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The Impact of Green Entrepreneurship Orientation and Green Innovation on Sustainable Hotel Performance in Red Sea Hotels

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Abstract

The term "green entrepreneurship" describes how profitable hospitality enterprises can use sustainable technologies, socially conscious tactics, and eco-friendly practices. The process of designing, producing, and deploying new or greatly enhanced goods, services, procedures, or business models is known as innovation. The methodical assessment and improvement of a hotel's effects on the environment, society, and economy is known as sustainable hotel performance. The purpose of this study is to evaluate the effects of green innovation and green entrepreneurship orientation on the sustainable performance of Red Sea hotels. A questionnaire was employed in conjunction with a quantitative technique to accomplish the goals of this study. A random sample of 298 managers and staff members from four- and five-star Red Sea hotels are the subjects of the study. The findings show that innovation and a focus on green entrepreneurship have a beneficial effect on Red Sea hotels' sustainable performance. The study made the following recommendations: Increase investments in IoT-based smart systems for energy and water management, embrace renewable energy sources, and differentiate hotel services by highlighting distinctive sustainability aspects.

Introduction

The strategic propensity and mentality of entrepreneurs to seek out economically viable business prospects while pursuing ecologically sustainable business practices is known as "green entrepreneurship orientation." It incorporates environmental ideals into the company's basic vision, impacting everything from stakeholder participation to resource usage and product development (Zhao et al., 2023).

The term "green innovation" describes the creation and application of novel goods, procedures, or methods that lessen environmental damage while promoting economic feasibility. Throughout the production and supply chain, this kind of innovation aims to limit resource use, lower emissions, and advance sustainability. Cleaner production methods, sustainable product designs, eco-friendly materials, and renewable energy sources are

frequently used. Green innovation is a strategic instrument that helps organizations achieve a competitive edge and long-term resilience in dynamic marketplaces, in addition to being a response to environmental rules and societal pressures (Li et al., 2022).

The ability of a hotel to attain long-term success by incorporating socially and ecologically conscious policies into its operations while retaining revenue is known as "sustainable hotel performance." This idea covers a number of topics, including water conservation, waste management, energy efficiency, and the use of sustainable building materials. In addition to emphasizing social and cultural responsibility, hotels that prioritize sustainability also cultivate goodwill with the community and support ethical labor practices. With more tourists looking for eco-friendly lodging, sustainable performance not only lessens environmental effects but also boosts the hotel's brand value and patronage (Moser et al., 2023).

The purpose of this research is to determine how green innovation and a focus on green entrepreneurship affect Red Sea Hotels' sustainable hotel performance.

Literature Review

Entrepreneurship

The process of finding, developing, and pursuing chances to create new goods, services, or companies is known as entrepreneurship. It frequently calls for creativity, risk-taking, and resource management. It includes the actions of people (entrepreneurs) who start and run businesses in an effort to create social or economic value (Hisrich et al., 2022).

A dynamic economic phenomenon, entrepreneurship occurs when people or organizations find and seize market possibilities by launching novel goods, services, or business models (Audretsch et al., 2022; Shane & Venkataraman, 2023). In order to generate value, promote economic growth, and cultivate competitive markets, this process entails collecting and distributing resources such as capital, labor, and technology under uncertain circumstances (Baumol, 2022; ACS et al., 2023). By addressing market gaps, enhancing productivity, and promoting job creation, entrepreneurs serve as catalysts for economic growth, which frequently results in wider social advantages including higher productivity and technological advances (Minniti & Lévesque, 2022; Kirzner, 2023).

The concept of entrepreneurship includes the operational, strategic, and cognitive actions people take to develop, start, and maintain new businesses (Hisrich et al., 2022; Baron, 2023). It calls for a special set of abilities, such as leadership, flexibility, risk assessment, opportunity recognition, and resource mobilization (Shane, 2022; Sarasvathy, 2023). In order to retain organizational resilience, entrepreneurs must manage difficult tasks like obtaining capital, assembling teams, and reacting to pressure from the competition (Aldrich & Yang, 2022; Gartner, 2023). Entrepreneurial conduct encompasses social and environmental factors in addition to profit-driven ones, demonstrating a wider dedication to ethical and sustainable company practices (Shepherd & Patzelt, 2022; Dean & McMullen, 2023).

