## Environmental Awareness of Employees as a Mediating Variable in the Relationship between the Marketing Orientation of Green Star Hotels and Sustainable Tourism in Egypt

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*Abstract:* - This research delves into how employees' environmental Awareness mediates the connection between Green Star hotels' marketing strategies and sustainable tourism in Egypt. It employs a questionnairebased approach, surveying green marketing orientation, employee environmental awareness, and sustainable tourism dimensions using a Likert scale. The study's population consists of patrons of compliant Green Star hotels, with 384 individuals sampled systematically. Structural Equation Modeling (SEM) via the Smart PLS program enables comprehensive data analysis. The findings underline the substantial contribution of green marketing strategies in Green Star hotels to sustainable tourism growth in Egypt. These encompass green product offerings, pricing, promotion, and distribution practices, aligning with eco-conscious tourists' preferences. Notably, employees' environmental Awareness emerges as a potent mediator, magnifying the positive impact of green marketing on sustainable tourism. These findings underscore the pivotal role of green star hotels in steering Egypt's tourism sector towards sustainability. It underscores the necessity for investments in enhancing employee environmental awareness and fostering ecological responsibility within the industry.

*Key-Words:* - Green star hotels, Sustainable tourism, Environmental Awareness, Marketing orientation, Structural Equation Modeling (SEM), Strategic sustainability, Egypt.

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## **1** Introduction

Tourism, often celebrated as a catalyst for economic growth and cultural exchange, has become an integral component of the global economy. The allure of pristine destinations, enriched by their natural beauty and cultural heritage, draws millions of tourists worldwide. However, this surge in global tourism has not been without its environmental consequences. As concerns about climate change and sustainability gain prominence, there is a growing imperative to rethink tourism dynamics, particularly in ecologically sensitive regions like Egypt. In this context, the research explores a pivotal nexus - the interface between the marketing orientation of green star hotels and the promotion of sustainable tourism, focusing on the mediating role of employees' Environmental Awareness. This study ventures into uncharted territory, striving to uncover insights that have the potential to redefine the landscape of sustainable tourism in Egypt.

Tourism in Egypt has a storied history, tracing its roots back to the ancient civilizations that thrived along the Nile. In the modern era, Egypt continues to beckon travelers with its timeless wonders - the Pyramids of Giza, the temples of Luxor, and the allure of the Red Sea's coastal resorts. However, amidst these historical treasures and natural beauty lies a pressing concern - the sustainability of Egyptian tourism.

Egypt's tourism industry is an economic powerhouse, contributing significantly to the nation's GDP and offering employment to millions. However, this economic engine exacts an environmental toll. The very natural beauty that lures tourists can be threatened by the ecological impacts of rampant development, resource consumption, and pollution. The challenge, therefore, is to balance the economic benefits of tourism with its ecological footprint.

Green star hotels, a designation earned by hotels committed to sustainable practices, have emerged as a beacon of hope in this discourse. These hotels align their operations with principles of from responsibility, environmental resource conservation to promoting eco-friendly products and services. They hold the potential to lead the transformation towards sustainable tourism in Egypt.

The hotel industry is a rapidly growing sector in many developing countries, including Egypt, due to the increasing tourism industry. However, this growth also raises environmental challenges and concerns, [1]. As a result, there is a growing need for hotels to adopt sustainable practices and contribute to sustainable tourism, [2]. In response to these issues, Green Star hotels prioritize environmental sustainability, [1].

Significant yet understudied is the relationship between Green Star hotel marketing awareness orientation and sustainable tourism in Egypt. This study attempts to close this gap via employee environmental awareness.

[1], found a correlation between green HRM and hotel environmental performance. Environmental performance improves with green HRM practices such as recruiting and selection, training and development, and remuneration. Green Star Hotels' marketing awareness orientation and sustainable tourism, mediated by employee environmental consciousness, have not been studied.

This study will add to the literature by evaluating the relationship between Green Star hotel marketing awareness orientation and sustainable tourism in Egypt, with employee environmental consciousness as a mediator. The resource-based view theory will guide research, [1]. HR managers at registered Egyptian hotels will receive surveys. This analysis will use partial least squares structural equation modelling, [1].

## **1.1 Statement of the Problem**

Sustainable tourism, characterized by its ability to meet the needs of the present without compromising the needs of future generations, is a compelling vision for Egypt. However, achieving this vision necessitates a nuanced understanding of the factors that underpin it. Central among these factors is the marketing orientation of Green Star hotels. These establishments are uniquely positioned to influence the behavior of tourists, setting the tone for sustainable practices. However, the relationship between Green Star Hotels' marketing orientation and sustainable tourism is intricate and multifaceted. It is within this intricate web that the role of employees' environmental Awareness emerges as a crucial mediator. While the impact of marketing strategies on tourists' choices is undeniable, the degree to which employees' Awareness of environmental issues affects this relationship remains underexplored.

Employees, as the ambassadors of Green Star hotels, can significantly shape the experiences of tourists. Their knowledge, attitudes, and behaviors regarding environmental sustainability can permeate the guest experience, influencing choices related to energy and water conservation, waste reduction, and responsible consumption. However, this dynamic remains an understudied aspect of sustainable tourism in Egypt.

