



The Impact of Green Marketing Strategies on Tourism and Hospitality Sustainability: An Applied Study in the Red Sea Region

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ABSTRACT

This study examines the impact of green marketing strategies on the sustainability of the tourism and hospitality sector in the Red Sea region of Egypt. The study addresses a fundamental gap in the literature, as current research on green marketing has primarily focused on industrial or commercial contexts, with limited exploration of the tourism sector, particularly in environmentally sensitive destinations, such as the Red Sea. Grounded in stakeholder theory and the resource-based perspective, the study provides a conceptual perspective through which to evaluate the strategic value of sustainable marketing practices. A quantitative research approach was employed, involving the distribution of questionnaires to customers and guests of 12 five-star hotels and 12 licensed travel agencies operating in the major tourist cities of Hurghada and Sharm El-Sheikh. The instrument's reliability and construct validity were confirmed through Cronbach's alpha and exploratory factor analysis (EFA). The results reveal a strong positive relationship between adopting green marketing strategies in tourism and hospitality and improved sustainability outcomes, increased guest loyalty, and greater operational efficiency. Additionally, the study identifies key challenges, such as poor infrastructure, the high cost of implementing green technologies, the scarcity of environmentally certified suppliers, and the impact of public image and reputation, which may hinder the expansion of these strategies. The research emphasizes the importance of aligning environmental goals with evolving guest expectations to promote sustainability and long-term success.

Keywords: Green Marketing, Sustainability, Red Sea, Stakeholder Theory, Resource-Based Perspective.

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أثر استراتيجيات التسويق الأخضر على استدامة السياحة والضيافة: دراسة تطبيقية على منطقة البحر الأحمر

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الملخص:

تبحث هذه الدراسة في تأثير استراتيجيات التسويق الأخضر على استدامة قطاع السياحة والضيافة في منطقة البحر الأحمر بمصر. تتناول الدراسة ثغرةً جوهريّةً في الأدبيات، حيث ركزت الأبحاث الحالية حول التسويق الأخضر بشكلٍ رئيسي على السياقات الصناعية أو التجارية، مع قلة الاستكشاف في قطاع السياحة لا سيما في الوجهات الحساسة بيئيًا مثل البحر الأحمر. تركز الدراسة على نظرية أصحاب المصلحة والنظرة القائمة على الموارد، وتوفر منظورًا مفاهيميًا يُمكن من خلاله تقييم القيمة الاستراتيجية لممارسات التسويق المستدام.

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استُخدم نهج بحثي كمي، باستخدام تقنيات أخذ العينات الهادفة والطبقية لاختيار 12 فندقًا من فئة الخمس نجوم و12 شركة سياحية مرخصة تعمل في مدينتي الغردقة وشرم الشيخ السياحيتين الرئيسيتين. تم استطلاع آراء العملاء من كلا شركات السياحة والفنادق المستهدفة. تم تأكيد موثوقية الأداة وصلاحيّة البناء من خلال ألفا كرونباخ وتحليل العوامل الاستكشافية (EFA). تكشف النتائج عن وجود علاقة إيجابية قوية بين تبني استراتيجيات التسويق الأخضر وتحسين نتائج الاستدامة، بما في ذلك تحسين صورة العلامة التجارية وزيادة ولاء العملاء وزيادة الكفاءة التشغيلية. بالإضافة إلى ذلك، تحدد الدراسة تحديات رئيسية مثل ارتفاع تكاليف التنفيذ ومحدودية تدريب الموظفين، مما قد يعيق التبني على نطاق أوسع. يُسهم البحث في كلّ من النظرية والتطبيق من خلال تقديم رؤى عملية لشركات السياحة والفنادق التي تسعى إلى دمج الاستدامة في استراتيجياتها التسويقية. ويُشدد على أهمية مواءمة الأهداف البيئية مع توقعات المستهلكين المتطورة لتعزيز الاستدامة والنجاح على المدى الطويل. وفي نهاية المطاف، تُسلط الدراسة الضوء على التسويق الأخضر كمسار عملي وضروري لتعزيز التنمية المستدامة في الوجهات السياحية الحساسة بيئيًا مثل البحر الأحمر.

الكلمات المفتاحية: التسويق الأخضر، الاستدامة، السياحة، الضيافة، البحر الأحمر، نظرية أصحاب المصلحة، منظور قائم على الموارد.

Introduction

In response to growing global challenges, including climate change, overconsumption of natural resources, and environmental degradation, the tourism and hospitality sector is increasingly implementing sustainable practices (UNWTO, 2022). These practices have emerged as a vital approach to promoting environmentally responsible operations while also meeting the expectations of eco-conscious travelers. This is about finding an effective way to support tourism while achieving the sustainability goals increasingly sought by eco-conscious travelers (Han *et al.*, 2010).

Green marketing refers to the strategic integration of environmental principles into marketing activities to reduce environmental impact and promote corporate social responsibility (Leonidou *et al.*, 2013; Chan *et al.*, 2019). In the context of tourism and hospitality, this may include eco-labeling, energy conservation, green branding, waste management, and sustainable guest engagement. Beyond ethical considerations, these green marketing strategies have become valuable assets, as they can help a brand stand out, build guest loyalty, and provide a competitive advantage (Bo and Jiang, 2023; Yadav *et al.*, 2016).

The Red Sea region in Egypt represents a beautiful environment for guests to study green marketing strategies. The area is known for its coral reefs, marine biodiversity, and attractive beaches. The tourism sector is highly dependent on tourism revenues and is vulnerable to the negative impacts of tourism and hospitality (Shaan, 2005). Consequently, there is a growing need for hotels and tourism companies to adopt environmentally sustainable practices that balance guest satisfaction, profitability, and environmental management (United Nations Environment Programme, UNEP, 2019).

While some initiatives exist, such as environmental certification and awareness campaigns, there is limited data on how the tourism and hospitality sector implements these strategies and whether they lead to improved sustainability performance and enhanced reputation (Baumgartner and Rauter, 2017; Demir *et al.*, 2025). Furthermore, the majority of existing studies on green marketing in tourism either focus on developed economies, make broad generalizations without taking into account the unique challenges faced by emerging destinations like Egypt, or generalize findings across diverse contexts without taking into account the unique social, economic, and environmental conditions of emerging destinations like Egypt (Peattie and Belz, 2010; Font and McCabe, 2017). This has created a research gap that hinders the theoretical understanding and practical application of green marketing in environmentally sensitive areas.

This study also aims to assess the relationship between green marketing in tourism and hospitality, economic and social sustainability, enhancing community engagement, and building guest trust and loyalty. By comprehensively addressing these dimensions, the study aims to provide a comprehensive understanding of how green marketing can contribute to driving sustainable transformation in eco-friendly tourism destinations.

Research Problem and Gap

Although green marketing has been globally acknowledged as a driver of sustainability in the tourism and hospitality sector, its role within Egypt's Red Sea region remains

underexplored. Existing studies are fragmented, focusing predominantly on general environmental practices or operational aspects of sustainability, while overlooking marketing as a strategic tool (Mele *et al.*, 2016; Demir *et al.*, 2025).

Despite the Red Sea's significance as a strategic tourism destination with high ecological value, research has yet to adequately address:

- The extent to which green marketing strategies are adopted by hotels and tourism operators,
- Their influence on the environmental, economic, and social dimensions of sustainability, and
- The barriers constraining their effective implementation.

This study aims to fill this gap by conducting an applied investigation in the Red Sea region, evaluating the impact of green marketing strategies on sustainability outcomes from the perspective of guests.

