years (22.7%) and 11–15 years (21.3%). Finally, the hospitality business type indicated a more concentrated representation in 4 Star Hotels (41.3%) and 3 Star Hotels (31.3%), whereas Budget Hotels (17.3%) and 5 Star Hotels (10.0%) were less than the sample. Those segments ensured a well-rounded and diversified set of hospitality practitioners for the analysis of sustainable management practices and environmental initiatives.

Obj. 1: To examine the impact of sustainable management practices on the environmental footprint of hospitality businesses.

H1: Sustainable management practices have a significant impact on the environmental footprint of hospitality businesses.

Table 2: Regression Analysis

Hypothesis	Regression Weights	Beta Coefficient	R2	F	t-value	p-value	Hypothesis Result
H1	Sustainable management practices > Environmental	.321	0.103	17.012	4.125	0.000	Supported

	footprint of hospitality businesses						
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Table 2 of the regression analysis of Hypothesis H1 explored the effect of sustainable management practices on the environmental impact of hospitality enterprises. The beta coefficient (0.321) confirmed the existence of a positive relationship, which stipulated that enhanced sustainable management practices resulted in decreased environmental impact. The R^2 value (0.103) indicated that 10.3% of the change in the environmental impact was accounted for by sustainable management practices. F-statistics (17.012) and t-value (4.125) were significant, with a p-value of 0.000, validating the strength of the relationship. The hypothesis held true, and the results identified the importance of sustainability programs in reducing environmental footprints in the hospitality industry.

Obj. 2: To investigate customer perceptions and preferences toward eco-friendly initiatives in the hospitality sector.

H2: Customer perceptions and preferences significantly influence the adoption of eco-friendly initiatives in the hospitality sector.

Table 3: Regression Analysis

Hypothesis	Regression Weights	Beta Coefficient	R ²	F	t-value	p-value	Hypothesis Result
H2	Customer perceptions > Adoption of eco-friendly initiatives in the hospitality sector	0.326	0.106	17.573	4.192	0.000	Supported

Table 3 of the regression analysis of Hypothesis H2 examined the influence of customer attitudes on the adoption of environmentally friendly practices in the hospitality industry. The beta coefficient (0.326) was positive, which implied that positive customer attitudes and preferences played a crucial role in the implementation of environmentally friendly practices. The R^2 value (0.106) revealed that 10.6% of the difference in the adoption of such practices was accounted for by customer attitudes. Both F-statistics (17.573) and t-value (4.192) were statistically significant and had a p-value of 0.000, proving the association. With the support for the hypothesis, the result validated the necessity for integrating efforts at sustainability to achieve what was needed to augment ecologically sound initiatives within hospitality firms.

5. Discussion

The study findings reflect that customer views and sustainable management practices play an important role in determining environmental sustainability in the hospitality industry. Hypothesis H1 is proved by regression analysis that sustainable management practices positively contribute to minimizing the environmental impact of hospitality firms ($\beta = 0.321$, $R^2 = 0.103$, $p = 0.000$), highlighting the need for the implementation of sustainability-oriented operational measures. Equally, Hypothesis H2 findings identify that customer attitudes and needs strongly influence the adoption of green initiatives ($\beta = 0.326$, $R^2 = 0.106$, $p = 0.000$), proving that hotels whose services respond to greener customer demands are likely to have green initiatives in place. These results reaffirm the importance of incorporating sustainable

management strategies and customer-focused eco-friendly policies in hospitality firms to promote environmental responsibility and long-term sustainability.

The results of this research concur with past research highlighting the central position of customer preferences and sustainable management practices in influencing environmental sustainability in the hotel sector. As in Barakat, et al., (2023) [18] and Darvishmotevali, & Altinay, (2022) [19] research, where it was determined that hotels have a substantially reduced environmental impact due to sustainable operation strategies, so too does this research establish that sustainability practices positively affect environmental results ($\beta = 0.321$, $p = 0.000$). Also, the significant impact of customer attitudes on the adoption of green initiatives ($\beta = 0.326$, $p = 0.000$) confirms earlier studies by Yusliza, et al., (2020) [20] and Arshad, et al., (2023) [21], who emphasized that hotels with green practices have environmentally friendly customers, which ultimately leads to sustainability initiatives. Whereas past research has predominantly been concerned with luxury hotels, the present research expands the sample to encompass a range of hospitality companies, thereby substantiating the idea that sustainability is not specific to upscale hotels but applies throughout the industry. The findings indicate that hospitality companies should strategically embed sustainability practices and link them to changing customer needs to maximize long-term environmental stewardship and competitive positioning.

6. Conclusion

The study underscores the essential importance of sustainable management techniques in mitigating the ecological impact of hospitality enterprises & the substantial effect of consumer perceptions in promoting eco-friendly activities. The results validate that sustainability-focused operational strategies not only alleviate environmental impact but also align with the growing consumer demand for environmentally friendly accommodations. Hotels using sustainable practices, like energy efficiency, waste minimization, and environmentally sensitive design, get a competitive edge by improving customer happiness and loyalty. The growing worldwide awareness of environmental issues requires a planned incorporation of sustainability within the hotel industry. Ultimately, sustained dedication to sustainability is essential for the industry's future expansion and ecological accountability.