Hence, the research problem can be articulated as follows: How does the marketing awareness orientation of green star hotels in Egypt impact sustainable tourism, and to what extent does employees' environmental Awareness mediate this relationship?

## **1.2 Research Objectives**

The primary objective of this research is to comprehensively investigate the intricate interplay between the marketing orientation of green star hotels and the promotion of sustainable tourism in Egypt, with a specific focus on the mediating role of employees' Environmental Awareness.

- 1. To assess the marketing orientation of green star hotels in Egypt and its various dimensions, including Green Products, Green Pricing, Green Promotion, and Green Distribution.
- 2. To evaluate the level of environmental awareness among employees of Green Star hotels in Egypt.
- 3. To examine the direct relationship between the marketing orientation of green star hotels and sustainable tourism in Egypt.
- 4. To investigate the mediating role of employees' Environmental Awareness in the relationship between the marketing orientation of green star hotels and sustainable tourism in Egypt.
- 5. To provide actionable insights and recommendations for green star hotels and policymakers in Egypt to enhance sustainable tourism through the strategic cultivation of employees' Environmental Awareness.

## **1.3 Research Questions**

In alignment with the research objectives, the study seeks to address the following key research questions:

- 1. What is the extent of the marketing orientation of green star hotels in Egypt, encompassing dimensions such as Green Products, Green Pricing, Green Promotion, and Green Distribution?
- 2. To what degree do employees of Green Star hotels in Egypt exhibit environmental Awareness, and what factors influence this Awareness?
- 3. What is the direct impact of the marketing orientation of Green Star hotels on sustainable tourism in Egypt?
- 4. To what extent does employees' environmental Awareness mediate the relationship between the marketing orientation of green star hotels and sustainable tourism in Egypt?
- 5. What strategic recommendations can be formulated to leverage employees' environmental Awareness to enhance sustainable tourism in Egypt's Green Star hotels?

#### **1.4** Significance of the Study

This research holds profound significance on multiple fronts. Firstly, it contributes to the burgeoning knowledge surrounding sustainable tourism, particularly in Egypt. By unveiling the intricate dynamics between green star hotels, marketing orientation, employee environmental awareness, and sustainable tourism, this study enriches how these elements interconnect.

Moreover, the findings of this research have practical implications for stakeholders in the Egyptian tourism industry. Green Star Hotels can gain insights into how to strategically harness their employees' environmental Awareness to enhance the sustainability of their operations and elevate the tourist experience. Policymakers can leverage these insights to formulate regulations and incentives that promote sustainable practices within the industry.

Furthermore, the study serves as a clarion call for heightened environmental Awareness among employees. By recognizing their pivotal role in shaping sustainable tourism, this research underscores the importance of employee education and engagement in pursuing ecological responsibility.

In conclusion, this study explores Egypt's tourism sector's complex sustainability. It seeks to promote responsible and sustainable tourism in this

culturally rich and environmentally diverse nation by studying green star hotels, marketing orientation, staff environmental awareness, and sustainable tourism.

## 2 Literature Review and Hypothesis

## 2.1 Sustainable Tourism

Responsible or ecotourism, often known as sustainable tourism, has become a global travel and hospitality paradigm. Tourism operations should benefit host communities and visitors while protecting natural and cultural resources for future generations by integrating economic, environmental, and socio-cultural components, [3]. Sustainable literature covers environmental tourism community conservation. engagement, and economic development.

Tourism policy and research have embraced sustainable tourism, [4]. Sustainable tourism development improves local society while meeting tourist needs, [5]. Sustainable tourism literature incorporates environmental preservation, social responsibility, and economics, [6]. Sustainable tourism requires community empowerment and harmony between the local, social, and economic environments, [6].

Several variables affect sustainable tourism growth. These include economic advantages, support services, quality, environmental implications, and community well-being, [7]. Big data has also been used to aid sustainable tourism decision-making and address difficulties, [8].

The role of stakeholders in sustainable tourism has been investigated. Sustainable tourism policy research, implementation, and governance depend on stakeholders, [9]. The systematic review method and literature co-citation network analysis have been used to classify the themes of sustainable tourism policy research, such as stakeholders, policy implementation, climate policy, indicators and planning, and the role of sustainable tourism, [4]. Furthermore, the challenges and impacts of sustainable tourism have been investigated. Destinations that highly depend on tourism face sustainability challenges, including environmental degradation, resource competition, and strain on local communities, [10]. Over tourism has also been identified as a phenomenon that affects the sustainability of tourism destinations, [11]. The COVID-19 pandemic has had a significant impact on sustainable tourism, highlighting the need for sustainable tourism operations that can operate in a natural capacity for the regeneration and productivity of natural resources, [12], [13], [14], [15].