Significance of the Study

This study offers both theoretical and practical contributions. From a theoretical standpoint, it extends the application of green marketing and Triple Bottom Line (TBL) thinking in tourism research, particularly within emerging market contexts. Practically, the findings can guide hotel managers, tourism marketers, and policymakers in developing sustainability-driven marketing strategies that enhance environmental responsibility while strengthening economic resilience and social reputation. This research focuses on tourism and hospitality in the Red Sea and seeks to support the sustainability of tourism and hospitality.

Theoretical Background

Understanding the importance of green marketing in promoting sustainability in the tourism and hospitality sector requires a multidimensional theoretical foundation. This study draws on three complementary frameworks, stakeholder theory and the triple bottom line (TBL), to analyze how green marketing contributes to organizational sustainability, particularly in environmentally sensitive contexts such as the Red Sea region in Egypt. Stakeholder theory (Freeman, 1984) posits that firms should generate value and profit not only for shareholders but also for a wide range of stakeholders. In the tourism and hospitality context, green marketing involves transparent communication, environmental certification, and environmentally responsible practices to foster trust and sustainable loyalty (Chang *et al.*, 2024).

The triple bottom line (TBL) emphasizes the integration of economic, environmental, and social dimensions in assessing sustainability and supporting green marketing strategies (Elkington, 1998). Sustainability has become a key factor for destination competitiveness. The Triple Bottom Line framework provides a practical application for applying green marketing to increase and support comprehensive value (United Nations Environment Programme, UNEP, 2022). Applying green marketing strategies in tourism and hospitality in the Red Sea allows for an effective response to environmental pressures and tourist expectations.

Literature Review

1. Green Marketing Strategies

Green marketing revolves around promoting products or services that are environmentally friendly, or at least environmentally friendly. It involves integrating sustainability into everything: product design, packaging, messaging, etc. While some green marketing strategies may be more expensive than traditional methods, they can help businesses stand out, especially in the tourism and hospitality sector. Increased tourist arrivals mean greater profits, so they are a smart investment. Essentially, green marketing means integrating environmentally friendly practices into the way hotel and tourism products and services are marketed, which not only helps the planet but also meets consumer desires and supports business objectives. This can include creating eco-friendly products, responsible sourcing, sustainable and environmentally friendly supply and distribution, and effective and transparent communication (Chuang and Huang, 2018; Uludaget *et al.*, 2024).

For hotels, adopting green marketing is no longer just an option; it's a necessity. With increasing customer environmental awareness and tightening regulations, hotels are looking to harness green practices, such as renewable energy use, recycling, waste reduction, and water conservation, not only to meet standards but also to enhance their brand and profits. Recent studies show that hotels' adoption of green marketing contributes to increased customer satisfaction and an improved overall reputation (Buhalis and Leung, 2018; Uludaget *et al.*, 2024).

2. Sustainable Tourism in Eco-Friendly Destinations

Sustainable tourism is widely defined as a development approach that balances environmental conservation, cultural and social integration, and economic profitability to ensure sustainable benefits for present and future generations (UNWTO, 2018). Sustainable tourism has become increasingly important today. It is about finding the optimal balance between environmental protection, respect for cultures, and profitability, to benefit present and future generations. This research aims to help the tourism and hospitality sectors meet the needs of tourists and local communities while ensuring promising future opportunities (UNWTO, 2018). This aligns with the so-called Three-Block Business (TBL) framework, which addresses environmental, economic, and social factors (Elkington, 1998).

From an environmental perspective, sustainable tourism is concerned with rationalizing resource use, protecting biodiversity, and reducing pollution. The Red Sea region in Egypt, for example, is a sensitive ecosystem, where coral reefs and marine life are suffering from over-tourism and climate change. Here, green marketing is crucial to attracting tourists, encouraging responsible behavior, and promoting environmental certification programs (Yadav *et al.*, 2016; UNEP, 2022).

From an economic perspective, sustainability requires ensuring the long-term financial health of tourism and hotel establishments. Sustainability means ensuring the long-term prosperity of tourism and hotel businesses, distributing benefits equitably, and empowering local communities. Green marketing contributes to this area by creating a distinctive brand that attracts environmentally conscious travelers willing to pay more for

sustainable services (Garay and Font, 2012; Chang *et al.*, 2024). Furthermore, investing in green infrastructure and efficient technologies can lead to cost savings and increased resilience for hotels and tourism businesses (Demir *et al.*, 2025).

Social sustainability centers on inclusive growth, cultural preservation, and equity. Sustainable tourism fosters respect for local customs and traditions, supports fair labor practices, and promotes community engagement. When marketing messages emphasize authentic cultural experiences, local sourcing, and community empowerment, they build trust and loyalty among guests (Font and McCabe, 2017).

In practice, environmental certifications and sustainability programs are key tools for measuring and communicating an organization's commitment to sustainability practices. For example, the Green Star Hotel certification in Egypt, created in collaboration with the German Agency for International Cooperation, focuses on energy efficiency and waste reduction based on local needs. There are also international standards such as ISO 14001, Travelife Gold, and Green Globe certification, which assess a broader range of environmental, social, and ethical performance (Green Globe, 2024). These certifications not only demonstrate a commitment to environmental stewardship but are also strategic assets, enhancing brand credibility and ensuring compliance with global sustainability goals, including the Sustainable Development Goals (UNWTO, 2017).

Ultimately, integrating green marketing with sustainable tourism principles enables destination managers and hospitality businesses to create shared value for stakeholders, enhance competitive positioning, and protect natural and cultural resources, an imperative for ecologically sensitive destinations such as the Red Sea.

Recent research underscores the strategic significance of sustainability in the Red Sea context. For example, digital green marketing enhances environmental outcomes and improves destination branding. Similarly, Gladstone *et al.* (2012) linked environmental degradation, especially the loss of coral reefs and marine life- to diminished tourist satisfaction. El Balbal and Omari (2024) further emphasized that sustainability has become a source of strategic competitiveness for firms in ecologically threatened destinations.

Thus, this study addresses a notable gap by providing empirical insights into how green marketing is implemented and perceived within the unique socio-environmental context of the Red Sea region.

3. Green Marketing Strategies and Sustainability

The research's primary hypothesis seeks to explore the relationship between the implementation of green marketing practices and sustainability (Baumgartner and Rauter, 2017). In the tourism and hospitality sector, sustainability is not merely environmental conservation but also extends to economic and social development and long-term operational resilience. According to the triple bottom line framework, sustainability is achieved when hotels and tourism companies balance environmental management, economic viability, and social responsibility (Elkington, 1998).

Research supports the relationship between green marketing strategies and the sustainability of the tourism and hospitality sectors, and sustainability significantly enhances environmental performance and the reputation of the tourist destination.

Environmental innovation in Egyptian hotels is positively related to resource efficiency and environmental quality (Elzek *et al.*, 2022). Studies indicate the importance of applying green marketing strategies to sustainability in the tourism and hotel sector

4. Guest Satisfaction in Sustainable Tourism

Sustainability plays a vital role in the tourism and hospitality sector through the implementation of green marketing strategies and the conscious and optimal use of resources. The success of hotels, resorts, and tourism companies depends on preserving the natural and cultural attractions that motivate and attract tourists and serve as a major driver of growth and sustainable development. Sustainable practices make hospitality and tourism companies stand out and become popular because tourists today are concerned about sustainability (Po and Jiang, 2023).

Recent studies have shown that sustainability-based tourist experiences promote higher satisfaction levels when they align with the values of eco-conscious tourists. However, the risk of environmental misinformation and false promises, where environmental claims are insincere, exaggerated, or unsubstantiated, can erode trust and reduce perceived credibility. Thus, transparent, realistic, and consistent communication is crucial. Moreover, guests are more likely to remain loyal to hotels and tourism companies that genuinely demonstrate their environmental responsibility, underscoring the importance of green marketing strategies in tourism and hospitality (Delmas and Burbano, 2011).