This study emphasizes the significance of sustainable management methods in the hotel sector, benefiting enterprises, policymakers, and environmental proponents. Eco-friendly strategies improve company reputation, foster consumer loyalty, and promote financial success, all while mitigating environmental damage. Nonetheless, the study is constrained by its geographic concentration on Delhi NCR and its dependence on self-reported data, which may not comprehensively reflect worldwide trends. Furthermore, the long-term financial implications remain unexamined. Future study should broaden geographically, do longitudinal studies, and investigate emerging technologies such as “AI, IoT, and blockchain” to improve sustainability initiatives. These improvements may enhance resource management, elevate client experiences, and propel the sector towards a more sustainable future.

Reference

1. Ozturkcan S, Kitapci O. A sustainable solution for the hospitality industry: The QR code menus. *Journal of Information Technology Teaching Cases*. 2023;20438869231181599.
2. Lee WH, Cheng CC. Less is more: A new insight for measuring service quality of green hotels. *Int J Hosp Manag*. 2018;68:32-40.

3. Green Hotels Association. Why should hotels be green? [Internet]. 2018 [cited 2020 Jul 6]. Available from: <http://greenhotels.com/index.php>
4. Chand M, Garge S. Eco friendly practices in Indian hotel industry: An exploratory study. *Int J Hosp Tour Syst*. 2017;10(1).
5. Supriadi B, Astuti W, Firdiansyah A. Green product and its impact on customer satisfaction. *IOSR J Bus Manag*. 2017;19(8):1.
6. Amandeep. Green hotels and sustainable hotel operations in India. *Int J Manag Soc Sci Res*. 2017;6(2):13-6.
7. Chhetri S, Kumar A. Attitude of customers towards eco-friendly practices: An exploratory study in star category hotels of Uttar Pradesh. *International Journal of Health Sciences*. 2022(I):9247-56.
8. Zhang L, Chen L, Wu Z, Xue H, Dong W. Key factors affecting informed consumer's willingness to pay for green housing: A case study of Jinan, China. *Sustainability*. 2018;10(6):1711.
9. Iamkovaia M, Arcila M, Cardoso Martins F, et al. Sustainable development of coastal food services. *Sustainability*. 2019;11(13):3728. Available from: <https://www.mdpi.com/2071-1050/11/13/3728>
10. Jang YJ, Zheng T, Bosselman R. Top managers' environmental values, leadership, and stakeholder engagement in promoting environmental sustainability in the restaurant industry. *Int J Hosp Manag*. 2017;63:101-11. doi: 10.1016/j.ijhm.2017.03.005.
11. Dey M, Bhattacharjee S, Mahmood M, Uddin MA, Biswas SR. Ethical leadership for better sustainable performance: Role of employee values, behavior and ethical climate. *Journal of Cleaner Production*. 2022 Feb 20;337:130527.
12. Kholijah S. Analysis of economic and environmental benefits of green business practices in the hospitality and tourism sector. *Involvement International Journal of Business*. 2024 Jan 20;1(1):60-74.
13. Elshaer IA, Azazz A, Fayyad S. Green management and sustainable performance of small-and medium-sized hospitality businesses: moderating the role of an employee's pro-environmental behaviour. *International Journal of Environmental Research and Public Health*. 2023 Jan;20(3):2244.
14. Lagun K. The Role of Eco-Friendly Hotels Towards Sustainability-An Initiative from the Hospitality Sector.
15. Xess A, Bhargave H, Kumar P. A study on influence of eco-friendly technologies in hospitality industry. *J Phys Conf Ser*. 2021 Aug;1950(1):012024. IOP Publishing.
16. Meeroff DE, Scarlatos PD, Bloetscher F, Sobel L. Implementation of sustainability practices in the hospitality industry. *Journal of Service Science and Management*. 2020 Mar 31;13(2):189-208.
17. Tiwari S, Dambhare A, Tripathi R. Eco-friendly practices in star category hotels of Lucknow: An exploratory study. *AVAHAN: A Journal on Hospitality and Tourism*. 2020 Jan 1;8(1):9-16.
18. Barakat B, Milhem M, Naji GM, Alzoraiki M, Muda HB, Ateeq A, Abro Z. Assessing the impact of green training on sustainable business advantage: exploring the mediating role of green supply chain practices. *Sustainability*. 2023 Sep 25;15(19):14144.
19. Darvishmotevali M, Altinay L. Toward pro-environmental performance in the hospitality industry: Empirical evidence on the mediating and interaction analysis. *Journal of Hospitality Marketing & Management*. 2022 May 19;31(4):431-57.
20. Yusliza MY, Amirudin A, Rahadi RA, Nik Sarah Athirah NA, Ramayah T, Muhammad Z, Dal Mas F, Massaro M, Saputra J, Mokhlis S. An investigation of pro-environmental behaviour and sustainable development in Malaysia. *Sustainability*. 2020 Aug 31;12(17):7083.

21. Arshad M, Yu CK, Qadir A, Rafique M. The influence of climate change, green innovation, and aspects of green dynamic capabilities as an approach to achieving sustainable development. Environmental Science and Pollution Research. 2023 Jun;30(27):71340-59.