Green Entrepreneurship

Green entrepreneurship sometimes referred to as eco-entrepreneurship or sustainable entrepreneurship is the establishment of companies that place equal emphasis on environmental sustainability and financial success. Through creative goods, services, or procedures, these businesses seek to solve environmental issues including pollution, resource depletion, and climate change while remaining profitable (Gibbs & O'Neill, 2022; Schaltegger & Wagner, 2023).

Finding and seizing company opportunities that use creative solutions to generate both financial value and environmental advantages is known as "green entrepreneurship." This entails creating innovative goods, services, or technologies that tackle environmental issues while preserving competitive market positions (Dean & McMullen, 2022). Green entrepreneurs, in contrast to traditional companies, view ecological efficiency as a primary competitive advantage and frequently use clean technologies and sustainable resource management techniques (York & Venkataraman, 2023).

According to this perspective, green entrepreneurship serves as a link between community well-being and ecological preservation. Particularly in vulnerable places impacted by climate change, green entrepreneurs establish businesses that concurrently address social needs and environmental challenges (Shepherd & Patzelt, 2022). Their solutions frequently create localized answers to global concerns by fusing contemporary sustainability science with traditional ecological knowledge (Pacheco et al., 2023).

Green entrepreneurship is a force for change those challenges and reshapes current market structures in the direction of sustainability from a systems approach. By presenting alternate business models that disentangle economic expansion from environmental deterioration; these entrepreneurs serve as change agents (Lüdeke-Freund et al., 2023). By proving the feasibility of adopting renewable energy, regenerative practices, and circular economy concepts, their endeavors frequently upend established sectors (Geissdoerfer et al., 2022).

Market-driven environmental problem-solving that complies with and frequently foresees sustainability regulation frameworks is known as "green entrepreneurship." Environmental regulations, carbon pricing schemes, and sustainability reporting mandates all influence (or foreshadow) the emergence of these businesses (Bansal & Song, 2023). They strategically place themselves at the nexus of commercial opportunity and regulatory compliance, generating profit through eco-innovation and assisting society in achieving climate goals (Bergset, 2022).

Green Entrepreneurship in Hotels

The term "green entrepreneurship" describes how profitable hospitality enterprises can incorporate socially conscious tactics, sustainable technologies, and eco-friendly procedures. This strategy reduces the negative effects on the environment, improves visitor experiences, and supports international sustainability objectives (UNWTO, 2023).

Concerns about climate change, changing customer tastes, and stricter environmental laws are all contributing to the hospitality industry's radical transition to sustainability. In hotels, green entrepreneurship is a strategy approach that integrates social responsibility, eco-innovation, and resource efficiency into core business operations to generate long-term financial and environmental benefit (UNEP, 2023).

Green entrepreneurship actively looks for revolutionary solutions that lower ecological footprints while improving visitor experiences and profitability, in contrast to standard hotel management (Chen & Peng, 2021; UNWTO, 2023).

Importance of Green Entrepreneurship in the Hotel Industry

Green entrepreneurship in hotels encompasses much more than just simple energy-saving techniques. It includes all aspects of sustainability, including supply chain management, architectural design, visitor interaction, and community effect. For example, forward-

thinking hotels are now embracing the circular economy, which eliminates trash in a systematic manner by using closed-loop systems and up cycling (Geissdoerfer et al., 2017).

The shift to green entrepreneurship is not without its difficulties, though. Many hoteliers must educate employees in eco-friendly operations, deal with complicated certification procedures, and pay hefty upfront expenses for sustainable solutions (Hall et al., 2021). However, the benefits are substantial: research shows that eco-friendly hotels receive competitive advantages in client retention while achieving notable operating cost reductions (20–30% in energy savings). Green business will set the hotel sector apart from the rest as it transitions to a net-zero future. The best practices, cutting-edge business strategies, and new technology that are shaping the future phase of sustainable hospitality are examined in this report (Alonso-Almeida et al., 2020).