5. A Framework for Green Marketing in the Tourism and Hospitality Sectors in the Red Sea Region

Green marketing in the Red Sea region represents both an opportunity and a responsibility. As defined by Papadas *et al.* (2017), green marketing involves creating and promoting environmentally friendly services and experiences. In the tourism and hospitality sectors, green marketing promotes operational sustainability and attracts a large segment of environmentally conscious travelers (Rahman *et al.*, 2015). Environmental responsibility includes efforts to reduce environmental footprints by promoting initiatives such as Environmental Management Systems (EMS), carbon audits, and environmental certifications (e.g., ISO 14001 and Green Key).

Despite these advances, numerous challenges remain, such as limited infrastructure, especially in remote areas; poor guest environmental awareness; and weak enforcement of regulations. Overcoming these challenges requires the cooperation of all stakeholders, government support, and the formulation of clear policies that stimulate green marketing and sustainability (Leonidou *et al.*, 2013; El-Bulbul and Omari, 2024). Green marketing is no longer just a promotional tool; it has become a pivotal strategy for the sustainable development of tourism and hospitality in environmentally sensitive areas such as the Red Sea. It promotes environmental integrity, enhances the destination's image, and ensures the long-term sustainability of tourism and hotel operations. This study contributes to both theoretical discourse and practical applications by providing a contextual framework that addresses the unique challenges and opportunities in the tourism and hospitality sector in Egypt.

Literature Review and Hypothesis Development

To delve deeper into the impact of green marketing strategies on sustainability in the tourism and hospitality sectors, with a particular focus on the Red Sea region. This study draws on a combination of theories such as stakeholder theory (Freeman, 1984) and the concept of "triple bottom lines" (Elkington, 1998). It examines how these green marketing strategies impact sustainability across environmental, economic, and social dimensions, as well as guest satisfaction and brand equity.

First, the study develops its first hypothesis, which delves into how green marketing strategies relate to sustainability outcomes in the tourism and hospitality sectors. The bottom line: sustainability in this field is not just about saving the planet; it also means ensuring a sustainable economy and prioritizing social justice. In places like the Red Sea, where coral reefs and marine life are suffering, adopting green practices is not just a good idea; it's crucial. It also offers a competitive advantage. Studies support this idea. For example, green digital marketing can enhance environmental performance and brand image. A study by Elzek et al. (2022) found a link between eco-innovation and improved resource efficiency in hotels across Egypt.

The second hypothesis looks at guest satisfaction from a sustainable tourism perspective. Tourists are increasingly concerned with ethical and environmental issues when traveling. Things like reducing waste, conserving water, and supporting local communities not only make them happier but also boost emotional and psychological satisfaction. However, there's a caveat. Researchers warn that hotels making empty promises or engaging in environmental misinformation practices can erode trust (Delmas and Burbano, 2011). Therefore, transparency and honesty in environmental communication are essential to maintaining guest happiness and engagement.

The third hypothesis focuses on how green marketing can contribute to enhancing guest brand loyalty. In sustainable tourism, this loyalty often depends on how closely a hotel or company's values align with those of its guests (Po and Jiang, 2023). When hotels are genuinely committed to sustainability and implement effective green marketing strategies, they can build stronger emotional bonds with their customers. This leads to loyalty, repeat visits, and a positive reputation, especially among eco-conscious travelers (Mele *et al.*, 2016). However, misleading messages can backfire and harm not only the hotel's image, but the entire Red Sea tourism industry. This is why consistent communication with guests, property owners, and all stakeholders, coupled with honest green marketing, is crucial to building lasting loyalty in this sector.

In short, green marketing goes beyond being a mere promotional tool; it is a strategic framework for promoting sustainability in tourism and hospitality. This approach enhances customer satisfaction, fosters loyalty, and builds a strong reputation for both hotels and brands in the Red Sea region.

Research Hypotheses

The current study proposed four main hypotheses; these hypotheses are based on relevant theoretical frameworks and supported by empirical evidence from green marketing, sustainable tourism, and hospitality. Each hypothesis aims to explore a unique aspect of

the impact of green marketing on sustainability in the Red Sea tourism and hospitality sector, which is, in fact, an environmentally and economically key region in Egypt.

1. There is a statistically significant impact of green marketing strategies on the economic sustainability of the tourism and hospitality sector in Egypt.
2. There is a statistically significant impact of green marketing strategies on the environmental sustainability of the tourism and hospitality sector in Egypt.
3. There is a statistically significant impact of green marketing strategies on the social sustainability of the tourism and hospitality sector in Egypt.
4. There are statistically significant differences among the opinions of the study sample regarding the challenges of adopting green marketing strategies.

Conceptual Framework

The conceptual framework for this study was designed to examine the direct impact of green marketing strategies on the performance and sustainability of tourism and hospitality: an empirical study of the Red Sea region. This framework is based on stakeholder theory, which emphasizes alignment with stakeholders' expectations regarding environmental, economic, and social responsibility (Freeman, 1984).

The framework assumes that green marketing, when implemented strategically, contributes significantly to three key dimensions of sustainability:

- Environmental sustainability (e.g., renewable energy use, energy conservation, waste reduction, and energy efficiency); Economic sustainability (e.g., cost efficiency, maximum profitability, and long-term sustainability); and Social sustainability (e.g., community support, social responsibility, and ethical business practices).
- Green marketing strategies in tourism and hospitality promote guest satisfaction and loyalty. Green marketing strategies have a significant positive impact on guest satisfaction in sustainable tourism and hospitality; Green marketing strategies have a positive impact on brand loyalty in sustainable tourism and hospitality.

Theoretical Justification

Growing awareness of environmental challenges is consolidating the application of green marketing as a strategic tool for achieving sustainability in tourism and hospitality. Numerous empirical studies confirm a close relationship between the implementation of green marketing strategies and improved sustainability (environmental, economic, and social), thus enhancing reputation and image (Leonidou *et al.*, 2013). These strategies include eco-friendly product design, green labeling, the implementation of sustainability practices, and communication efforts that align with sustainability values (environmental, economic, and social) (Rosenbaum and Wong, 2015).

In the tourism and hospitality sector, service delivery is closely linked to the natural environment, making green marketing not only a corporate responsibility but also a competitive imperative. Tourism establishments are increasingly relying on initiatives such as water conservation, energy conservation, waste reduction, renewable energy use, and recycling to promote sustainability while satisfying environmentally conscious consumers (Po and Jiang, 2023). The theoretical foundation of this study is based on the stakeholder theory perspective, whereby green marketing implementation aligns with

stakeholders' environmental, economic, and social expectations, thereby enhancing sustainability, and the "triple bottom line" (TBL) framework developed by Elkington (1998), which emphasizes the integration of economic, environmental, and social objectives.

Within this framework, promoting sustainability is considered an independent variable that influences strategic practices, customer perceptions, and destination resilience. In environmentally sensitive areas such as the Red Sea, where natural and biological diversity are central to tourism and hotel products, green marketing becomes a necessary path to protecting natural capital and sustaining tourism and hotel development.

Table 1: Variables and Operational Definitions			
Variable	Type	Operational Definition	Source
Green Marketing Strategies	Independent	The extent to which the organization adopts environmentally responsible practices in product design, promotion, pricing, and distribution.	Leonidou et al. (2013)
Environmental Sustainability	Dependent (1)	Reduction in ecological footprint, waste management, and conservation efforts.	Elkington (1998)
Economic Sustainability	Dependent (2)	Financial viability, cost savings from green practices, and long-term economic resilience.	Garay and Font (2012)
Social Sustainability	Dependent (3)	Contribution to community well-being, welfare, and social responsibility.	Font and McCabe (2017)

Research Methodology

This section provides an overview of the study methodology, which includes the research design, sampling, questionnaire construction, exploratory validation, and assessment of the instrument's reliability and validity. The study is fundamentally based on two important theories: stakeholder theory and the triple bottom line (TBL) model. These frameworks guide our research in four main areas: how green marketing represents a competitive advantage, and how it relates to sustainability, environmentally, socially, and economically, in the tourism and hospitality sector, particularly in the Red Sea region.

1. Research Design

The study relies on a quantitative approach to examine the relationships between the study's main variables. This allows us to delve deeper into the relationships between our key variables, thinking about green marketing and sustainability across economic, environmental, and social dimensions, test hypotheses, and generalize the results to relevant stakeholder groups (customers and guests of 12 five-star hotels and 12 licensed travel agencies operating in the major tourist cities of Hurghada and Sharm El-Sheikh). The study structure relies on a deductive approach, building on a solid theoretical foundation with scientific foundations and proceeding to test empirical hypotheses. This structure enabled the exploration of concepts such as guest perceptions, environmentally friendly green marketing practices, and sustainability. To empirically validate these concepts, the study applied multiple statistical methods, including regression analysis and

structural equation modeling (SEM), based on the recommendations of Hair et al. (2019). These methods ensured a careful examination of the direct relationships between the study variables, providing evidence of the role of green marketing strategies in promoting sustainable tourism and hospitality sector development.

2. Justification for Selecting the Sample

The Red Sea region was chosen as the primary research site based on a combination of strategic, environmental, and empirical considerations. For example, the region represents a prominent tourism hub in Egypt, renowned for its luxury resorts, biodiversity, and promising ecotourism and hospitality potential. This makes it an ideal setting for studying the impact of green marketing strategies on tourism and hospitality sustainability. Its importance is further enhanced by the presence of diverse guest segments, which enhances the generalizability of insights across various market levels. In addition, the Red Sea region has emerged as a leading destination in green tourism initiatives. Many hotels and travel companies here participate in environmental certification programs such as the Green Star Hotels Initiative, the Travelife program, and the ISO 14001 program. These certifications reflect a growing commitment to environmental and social responsibility and the integration of green marketing strategies into the tourism and hospitality value chain.

While the sample may not be statistically representative, it provides strong analytical depth and theoretical significance, enabling a nuanced and context-specific understanding of the role of green marketing in promoting sustainable tourism development in environmentally sensitive destinations.

3. Sample Selection

The study adopted a stratified sampling strategy to capture the diversity of perspectives in the tourism sector, which primarily helps capture diverse perspectives. The sample was divided into three main stakeholder groups: "Egyptians, Arabs, and foreigners," comprising customers and guests of five-star hotels and travel agencies operating in the environmentally sensitive Red Sea region, specifically Hurghada and Sharm El Sheikh.

Twelve five-star hotels and 12 travel agencies were purposefully selected based on their recognized commitment to sustainable tourism practices. Selection criteria included (1) participation in internationally or nationally recognized environmental certification programs, such as the Green Star Hotels Initiative (GSHI), ISO 14001 certification, and the Travelife program for tour operators and travel agencies; (2) public disclosure of sustainability reports or environmental policies; and (3) institutional capacity and presence in the tourism market. These organizations were verified using published lists provided by the Egyptian Ministry of Tourism, the Egyptian Hotel Chamber, and certification databases such as www.travelifecollection.com and www.greenstarhotel.org. A representative list of these companies can be provided upon request or included in the study's appendix for transparency purposes.

The selection of 12 entities for each group was driven by theoretical saturation and practical considerations, combining theory and practice, such as accessibility, willingness to participate, and the need for balanced representation. This number allowed for a robust

statistical comparison between the hotel and tour operator sectors while maintaining the depth of contextual analysis required in sustainability research.

A simple random sampling method was used, and 300 questionnaires were distributed to customers and guests of five-star hotels and travel agencies, including "Egyptian, Arab, and foreign guests" who adopted environmentally friendly practices or held environmental certifications and were interested in sustainable tourism. After excluding 14 questionnaires with incomplete data, 286 valid responses were collected from the 300 distributed questionnaires, which were returned (166 guests and 120 customers), representing 95.3% of the study sample size.

The sampling process was conducted during the peak tourism seasons from December 2024 to March 2025. Participants were contacted at various strategic locations. We targeted participants at key locations such as hotel receptions, lobbies, and tour booking centers to ensure accessibility and maximize response rates. This distribution was designed to accommodate a wide range of customers and guests of five-star hotels and travel agencies across demographics and cultural backgrounds (Egyptian, Arab, and international guests), enhancing the study's external validity. This segmentation aligns with the unique position of the Red Sea region as a local and international tourism destination and ensures that the analysis includes diverse perspectives on green marketing practices and sustainability initiatives in the hospitality sector.

No.	Hotel / Tourism Company Name	Type	Location	Green Certification / Sustainability Indicator	Environmental Certification / Activities or Rationale for Selection
1	Steigenberger Al Dau Beach Hotel	Five-Star Hotel	Hurghada	Green Star Hotel (Egypt), ISO 14001	Holds dual certifications (national and international), recognized for strong environmental policy
2	Baron Palace Sahl Hasheesh		Hurghada	Travelife Gold Certification	Certified by Travelife, participates in energy conservation and waste reduction programs
3	Jaz Aquamarine Resort		Hurghada	Green Globe Certified	Actively involved in biodiversity protection and sustainable resource use
4	Sunrise Crystal Bay Resort		Hurghada	Sustainability Program Website Disclosure	Publicly discloses green practices including recycling, energy monitoring
5	Hilton Hurghada Resort		Hurghada	Green Key Eco-Rating Program	Selected for its globally recognized eco-certification and commitment to CSR
6	Rixos Premium Seagate		Sharm El-Sheikh	ISO 14001 Environmental Management	Engaged in environmental education for staff and guests
7	Four Seasons Resort Sharm El-Sheikh		Sharm El-Sheikh	Green Building Standards + Internal CSR Reports	Integrates sustainability into architecture and operations, publishes CSR reports
8	Sunrise Arabian Beach Resort		Sharm El-Sheikh	Travelife Gold + Energy Reduction Initiatives	Noted for proactive sustainability communication and solar energy initiatives
9	Stella Di Mare Beach Hotel and Spa		Sharm El-Sheikh	Eco-Friendly Initiatives (on company website)	Chosen for voluntary sustainability efforts and environmental transparency
10	Grand Rotana Resort and Spa		Sharm El-Sheikh	Environmental Policy Statement	Implements in-house waste management and water efficiency systems
11	Iberotel Makadi Beach		Hurghada	Green Star Certification	Nationally certified, with visible eco-tourism promotional material
12	Cleopatra Luxury Resort		Sharm El-Sheikh	ISO-based Environmental Policy	Selected for applying structured environmental policies in daily operations
13	Travco Group International	Tourism Company	National / Red Sea	Public CSR Reports and Ecotourism Packages	Major industry player with public sustainability reporting and ecotourism focus
14	Blue Sky Group		Red Sea	Partnered with eco-hotels, promotes sustainable travel	Key market intermediary supporting green certified accommodations
15	Egypt Sun Marine		Hurghada	Offers green diving and	Selected for commitment to marine

	Tours			marine preservation programs	biodiversity and eco-friendly excursions
16	Ocean Travel Egypt		Hurghada	Participates in plastic-free tourism campaigns	Recognized for active role in reducing plastic use in marine tourism
17	Red Sea Dive Safari		Marsa Alam	Eco-lodges and reef protection initiatives	Operates eco-lodges and engages in coral reef conservation
18	SunRise Travel		Sharm El-Sheikh	Website transparency in sustainability activities	Noted for communicating sustainability goals and performance publicly
19	Grand Tours Egypt		Hurghada	Cultural and eco-tourism specialization	Focuses on environmentally responsible tours and heritage site conservation
20	Egypt Eco Tours		Hurghada	Eco-certified by local authorities	Locally recognized for promoting community-based eco-tourism
21	Sharm Wonders		Sharm El-Sheikh	Sustainable excursion programs	Provides eco-labeled tours and sustainable transport options
22	Sea Queen Travel		Hurghada	Public recycling and environmental initiatives	Selected for active recycling campaigns and environmental awareness efforts
23	Sahara Travel		Sharm El-Sheikh	Works with certified green hotels	Cooperates exclusively with eco-certified partners
24	Marsa Alam Adventures		Marsa Alam	Focus on marine conservation tourism	Specializes in sustainability-oriented marine and desert tours
Source: Compiled by the researcher from public websites, green certification databases, interviews, and Ministry of Tourism references (2025).					