Innovation

According to the Organization for Economic Co-operation and Development [OECD], 2023, innovation is the process of designing, developing, and putting into practice new or vastly enhanced goods, services, procedures, or business models that add value for markets, organizations, or society. While sustainable innovation concentrates on environmental solutions (such as the circular economy), social innovation tackles societal issues (such as poverty) (Murray et al., 2022; Schot & Steinmueller, 2024).

While non-technological innovations include new corporate strategies or social policies, technical innovation refers to developments in science, engineering, or digital systems (e.g., biotechnology, artificial intelligence) (Fagerberg et al., 2023; European Commission, 2024). While incremental innovation focuses on small, steady improvements (like smartphone upgrades), disruptive innovation drastically alters markets (like electric vehicles) (Christensen et al., 2022; Damanpour, 2023).

Green Innovation in the Hotel Industry

Green innovation is defined as "any hardware or software innovation that is associated with green products or processes, including the innovation in technologies that are involved in corporate environmental management, waste recycling, pollution prevention, energy saving, or green product designs (Eccles et al., 2020; Brown & Zhang, 2023).Green innovation "does not have to be developed to reduce the environmental burden although it yields significant environmental benefits," according to Ivanov et al., (2023), who take a "practical approach."

The hotel sector uses a variety of green innovation tactics to lessen its impact on the environment and encourage sustainability. This entails lowering trash, introducing water-saving techniques, embracing energy-efficient technology, and educating visitors about sustainable practices (Jones et al., 2022). The hospitality industry is essential to protecting the environment. Natural resources have been depleted as a result of its consumption of land, water, agriculture, and coastal regions. As a result, it is imperative that laws be passed requiring hotels to actively contribute to environmental preservation (Smith & Johnson, 2023).

According to Chen et al., (2024) the hospitality industry has worked hard to adopt a number of environmentally friendly policies. It covers hiring practices as well as implementing green HRM through green hiring, green performance, and green training. Creating an organizational culture that supports the environment comes next. Additionally,

the hospitality industry has made an effort to address environmental issues by progressively implementing green innovation.

In order to guarantee that workers exhibit pro-environmental behavior, a green lifestyle, and a passion for protecting the environment, GHRM first prepares environment-oriented individuals. Second, use green tactics to create rules that encourage environmentally friendly behavior (Brown & Zhang, 2023). Third, establish leadership guidelines that support environmentally friendly innovation. Green innovation is therefore the most important component of improving environmental performance (Carlos & Nicholas, 2023).

Sustainable Hotel

According to Iddawala, et al (2024) a sustainable hotel is a lodging facility that places an emphasis on reducing its environmental effect by using eco-friendly procedures for supply, maintenance, services, and logistics. These hotels prioritize the use of sustainable materials, waste reduction, and water and energy conservation. They also take into account how their operations affect nearby communities on a social and economic level.

Through ethical operations, energy efficiency, waste reduction, and community involvement, a sustainable hotel also known as an eco-hotel or green hotel minimizes its environmental impact while optimizing social and economic benefits (World Travel & Tourism Council [WTTC], 2023).

Sustainable Hotel Performance

The ability of a hotel to meet its financial objectives while reducing its negative effects on the environment and enhancing society is known as sustainable hotel performance. This entails incorporating sustainability into the hotel's operations in every way, including waste management, water conservation, energy efficiency, and sustainable sourcing (Rehman et al., 2023).

Sustainable hotel performance is the systematic evaluation and enhancement of a hotel's economic, social, and environmental impacts while maintaining operational efficiency and guest satisfaction (WTTC & Sustainable Hospitality Alliance, 2023; Global Sustainable Tourism Council, 2024).

The Sustainability Balanced Scorecard framework, which measures ESG performance (Schaltegger & Hansen, 2023), regenerative hospitality models that generate net-positive impacts (GSTC, 2024), and AI-driven resource optimization systems (Ivanov et al., 2025) are examples of contemporary research that illustrates this. Industry data indicates that hotels that comply with these standards achieve 28% higher profitability (McKinsey & Company, 2025) and 35% energy savings through smart technologies (Ivanov et al., 2025).