1. Survey Design

A questionnaire was developed, divided into five main sections, with the goal of covering all important aspects. First, the study collected demographic information, such as age, gender, nationality, and education level. Then the study moved on to green marketing awareness, asking about people's familiarity with eco-labels, sustainability certifications, and environmental messages.

Then, the study analyzed how people perceive green practices. This included questions about energy and water conservation, corporate social responsibility activities, and waste reduction efforts. Afterward, the study assessed customer satisfaction and brand loyalty. The study asked whether guests were willing to pay more for eco-friendly services, how likely they were to return, and whether they would spread the word positively. Finally, the study addressed challenges and limitations, exploring issues such as regulatory hurdles, concerns about environmental misinformation, and the costs of adopting sustainability practices.

The study based and adapted the survey questions on reliable measures from validated scales in the existing literature, and previous studies, ensuring that everything was relevant and reliable. For the topic of green marketing, drew on the work of Leonidou et al. (2013). For sustainability indicators, drew insights from Elkington (1998) and Garay and Font (2012). Participants rated their responses on a five-point Likert scale, from 1 (strongly disagree) to 5 (strongly agree), to enable us to analyze attitudes and perceptions consistently across different groups.

To ensure clarity and accuracy, the study began with an exploratory phase before delving into primary data collection. The study interviewed experts from 10 disciplines such as hotel managers, environmental consultants, and tourism officials—to identify practical challenges and best practices in green marketing. Additionally, a pilot survey was conducted with 30 respondents between June and July 2024 to test the reliability and structure of the survey. The feedback were received from this exploratory phase helped us refine the questions and ensure they aligned with local sustainability practices.

Reliability and Validity Test of the Study Tool:

Testing the reliability and validity of the study tool:

Table (3) Reliability and validity coefficient of the questionnaire

Axis	Topic	Number of Items	Reliability Coefficient (Cronbach's Alpha)	Consistency Validity (Square Root of Reliability)
First	Green Marketing Strategies	4	0.940	0.969
Second	Economic Sustainability in the Tourism and Hospitality Sector	3	0.909	0.953
Third	Environmental Sustainability in the Tourism and Hospitality Sector	4	0.954	0.976

Fourth	Social Sustainability in the Tourism and Hospitality Sector	3	0.932	0.965
Fifth	Challenges of Adopting Green Marketing Strategies	7	0.942	0.970
Total Paragraphs		21	0.936	0.967

Table (3) shows a high degree of reliability of the questionnaire items, with the Cronbach's alpha coefficient for all 21 items of the questionnaire being 0.936. The questionnaire also demonstrates a high degree of validity, with the self-consistency validity coefficient reaching 0.967.

Confirmatory Factor Analysis (CFA) Test

Table (4) Data Efficiency Tests

Laboratories	Scale	Value
Analysis Efficiency Test	Kaiser-Meyer-Olkin Measure	0.923
Chi-square Significance Test	Chi-Square Bartlett's Test	6323.18
Statistical Significance	Sig.	0.000

The Kaiser-Meyer-Olkin scale value reached 0.923, which is higher than the value of 0.7, indicating high data efficiency for factor analysis. The statistical significance level was 0.000, which is lower than the significance level of 0.05, indicating the significance of the data.

Table (5) Key factors affecting the impact of green marketing strategies on the sustainability of the tourism and hospitality sector

Factors	Value
Factor 1: Adoption of Green Marketing Strategies	
Frankly, it's very important to me to choose hotels or tour operators that are committed to environmental sustainability.	.806
I feel satisfied when my stay contributes to supporting sustainable tourism.	.774
I prefer to choose hotels that use environmentally friendly products (such as toiletries, renewable energy, and waste reduction).	.760
I care that the hotels I visit are part of efforts to preserve the environment and reduce pollution.	.725
I find that environmental marketing strategies add a special appeal to any hotel or tour operator.	.716
I believe the government should play a role in supporting sustainable hotels and encouraging them to provide better services.	.684
I believe that the sometimes higher prices at eco-friendly hotels are justified due to their commitment to sustainability.	.679
I have noticed that the hotel/tour operator provides clear information about its environmental practices.	.645
I have noticed that the hotel/tour operator implements practices that take environmental conservation into account.	.544
Factor 2: The Impact of Green Marketing on Sustainability	
Tourists prefer to deal with hotels and travel agencies that adopt green marketing strategies.	.751
Green marketing strategies positively impact tourists' perceptions of hotels and travel agencies.	.685

Hotels' and travel agencies' participation in community service initiatives improves brand reputation.	.668
Implementing environmental sustainability practices reduces the carbon footprint of tourism operations.	.655
Hotels and travel agencies that adopt environmental sustainability practices achieve better operational efficiency.	.443
Hotels and travel agencies contribute to job creation for local residents.	.423
There is a lack of customer awareness about the importance of sustainable practices.	.399
Factor 3: The Impact of Green Marketing on Customer Satisfaction and Loyalty	
Green marketing strategies contribute to increased customer satisfaction and willingness to recommend and repeat visits.	.796
Customers are more likely to remain loyal to hotels and travel agencies that adopt green marketing strategies.	.760
Factor 4: Opportunities and Challenges in Adopting Green Marketing	
Green marketing efforts, such as eco-labels and sustainable certifications, contribute to the development of sustainable tourism.	.689
Environmental sustainability contributes to a competitive advantage for hotels and travel agencies.	.605
Hotels and travel agencies that embrace environmental sustainability receive government support and financial incentives	.544

Table (6): The percentage of variance explained by the factors affecting green marketing strategies on the sustainability of the tourism and hospitality sector

Factor	Total	Variance	Cumulative
First	10.85	31.01	31.01
Second	3.00	8.58	39.59
Third	1.82	5.21	44.81
Fourth	1.61	4.60	49.41

Table 6 shows the presence of four main factors that explain the impact of green marketing strategies on the sustainability of the tourism and hospitality sector. The first factor explains 31.01% of the impact, the second factor explains 8.58% of the impact, the third factor explains 5.21% of the impact, and the fourth factor explains 4.60% of the impact. Thus, the four factors explain 52.89% of the impact of green marketing strategies on the sustainability of the tourism and hospitality sector.

Goodness of Fit Index (GFI) Test

Table (7) Results of the Goodness of Fit Index Test

The model	Comparative Quality of Fit Index (CFI)	Incremental Quality of Fit Index (IFI)
Default Model	0.920	0.920
Saturated Model	1.000	1.000
Independent Model	0.000	0.000

The goodness-of-fit index shows the overall degree of agreement between the squared residuals calculated from the estimated data and the squared residuals calculated from the actual data. The index values range from (0-1), as shown in Table 7, indicating the goodness of fit of the data, with the independent model value reaching 0.000.