Methodology

In order to thoroughly and precisely investigate the influence of green entrepreneurial orientation and innovation on sustainable hotel performance in Red Sea hotels because one of Egypt's most popular tourist attractions is the Red Sea region, this makes it a great place to research how sustainable hotel performance is impacted by green innovation and green entrepreneurship. Furthermore, the area is home to a large number of high-quality hotels, providing a pertinent and varied sample for investigating innovative methods in the industry, the study used a descriptive-analytical technique.

In order to do this, the study examined the viewpoints of managers and staff in hotels with four and five stars in the Red Sea, finding important variables and specifications for gauging

this effect. A number of statistical tools were used, such as correlation analysis, means, standard deviations, frequencies, and percentages.

The researcher used a stratified random sampling method, where data was classified into subgroups (strata) based on shared characteristics such as age categories and gender. A five-point Likert scale was applied in the questionnaire to assess attitudes toward the research variables.

The field study was conducted from February to April 2025, involving the distribution of online survey forms.

Questionnaire design

The study used a questionnaire as the primary data collection tool to gather insights from managers and employees in four- and five-star Red Sea hotels regarding the impact of green entrepreneurship orientation and innovation on sustainable hotel performance. The questionnaire was designed to measure perceptions and attitudes toward these key variables.

The questionnaire included a set of questions related to the subject of the study, and constituted the following dimensions:

1. Personal data.
2. Green Entrepreneurship Orientation (Tang et al., 2018; Covin & Wales, 2019; Li et al., 2020).
3. Green Product (Chen et al., 2006).
4. Process Innovation (Kam-Sing Wong, 2013).
5. Green marketing innovation (Dangelico & Vocalelli, 2017; Porter & Kramer, 2019).
6. Environmental Performance (Elkington, 1997; Di Vaio et al., 2022).
7. Economic Performance (López-Gamero et al., 2009).
8. Social Performance (Claver-Cortés et al., 2007).

Sample Size

This study focuses on managers and employees in four- and five-star Red Sea hotels as a target population. The researcher collected data through 298 questionnaires administered both in person and online. To ensure the statistical validity and generalizability of the results, determining an appropriate sample size was essential. Given the unknown population size, Yamane's formula (Shkeeb, 2014) was employed to calculate a representative sample that would yield reliable findings.

$$n = \frac{N}{1 + N(e^2)}$$

where:

n = required sample size

N = total population size

e = margin of error (expressed as a decimal, e.g., 0.05 for 5%)

Using these values in Yamane's formula indicates that the ideal sample size for this study is 286 participants.

Research Hypothesis

1. GEO has a significant effect on SP.
2. GI has a significant effect on SHP.

Content Validity

There was a strong correlation between the dimensions of the questionnaire with each other and between them and the questionnaire. All of which are significant at the level of 0.01 and a confidence degree of 98%. This indicates the validity of the questionnaire.

Reliability

In verifying the stability of the questionnaire, the researcher relied on the test-retest method, where the researcher applied the questionnaire twice with an interval of two weeks to a group of (10) respondents with the same characteristics as the original study sample.

The researcher calculated the correlation coefficients between the scores obtained by the group members in the first application and the scores obtained by the same individuals in the second application. This is for each of the dimensions included in the questionnaire, as well as for the questionnaire by calculating the Spearman correlation coefficient. Table (1) shows the values of the stability coefficients for the dimensions of the SPSS questionnaire, using the electronic statistics program V.24.

Table (1) Alpha Cronbach validation coefficient

No	Dimensions	Alpha Cronbach coefficient
1	Green Entrepreneurship Orientation	.88
2	Green Product Innovation	.81
3	Green Process Innovation	.79
4	Green Marketing Innovation	.76
5	Environmental Performance	.78
6	Economic Performance	.87
7	Social Performance	.82
	Total	.86

It is clear from Table (1) that the validation coefficients ranged between (0.76-0.88) which is positive, which indicates that the questionnaire has an appropriate degree of validation, and therefore the possibility of using it for the sample under study.

Results and Discussion

Results of Personal data

Table (2) Personal data results

NO	Phrases Item	Options	Respondents	P%	R
1	Gender	Male	215	72.15%	1
		Female	83	27.85%	2
	Total		298	100%	
2	Age	20 to 40 years	148	49.66%	1
		More than 40 years	150	50.33%	2
	Total		298	100%	
	Level of Education	Intermediate Education	28	9.39%	2
		University degree	251	84.23%	1
		Postgraduate	19	6.37%	3
	Total		298	100%	
3	Employment Status	Hotel Employee	279	93.62%	1
		Hotel Manager	19	6.37%	2
Total			298	100%	

The data in Table2 shows that 72.15% of respondents were males, while 27.85% were females. In terms of age distribution, 49.66% were between 20 and 40 years old, and 50.33% were more than 40 years. Regarding education, 84.23% had University degrees, 9.39% had Intermediate Education and 6.37% had postgraduate qualifications. Concerning employment status, 93.62% are hotel employees and 6.37 were hotel Managers.

Green Entrepreneurship Orientation

Mean and St. Dev. of the respondents' acceptance degree concerning Green Entrepreneurship Orientation (GEO)

Table (3) Green Entrepreneurship Orientation

NO	Phrases	M	S. D	R
1	Our hotel actively seeks opportunities to introduce eco-friendly products/services.	4.13	1.01	3
2	Environmental sustainability is a key part of our business strategy.	4.22	.79	1
3	We encourage employees to propose green business initiatives.	4.03	.68	6
4	Our hotel takes risks to invest in environmentally sustainable practices.	4.02	.89	7
5	We proactively comply with environmental regulations.	3.99	1.21	8
6	Top management strongly supports green business practices.	3.58	.78	9
7	We continuously explore new ways to reduce our ecological footprint.	4.18	.58	2
8	Our hotel prioritizes long-term environmental benefits over short-term profits.	4.08	1.21	5
9	We collaborate with suppliers who follow sustainable practices.	4.11	.85	4
10	Our hotel has clear policies to promote environmental responsibility.	3.38	.74	10
Total		**4.11**	**1.02**	-

Table 3 presents the mean scores, standard deviations, and rankings of respondents' perceptions of green entrepreneurship orientation. The results indicate strong agreement on the value of green entrepreneurship orientation among participants.

The highest-ranked statement was "Environmental sustainability is a key part of our business strategy" (M = 4.22, SD = .79), The lowest-ranked statement was "Our hotel has clear policies to promote environmental responsibility" (M = 3.38, SD = .74). The overall mean score across all items was (M=4.11, SD = 1.02),

Green Innovation

Green Product Innovation

Table (4) Mean and St. Dev. of the respondents' acceptance degree concerning Green Product Innovation

NO	Phrases	M	S. D	R
1	Our hotel offers services that significantly reduce environmental impact (e.g., energy-efficient lighting, water-saving fixtures).	4.27	.89	3
2	We modify our existing services to make them more eco-friendly.	4.16	.78	4
3	We introduce new green products/services (e.g., organic toiletries, zero-waste dining).	4.38	.76	2
4	Customer feedback influences our development of sustainable offerings.	4.46	1.01	1
5	Our green products/services differentiate us from competitors.	4.07	1. 03	5
Total		**4.32**	**1.09**	

Table 4 presents the mean scores, standard deviations, and rankings of Green Product Innovation. The results indicate strong agreement on the value of Green Product Innovation.

The highest-ranked statement was "Customer feedback influences our development of sustainable offerings" (M = 4.46, SD = 1.01), The lowest-ranked statement was "Our green products/services differentiate us from competitors" (M = 4.07, SD = 1.03). The overall mean score across all items was (M=4.32, SD = 1.09).