Descriptive Statistics for Demographic Data

Table (8) Descriptive Statistics for Demographic Data

Variable	Response	Frequency	Percentage
Gender	Male	182	63.6
	Female	104	36.4
Age	Under 30	44	15.4
	From 30 to under 40	116	40.6
	From 40 to under 50	66	23.1
	50 years and older	60	21.0
Nationality	Egyptian	121	42.3
	Arab	15	5.2
	Foreigner	150	52.5
Facility Type	Hotel	166	58.0
	Tourism company	120	42.0

Table 8 shows that the number of males in the study sample reached 182 individuals, representing 63.6%, and the number of females reached 104 individuals, representing 36.4%. It was found that the prevailing age group was from 30 to less than 40 years, with a number of 116 individuals, representing 40.6%, while the age group from 40 to less than 50 years was 66 individuals, representing 23.1%, and the age group of 50 years and older was 60 individuals, representing 21%, and the age group of less than 30 years was 44 individuals, representing 15.4%. In terms of nationality, the number of foreigners reached 150 individuals, representing 52.5%, the number of Egyptians reached 121 individuals, representing 42.3%, and the number of Arabs reached 15 individuals, representing 5.2%. In terms of the type of facility, the number of hotel clients reached 166 individuals, representing 58%, and the number of tourism company clients reached 120 individuals, representing 42%.

3 - Descriptive Statistics for Study Variables

First Axis - Green Marketing Strategies

Table (9) Descriptive Statistics for the Study Sample's Opinions on Green Marketing Strategies in the Tourism and Hospitality Sector

Paragraph		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	Standard deviation
Tourists prefer to deal with hotels and travel agencies that adopt green marketing	Frequency	28	40	46	58	114	3.66	1.37
	%	9.8	14.0	16.1	20.3	39.9		

strategies.								
Green marketing strategies positively impact tourists' perceptions of hotels and travel agencies.	Frequency	26	46	46	68	100	3.59	1.34
	%	9.1	16.1	16.1	23.8	35.0		
Green marketing strategies contribute to increased customer satisfaction and willingness to recommend and repeat visits.	Frequency	22	44	50	66	104	3.65	1.31
	%	7.7	15.4	17.5	23.1	36.4		
Customers are more likely to remain loyal to hotels and travel agencies that adopt green marketing strategies	Frequency	18	34	54	68	112	3.77	1.25
	%	6.3	11.9	18.9	23.8	39.2		

Table (9) shows that the study sample's responses regarding green marketing strategies in the tourism and hospitality sector were highly rated (agree). The item "Tourists prefer to deal with hotels and travel agencies that adopt green marketing strategies" received an arithmetic mean of 3.66, the item "Green marketing strategies positively impact tourists' perceptions of hotels and travel agencies" received an arithmetic mean of 3.59, the item "Green marketing strategies contribute to increasing customer satisfaction and their willingness to recommend repeat visits" received an arithmetic mean of 3.65, and the item "Customers are more likely to remain loyal to hotels and travel agencies that adopt green marketing strategies" received an arithmetic mean of 3.77. Standard deviations ranged between 1.25 and 1.37, indicating a dispersion of values from their arithmetic mean.

Second Axis - Economic Sustainability of the Tourism and Hospitality Sector

Table (10) Descriptive Statistics of the Study Sample's Opinions on the Economic Sustainability of the Tourism and Hospitality Sector

Paragraph		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	d deviation
I prefer to stay in hotels that support the local economy by purchasing products and services from local suppliers.	Frequency	28	40	46	58	114	3.66	1.37
	%	9.8	14.0	16.1	20.3	39.9		
I believe that the tourism and hospitality sector in the Red Sea contributes to providing stable employment opportunities for local residents.	Frequency	26	36	46	54	124	3.74	1.36
	%	9.1	12.6	16.1	18.9	43.4		
I feel that my tourism spending directly benefits the local economy.	Frequency	18	34	54	68	112	3.77	1.25
	%	6.3	11.9	18.9	23.8	39.2		

Table (10) shows that the study sample's responses regarding the economic sustainability of the tourism and hospitality sector were highly rated (Agree). The item " I prefer to stay in hotels that support the local economy by purchasing products and services from local suppliers" received an arithmetic mean of 3.66, the item " I believe that the tourism and hospitality sector in the Red Sea contributes to providing stable employment opportunities for local residents" received an arithmetic mean of 3.74, and the item " I feel that my tourism spending directly benefits the local economy" received an arithmetic mean of 3.77. Standard deviations ranged between 1.25 and 1.37, indicating a dispersion of values from their arithmetic mean.

Third Axis - Environmental Sustainability of the Tourism and Hospitality Sector

Table (11) Descriptive Statistics of the Study Sample's Opinions on Environmental Sustainability of the Tourism and Hospitality Sector

Paragraph		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	d deviation
Implementing environmental sustainability practices reduces the carbon footprint of tourism operations.	Frequency	22	42	62	58	102	3.61	1.31
	%	7.7	14.7	21.7	20.3	35.7		
Green marketing efforts, such as eco-labels and sustainable certifications, contribute to the development of sustainable tourism.	Frequency	16	28	62	60	120	3.83	1.23
	%	5.6	9.8	21.7	21.0	42.0		
Environmental sustainability contributes to a competitive advantage for hotels and travel agencies.	Frequency	18	28	50	68	122	3.86	1.24
	%	6.3	9.8	17.5	23.8	42.7		
Hotels and travel agencies that adopt environmental sustainability practices achieve better operational efficiency.	Frequency	16	34	50	70	116	3.82	1.24
	%	5.6	11.9	17.5	24.5	40.6		

Table (11) shows that the study sample's responses regarding environmental sustainability in the tourism and hospitality sector were highly rated (Agree). The item "Implementing environmental sustainability practices reduces the carbon footprint of tourism operations" received an arithmetic mean of 3.61, while the item "Green marketing efforts, such as eco-labels and sustainable certifications, contribute to the development of sustainable tourism" received an arithmetic mean of 3.83. The item "Environmental sustainability contributes to achieving a competitive advantage for hotels and travel agencies" received an arithmetic mean of 3.86, and the item "Hotels and travel agencies that adopt environmental sustainability practices achieve better operational efficiency" received an arithmetic mean of 3.82. Standard deviations ranged between 1.23 and 1.31, indicating that values are dispersed from their arithmetic mean.

Axis Four - Social Sustainability of the Tourism and Hospitality Sector

Table (12) Descriptive Statistics of the Study Sample's Opinions on Social Sustainability in the Tourism and Hospitality Sector

Paragraph		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	d deviation
Hotels and travel agencies' participation in community service initiatives improves brand reputation.	Frequency	14	30	60	70	112	3.82	1.20
	%	4.9	10.5	21.0	24.5	39.2		
Hotels and travel agencies contribute to job opportunities for local residents.	Frequency	22	42	56	64	102	3.63	1.30
	%	7.7	14.7	19.6	22.4	35.7		
Tourism activities reduce poverty and hunger in the local community.	Frequency	26	32	66	70	92	3.59	1.29
	%	9.1	11.2	23.1	24.5	32.2		

Table (12) shows that the study sample's responses regarding the social sustainability of the tourism and hospitality sector were highly rated (Agree). The item "The participation of hotels and travel agencies in community service initiatives improves brand reputation" received an arithmetic mean of 3.66, the item "Hotels and travel agencies contribute to providing job opportunities for local residents" received an arithmetic mean of 3.74, and the item "Do tourism activities reduce poverty and hunger in the local community" received an arithmetic mean of 3.77. Standard deviations ranged between 1.25 and 1.37, indicating a dispersion of values from their arithmetic mean.