Green Process Innovation

Table (5) Mean and St. Dev. of the Respondents' Acceptance Degree Concerning green process innovation

NO	Phrases	M	S. D	R
1	Our hotel adopts sustainable operational practices (e.g., waste reduction, recycling).	4.13	.67	5
2	We use environmentally friendly technologies in daily operations.	4.30	.72	2
3	We optimize energy and water usage through smart systems.	4.51	1.11	1
4	Our hotel minimizes pollution in its operational processes.	4.18	.82	3
5	We train employees to follow sustainable work procedures.	4.14	.75	4
Total		**4.39**	**0.70**	

Table 5 presents the mean scores, standard deviations, and rankings of green process innovation. The results indicate strong agreement on the value of green process innovation.

The highest-ranked statement was "We optimize energy and water usage through smart systems" (M = 4.51, SD = 1.11), The lowest-ranked statement was "Our hotel adopts sustainable operational practices (e.g., waste reduction, recycling)" (M = 4.13, SD = 0.67). The overall mean score across all items was (M=4.39, SD = 0.70).

Green Marketing Innovation

Table (6) Mean and St. Dev. of the Respondents' Acceptance Degree Concerning the green marketing innovation

NO	Phrases	M	S. D	R
1	We actively communicate our sustainability efforts to guests.	4.19	1.01	2
2	Eco-friendly features are prominently highlighted in our branding.	4.08	0.75	3
3	Marketing materials emphasize our dedication to environmental stewardship.	4.42	0.97	1
4	Digital tools are prioritized to cut down on promotional waste.	4.00	0.62	5
5	Customers associate our hotel with strong sustainability leadership.	4.03	0.81	4
Total		**4.17**	**0.69**	

Table 6 presents the mean scores, standard deviations, and rankings of green marketing innovation. The results indicate strong agreement on the value of green marketing innovation.

The highest-ranked statement was "Marketing materials emphasize our dedication to environmental stewardship" (M = 4.42, SD = 0.97), The lowest-ranked statement was "Customers associate our hotel with strong sustainability leadership" (M = 4.03, SD = .81). The overall mean score across all items was (M=4.17, SD = 0.69).

Sustainable Hotel Performance (SHP)

Environmental Performance

Table (7) Mean and St. Dev. of the Respondents' Acceptance Degree Concerning the environmental performance

NO	Phrases	M	S. D	R
1	Energy and water usage have been significantly reduced.	3.95	0.85	3
2	Waste is systematically minimized, and recycling is maximized.	3.92	1.16	4
3	Our carbon emissions have declined due to green programs.	4.19	0.97	1
4	Renewable energy sources are incorporated whenever feasible.	4.05	.94	2
5	The hotel has earned recognized eco-certifications (e.g., Green Key, LEED).	3.64	.92	5
Total		**4.01**	**0.85**	

Table 7 presents the mean scores, standard deviations, and rankings of environmental performance. The results indicate strong agreement on the value of environmental performance.

The highest-ranked statement was "Our carbon emissions have declined due to green programs" (M = 4.19, SD = 0.97), The lowest-ranked statement was "The hotel has earned recognized eco-certifications (e.g., Green Key, LEED)" (M = 3.64, SD = 0.92). The overall mean score across all items was (M=4.01, SD = 0.85).

Economic Performance

Table (8) Mean and St. Dev. of the Respondents' Acceptance Degree Concerning the economic performance

NO	Phrases	M	S. D	R
1	Sustainable practices have led to measurable cost reductions.	4.31	0.85	1
2	Eco-friendly strategies have boosted our financial performance.	4.10	1.14	3
3	Guests show willingness to pay a premium for sustainable services.	4.02	0.98	5
4	Operational expenses have dropped as a result of green initiatives.	4.21	.84	2
5	Investments in green technology have yielded strong returns.	4.05	.76	4
Total		**4.24**	**0.81**	

Table 8 presents the mean scores, standard deviations, and rankings of economic performance. The results indicate strong agreement on the value of economic performance.

The highest-ranked statement was "Sustainable practices have led to measurable cost reductions" (M = 4.31, SD = 0.85), The lowest-ranked statement was "Guests show willingness to pay a premium for sustainable services" (M = 4.02, SD = 0.98). The overall mean score across all items was (M=4.24, SD = 0.81).

Social Performance

Table (9) Mean and St. Dev. of the Respondents' Acceptance Degree Concerning the social performance

NO	Phrases	M	S. D	R
1	Our sustainability efforts have strengthened our reputation.	4.00	0.95	4
2	Both employees and guests express higher satisfaction with our green policies.	4.14	1.06	2
3	We actively support local environmental preservation projects.	4.12	0.68	3
4	Staff take pride in the hotel's sustainability commitments.	4.22	.71	1
5	The community regards our hotel as a leader in environmental responsibility.	3.74	.86	5
Total		**4.09**	**0.81**	

Table 9 presents the mean scores, standard deviations, and rankings of social performance. The results indicate strong agreement on the value of social performance.

The highest-ranked statement was "Staff take pride in the hotel's sustainability commitments" (M = 4.22, SD = 0.71), The lowest-ranked statement was "The community regards our hotel as a leader in environmental responsibility" (M = 3.74, SD = 0.86). The overall mean score across all items was (M=4.09, SD = 0.81).

Test of hypothesis

H1: GEO has a significant effect on SHP.

Table (10) multiple linear regression model 1

variables	Model	B	Std. Error
Independent	Green Entrepreneurship Orientation	0.279	0.037
Dependent Variables	Environmental Performance	0.219	0.032
	Economic Performance	0.432	0.036
	Social Performance	0.201	0.038
Statistical Values	**F Value**	4679.25	
	Sig.	0.001	
	R	0.995	
	R^2	0.985	
	Std. Error of the estimate	0.094	

The results of the multiple linear regression model showed a strong correlation between the independent variables (Green Entrepreneurship Orientation) and the dependent variable (Sustainable Hotel Performance). The R value (0.995) indicates the strength of the relationship between the independent and dependent variables, while the R^2 value (0.985) suggests that the independent variables explain 98.5% of the variance in the dependent variable. The regression model yielded an F-value of 4679.25, with a significance level of 0.000 (< 0.01), confirming a statistically significant effect of Green Entrepreneurship Orientation on Sustainable Hotel Performance. These results support the **acceptance** of the first hypothesis.

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H2: GI has a significant effect on SHP.

Table (11) multiple linear regression model 2

variables	Model	B	Std. Error
Independent	Green Product Innovation	0.268	0.036
	Green Process Innovation	0.287	0.030
	Green Marketing Innovation	0.271	0.029
Dependent Variables	Environmental Performance	0.216	0.034
	Economic Performance	0.354	0.038
	Social Performance	0.199	0.034
Statistical Values	**F Value**	4688.19	
	Sig.	0.001	
	R	0.993	
	R^2	0.980	
	Std. Error of the estimate	0.091	

The results of the multiple linear regression model showed a strong correlation between the independent variables (Green Innovation) and the dependent variable (Sustainable Hotel Performance). The R value (0.993) indicates the strength of the relationship between the independent and dependent variables, while the R^2 value (0.980) suggests that the independent variables explain 98.0% of the variance in the dependent variable. The

regression model yielded an F-value of 4688.19, with a significance level of 0.000 (< 0.01), confirming a statistically significant effect of Green Innovation on Sustainable Hotel Performance. These results support the **acceptance** of the second hypothesis.

Research Conclusion

According to the research, participants strongly agree that green entrepreneurship is important, and that environmental sustainability is a crucial component of corporate strategy. Innovation in green products is highly regarded, especially when it comes to how consumer input shapes sustainable offers. In a similar vein, green process innovation is highly supported, particularly when it comes to using smart systems to maximize energy and water efficiency. With a focus on encouraging environmental stewardship in marketing materials, green marketing innovation is also highly recognized.

Although eco-certifications still need work, the results of the performance outcomes assessment show that environmental performance is positively perceived, particularly in terms of lowering carbon emissions. Despite the hotel's lack of community reputation as a sustainability leader, social performance emphasizes staff pride in the hotel's green efforts, while economic performance benefits from sustainability initiatives, especially in cost reduction.