Axis Five - Challenges Facing Hotels and Travel agencies When Adopting Green Marketing Strategies

Table (13) Descriptive Statistics of the Study Sample's Opinions on the Challenges Facing Hotels and Travel agencies When Adopting Green Marketing Strategies

Paragraph		Strongly disagree	Disagree	Neutral	Agree	Strongly agree	Mean	d deviation
High costs are a barrier to implementing sustainability strategies.	Frequency	14	28	68	70	106	3.79	1.18
	%	4.9	9.8	23.8	24.5	37.1		
There is a lack of customer awareness about the importance of sustainable practices.	Frequency	22	24	62	56	122	3.81	1.28
	%	7.7	8.4	21.7	19.6	42.7		
Complex regulatory standards and laws hinder the implementation of sustainability initiatives.	Frequency	20	30	48	68	110	3.79	1.25
	%	7.0	10.5	16.8	27.3	38.5		
Hotels and tourism companies are	Frequency	20	44	66	62	94	3.58	1.28

resistant to implementing green marketing strategies.	%	7.0	15.4	23.1	21.7	32.9		
The technology available to implement sustainability in the tourism and hospitality sector is expensive or unavailable.	Frequency	10	30	34	84	128	4.01	1.14
	%	3.5	10.5	11.9	29.4	44.8		
The lack of government incentives impacts the adoption of green marketing strategies.	Frequency	16	32	48	64	126	3.88	1.24
	%	5.6	11.2	16.8	22.4	44.1		
It is difficult to find suppliers who adhere to environmental sustainability standards.	Frequency	22	32	72	76	84	3.58	1.23
	%	7.7	11.2	25.2	26.6	29.4		

Table (13) shows that the study sample's responses regarding the challenges facing hotels and travel agencies when adopting green marketing strategies were high (Agree), as the paragraph "High costs are an obstacle to implementing sustainability strategies" received an arithmetic mean of 3.79, the paragraph "There is a lack of customer awareness about the importance of sustainable practices" received an arithmetic mean of 3.81, the paragraph "Complex regulatory standards and laws hinder the implementation of sustainability initiatives" received an arithmetic mean of 3.79, the paragraph "The technology available to implement sustainability in the tourism and hospitality sector is expensive or unavailable" received an arithmetic mean of 4.01, the paragraph "The lack of government incentives affects the adoption of green marketing strategies" received an arithmetic mean of 3.88, and the paragraph "It is difficult to find suppliers who adhere to environmental sustainability standards." The mean was 3.58, and the standard deviations ranged between 1.14 and 1.28, indicating that the values were dispersed from their mean.

Testing the validity of the study's hypotheses:

Testing the validity of the first hypothesis:

Table (14) Results of the linear regression analysis of the effect of the independent variable (green marketing strategies) on the dependent variable (economic sustainability of the tourism and hospitality sector)

Variables	Regression value (B)	Standard error	T value
Economic Sustainability of the Tourism and Hospitality Sector	0.683*	0.134	5.022
Green Marketing Strategies	0.616	0.150	4.054
F Value	761.02		
F Significance Level	0.000		
Correlation Coefficient (R)	0.940		
Coefficient of Determination (R ²)	0.892		
Standard Error of Estimate	0.265		

***Regression constant.**

The regression line relationship appeared as follows: $Y = 0.683 + 0.616x_1$
Where: Y = economic sustainability of the tourism and hospitality sector, X_1 = green marketing strategies.

The results of the linear regression test revealed a strong relationship between green marketing strategies and the economic sustainability of the tourism and hospitality sector. The correlation coefficient value reached 0.940, indicating the strong impact of green marketing strategies on the economic sustainability of the tourism and hospitality sector. The explanatory value reached 0.892, indicating that 89.2% of the changes in the economic sustainability of the tourism and hospitality sector are explained by green marketing strategies. Meanwhile, the F value reached 761.02, with a statistical significance level (sig = 0.000), which is smaller than the accepted statistical significance level (0.05). This indicates a statistically significant effect of green marketing strategies on the economic sustainability of the tourism and hospitality sector. Therefore, the first hypothesis is accepted.

Testing the validity of the second hypothesis:

Table (15) Results of the linear regression analysis of the effect of the independent variable (green marketing strategies) on the dependent variable (environmental sustainability of the tourism and hospitality sector)

Variables	Regression value (B)	Standard error	T value
Economic Sustainability of the Tourism and Hospitality Sector	0.545*	0.115	6.342
Green Marketing Strategies	0.604	0.023	5.011
F Value	660.11		
F Significance Level	0.000		
Correlation Coefficient (R)	0.960		
Coefficient of Determination (R^2)	0.934		
Standard Error of Estimate	0.200		

*** Regression constant.**

The regression line relationship appeared as follows: $Y = 0.545 + 0.604x_1$

Where: Y = environmental sustainability of the tourism and hospitality sector, X_1 = green marketing strategies.

The results of the linear regression test revealed a strong relationship between green marketing strategies and environmental sustainability of the tourism and hospitality sector. The correlation coefficient value reached 0.960, indicating the strong impact of green marketing strategies on environmental sustainability of the tourism and hospitality sector. The explanatory value reached 0.934, indicating that 93.4% of the changes in environmental sustainability of the tourism and hospitality sector are explained by green marketing strategies. The F value reached 660.11, with a statistical significance level (sig = 0.000), which is smaller than the accepted statistical significance level (0.05). This indicates a statistically significant effect of green marketing strategies on environmental

sustainability of the tourism and hospitality sector. Therefore, the second hypothesis is accepted.

Testing the validity of the second hypothesis:

Table (16) Results of the linear regression analysis of the effect of the independent variable (green marketing strategies) on the dependent variable (social sustainability of the tourism and hospitality sector)

Variables	Regression (value (B	Standard error	T value
Economic Sustainability of the Tourism and Hospitality Sector	0.422*	0.120	5.432
Green Marketing Strategies	0.078	0.022	4.056
F Value	598.20		
F Significance Level	0.000		
Correlation Coefficient (R)	0.910		
Coefficient of Determination (R ²)	0.885		
Standard Error of Estimate	0.248		

*** Regression constant.**

The regression line relationship appeared as follows: $Y = 0.422 + 0.078x_1$

Where: Y = social sustainability of the tourism and hospitality sector, X₁ = green marketing strategies.

The results of the linear regression test revealed a strong relationship between green marketing strategies and social sustainability of the tourism and hospitality sector. The correlation coefficient value reached 0.910, indicating the strong impact of green marketing strategies on the social sustainability of the tourism and hospitality sector. The explanatory value reached 0.885, indicating that 88.5% of the changes in the social sustainability of the tourism and hospitality sector are explained by green marketing strategies. Meanwhile, the F value reached 598.20, with a statistical significance level (sig = 0.000), which is smaller than the accepted statistical significance level (0.05). This indicates a statistically significant effect of green marketing strategies on the social sustainability of the tourism and hospitality sector. Therefore, the third hypothesis is accepted.

Testing the validity of the fourth hypothesis:

Table (17) Results of the t-test for the fourth study hypothesis

Mean	Standard deviation	Standard error of the mean	T-test	%95confidence interval for the difference between the means		Probability of significance p
				Minimum	Maximum	
3.26	1.12	0.098	21.352	3.40	3.80	0.000

It is clear from Table 17 that the probability of significance p = (0.000) is smaller than the significance level (0.05), which indicates the existence of statistically significant

differences between the opinions of the study sample regarding the challenges of adopting green marketing strategies, and thus the fourth hypothesis is accepted.