The regression analysis confirms a robust and statistically significant relationship between green entrepreneurship orientation, green innovation, and sustainable hotel performance. The high explanatory power of the models (R^2 = 0.985 and 0.980) underscores that these factors collectively account for the majority of variance in performance outcomes. These results strongly support the hypotheses, demonstrating that both green entrepreneurship orientation and green innovation are critical drivers of sustainable performance in the hotel industry.

These results imply that although hotels are making significant strides in sustainability, there are still chances to improve community involvement, seek accredited eco-certifications, and clarify policies. Subsequent investigations may examine industry-specific approaches to enhance these elements while preserving the proven advantages of green innovation and entrepreneurship.

Recommendations for Hotel Managers

- To overcome the lower policy clarity score, establish sustainability commitments by creating understandable, implementable environmental policies for employees and visitors.
- Since this was the most highly regarded component of product innovation, actively gather and incorporate consumer input via surveys or online channels to enhance green product offerings.
- To increase competitive advantage, differentiate hotel services by highlighting distinctive sustainability elements such locally sourced food and toiletries that are safe for coral.
- Increase spending on Internet of Things (IoT)-based smart water and energy management technologies, which are especially crucial in this water-limited area.
- To strengthen trash reduction initiatives, apply quantifiable circular economy techniques like up cycling and composting.
- Create engaging sustainability narratives for marketing materials that showcase particular projects, such as reef preservation.

- To support sustainability claims and enhance visitor perception, pursue globally recognized eco-certifications (Green Key, Blue Flag).
- Use carbon offset schemes designed for coastal areas and renewable energy sources like solar panels.
- To show the financial benefits of sustainability programs, track and publicly publish cost savings.
- To raise social performance scores, include local people in environmental initiatives like beach clean-ups.
- Collaborate with marine conservation groups on projects aimed at reducing plastic and restoring coral.
- Support Egypt's Vision 2030 tourism sustainability goals by collaborating with regional lawmakers.
- Regularly evaluate the sustainability impact of the Red Sea's distinct environment.

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تأثير التوجه نحو ريادة الأعمال الخضراء والابتكار الأخضر على الأداء الفندقي المستدام في فنادق البحر الأحمر

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معلومات المقالة

الكلمات المفتاحية
التوجه نحو ريادة الأعمال الخضراء؛ الابتكار الأخضر؛ أداء الفنادق المستدامة؛ فنادق البحر الأحمر.

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الملخص

يصف مصطلح "ريادة الأعمال الخضراء" كيفية استخدام مؤسسات الضيافة المربحة للتقنيات المستدامة، والأساليب الواعية اجتماعيًا، والممارسات الصديقة للبيئة. تُعرف عملية تصميم وإنتاج ونشر سلع أو خدمات أو إجراءات أو نماذج أعمال جديدة أو مُحسّنة بشكل كبير بالابتكار. ويُعرف التقييم المنهجي وتحسين آثار الفندق على البيئة والمجتمع والاقتصاد بالأداء الفندقي المستدام. تهدف هذه الدراسة إلى تقييم آثار الابتكار الأخضر والتوجه نحو ريادة الأعمال الخضراء على الأداء المستدام لفنادق الاربع والخمس نجوم بالبحر الأحمر. وقد استُخدم استبيان بالتزامن مع أسلوب كمي لتحقيق أهداف هذه الدراسة. شملت الدراسة عينة عشوائية من ٢٩٨ مديرًا وموظفًا من فنادق البحر الأحمر من فئة الأربع والخمس نجوم. تُظهر النتائج أن الابتكار والتركيز على ريادة الأعمال الخضراء لهما تأثير إيجابي على الأداء المستدام لفنادق البحر الأحمر. وقد قدمت الدراسة التوصيات التالية: زيادة الاستثمارات في الأنظمة الذكية القائمة على إنترنت الأشياء لإدارة الطاقة والمياه، وتبني مصادر الطاقة المتجددة، وتمييز خدمات الفنادق من خلال تسليط الضوء على جوانب الاستدامة المميزة.