Results and conclusions:

The study results revealed a high level of awareness of green marketing practices among participants, particularly with regard to eco-labels, sustainability certifications, and environmentally friendly operational practices in the tourism and hospitality sectors. Participants expressed positive perceptions of the role of green marketing in enhancing customer satisfaction and loyalty, and were willing to pay a premium for environmental services. This is consistent with the findings of previous studies such as Papadas et al. (2017), which confirmed that environmental practices enhance organizational performance and increase customer confidence.

Statistical analyses also revealed a significant relationship between green marketing strategies and the three dimensions of sustainability: economic ($R^2 = 0.892$), environmental ($R^2 = 0.934$), and social ($R^2 = 0.885$). These findings support the “triple bottom line” model proposed by Elkington (1998), which measures organizational success not only by profits, but also by social and environmental performance. The study also emphasizes the importance of integrating stakeholder theory (Freeman, 1984) and corporate reputation theory (Fombrun, 2018) to understand the relationship between sustainability and green marketing, especially in sensitive environmental contexts such as the Red Sea.

Despite the positive results, the study identified significant challenges facing the implementation of green marketing, including high operating costs, a lack of government incentives, internal employee resistance, and weak environmental awareness among some customers. These findings are consistent with the findings of Leonidou et al. (2013) on the importance of institutional and organizational support for the success of environmental strategies.

Factor analysis results also showed that four main determinants explained 52.89% of the variance in the adoption of green marketing strategies: poor infrastructure, high costs of environmental technology, scarcity of environmentally certified suppliers, and the impact of corporate image. These results indicate that environmental transformation does not depend solely on management's convictions, but is linked to a range of external and internal factors.

Theoretically, the study contributes to the literature on sustainable marketing and environmental management by confirming the link between green marketing and achieving corporate sustainability. The study also demonstrates that theoretical frameworks such as reputation theory and stakeholder theory remain valid and relevant in contemporary tourism contexts.

Applied to the practical aspect, the study results provide clear practical recommendations for hoteliers, travel agencies, and decision-makers. Establishments should invest in measurable and observable green practices by guests. Governments should support environmental transformation through clear incentives and legislation, especially in major tourist areas such as Hurghada and Sharm El-Sheikh. Marketers should use

environmental certifications and transparent communication to persuade customers and convert their positive intentions into actual loyalty.

One interesting observation revealed by the study is the gap between the positive perception of green establishments and actual customer loyalty. Despite the high appreciation for environmental practices, some customers showed no real intention of returning or paying higher prices. This is consistent with what Aly (2023) indicated, who demonstrated that “perceived environmental credibility” and “degree of guest interaction” play a mediating role between perception and actual loyalty.

Linking Findings to Research Hypotheses

Theoretical Implications

The results contribute to the body of knowledge on sustainable marketing and strategic management in tourism by empirically validating the theoretical linkages between environmental initiatives and business performance. The integration of Stakeholder Theory (Freeman, 1984), Corporate Reputation Theory (Fombrun, 2018), and Sustainable Tourism Development frameworks is shown to be applicable and relevant in the Red Sea context.

Practical Implications

From a managerial perspective, this research offers actionable insights:

- For hotels and travel agencies: Investing in visible and authentic green practices leads to improved brand image and stronger guest relationships.
- For policymakers: The results highlight the urgent need to support tourism businesses through incentives, tax relief, and clear environmental regulations, especially in regions like Hurghada and Sharm El-Sheikh.
- For marketers: Transparent communication, third-party certifications, and guest engagement are essential to overcome guest skepticism and convert green initiatives into loyalty and advocacy.

Additionally, the research emphasizes that green marketing must be a strategic commitment, not a superficial campaign, to gain a real competitive advantage.

5. Unexpected Findings and Explanations

One unexpected finding was the gap between positive brand image and actual guest loyalty in some cases. While many tourists viewed green hotels favorably, only a subset expressed intention to revisit or pay premium prices.

Recommendations

1. For the Hospitality Sector (Hotels):

Hotels operating in the Red Sea region must treat green marketing not as a supplementary activity but as a **core component of business strategy**. Management should prioritize adopting recognized environmental certifications such as **Green Star Hotel, ISO 14001, or Travelife**, integrating sustainability messaging into branding, and ensuring visible application of eco-friendly practices like **energy efficiency, water conservation, waste reduction, and local sourcing**. Staff training should be institutionalized to build internal awareness and operational capacity in green practices. Moreover, hotels should enhance digital

communication to transparently showcase their environmental commitments. This not only improves brand image but also increases **guest trust, satisfaction, and loyalty**.

2. For Travel agencies:

Tourism agencies should redesign their marketing strategies to highlight **eco-conscious travel experiences**. By offering **eco-tourism packages**, partnering with **sustainably certified hotels and transport providers**, and using **green messaging** in all communication channels, travel agencies can position themselves as leaders in responsible tourism. Frontline staff should be trained to communicate environmental value effectively, and companies should **collect and act upon guest feedback** to continuously refine their green offerings. These practices help capture a growing market segment of environmentally aware travelers and enhance the company's competitive edge.

3. Recommendations to the Egyptian Government and Ministry of Tourism:

The Ministry of Tourism, in cooperation with the Ministry of Environment, must play a more **proactive and facilitative role** in institutionalizing green marketing. This can be done by creating **financial incentive programs** (such as tax deductions or green grants) for hotels and tourism businesses that meet specific environmental standards. Enforcing **mandatory eco-certification requirements**, supporting **sustainability training for workers**, and promoting green-certified destinations, particularly the Red Sea, through **national and international campaigns** will strengthen Egypt's position as a sustainable tourism hub. Moreover, the government should invest in **research and digital infrastructure** to help businesses access low-cost, eco-friendly technologies.

1. Final Policy and Operational Insights:

Green marketing must be **institutionalized at all organizational levels**. From frontline workers to executives, a sustainability culture should be promoted through structured training, performance incentives, and internal communication strategies. Marketing teams must ensure **transparency, consistency, and authenticity** in all green messaging to avoid greenwashing. Additionally, businesses should align their green strategies with **international sustainability frameworks** (e.g., SDGs, GSTC) to enhance global competitiveness and investor confidence.

Green marketing is no longer optional in ecologically fragile destinations like the Red Sea; it is a **strategic necessity**. Its authentic implementation enhances guest loyalty, improves brand reputation, and secures long-term resilience for tourism businesses. With the support of a coordinated effort between the government, private sector, and civil society, Egypt's Red Sea region can become a **flagship destination for sustainable tourism in the Middle East and North Africa**.

With the empirical findings, this study and hospitality brands, in partnership with marketing experts, are partly focused on their core operations to enhance sustainability performance and achieve success. In particular, small brands should be awarded accreditation, sustainability certifications, and visible green practices, as these elements

have been positively perceived by consumers and have statistically improved economic, environmental, and social sustainability outcomes.

Furthermore, to overcome the financial barriers identified in the study, travel agencies, especially small businesses, must secure significant incentives, grants, and tax breaks, which have gained the support of many politicians. Manufacturers are urged to establish appropriate regulations and clearer reward systems that facilitate adherence to green environmental policies, especially in particularly sensitive destinations such as the Red Sea region in Egypt.

On the human resources side, the study brands are developing advanced talent development programs for key green skills and activating employee engagement in sustainability. They are also capable of implementing awareness campaigns and education strategies necessary to bridge the business and customer experience with sustainable consumer engagement.

Finally, to enhance customer loyalty and the effectiveness of green marketing campaigns, companies must be fully assured, credible, and have their tax claims verified by third parties. Aligning green initiatives with the commercial efforts of businesses, such as participating in a revitalized community, will enhance brand recognition among the public.

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