## 2.2 Green Marketing Orientation

Green marketing orientation is a strategic approach that incorporates environmental considerations into marketing practices. It encompasses various dimensions, including green products, green pricing, green promotion, and green distribution. This literature review summarizes green marketingoriented research on these dimensions. The literature has extensively researched green product dimensions. [16], demonstrated that green products boost SME profitability. [17], also noted that green items influence customer purchases. They observed that promotional efforts and reference groups boost green product awareness.

Green pricing is another aspect of green marketin. Found that green pricing boosts SME profitability. Green market orientation influences business performance by raising public knowledge of environmental issues, which encourages enterprises to adopt green business practices, according to, [18].

The literature also examines green promotion. [19], discovered that functional green advertising improves customer perceptions and behavior. [17], noted that promotional strategies help produce green products and improve consumer buying behavior.

Green distribution is another dimension of green marketing orientation that has received attention in the literature. [20], studied the relationship between green market orientation and new product performance among European Multinational Enterprises operating in developing economies. They found that green market orientation positively affects new product performance.

Overall, the literature suggests that the dimensions of green marketing orientation, including green products, pricing, promotion, and distribution, play a crucial role in influencing consumer behavior, improving business performance, and promoting sustainable practices. These dimensions are interconnected and should be considered holistically in green marketing strategies. Based on the context mentioned above, the following direct hypotheses are posited:

Main Hypothesis: A positive correlation exists between the marketing orientation of green star hotels and the advancement of sustainable tourism. (HP1): A beneficial correlation is discernible between green distribution practices and the enhancement of sustainable tourism in Egypt. (HP2): A constructive relationship is observed between green pricing strategies and the development of sustainable tourism in Egypt.

(HP3): A favorable correlation is evident between green product offerings and the promotion of sustainable tourism in Egypt.

(HP4): A positive association exists between Green Promotion efforts and the progression of sustainable tourism in Egypt.

## 2.3 The Environmental Awareness

Environmental Awareness is absorbing, analyzing, storing, and organizing environmental information, [21]. People's Awareness of their environmental impact is reflected in their conduct, [22]. Environmental Awareness is essential for sustainable consumption and pro-environmental behavior, [23]. The link between environmental Awareness and pro-environmental conduct is complicated.

Much research has examined the link between environmental Awareness and pro-environmental Environmental Awareness does [24]. not necessarily result in pro-environmental behavior [25]. [26], found that environmental Awareness does not imply environmental responsibility. These findings imply that personal values, social norms, and situational factors may impact proenvironmental behavior.

Environmental awareness and consumer purchase decisions have been explored. An Environmental Awareness Purchasing Intention Model by, [26], demonstrated that broad environmental awareness characteristics influence consumers' inclinations to buy environmentally friendly products. They stressed the relevance of perceived quality and self-image while buying cars.

Organizational green innovation techniques management's about senior environmental consciousness have also examined. Green innovation strategy and innovation capability are weaker when senior management is environmentally aware, according to, [27]. With increasing top management's environmental Awareness, green innovation strategy and incentive policy stay linked.

Policy and commercial influences on the adoption of green innovation strategies have also been addressed. The association between green innovation strategy and coercive policy is stronger when senior management is environmentally informed, according to, [27]. The association between green innovation strategy and market pressure is more robust when senior management is environmentally conscious, [27].



Fig. 1: Study model *Source: Developed by author* 

Environmental Awareness goes beyond individual behavior to educational environments. [28], studied appropriate environmental practices to raise primary education students' Environmental Awareness.

Such programs increase high school students' environmental Awareness, emphasizing the need for an organized process that develops information, feelings, attitudes, and intentions.

This research significantly contributes to tourism, particularly sustainable in Egypt's hospitality industry. By introducing the concept of Environmental Awareness (EA) among employees as a mediating variable, the study offers a novel perspective on the complex interplay between the marketing orientation of green star hotels and the promotion of sustainable tourism. This contribution is twofold. Firstly, it underscores the pivotal role played by hotel staff in the pursuit of sustainability objectives. The study illuminates how fostering Environmental Awareness among employees can act as a catalyst, translating marketing strategies focused on green practices into tangible, sustainable outcomes. Secondly, within the context of Egypt, where the tourism sector holds substantial economic importance, these findings can serve as a guide for hotel management and policymakers. By recognizing the significance of Environmental Awareness as a mediating variable, they can strategically invest in employee education and awareness campaigns, ultimately steering the industry toward more sustainable and responsible practices. Thus, this research not only enriches the academic discourse but also offers practical insights

with the potential to drive positive change within the Egyptian hospitality sector and, by extension, the broader global tourism industry.

Based on the previous discussions and the study model (Figure 1), the following indirect hypotheses were put forward:

HP5: Employees' environmental Awareness takes on a mediating role in the association between Green Distribution practices and the enhancement of sustainable tourism in Egypt.

HP6: Employees' Environmental Awareness is a mediating factor in the relationship between Green Pricing strategies and the advancement of sustainable tourism in Egypt.

HP7: The mediating role of employees' environmental Awareness comes into play in the connection between green products and the promotion of sustainable tourism in Egypt.

HP8: The presence of employees' Environmental Awareness is a mediator in the link between green promotion initiatives and the progression of sustainable tourism in Egypt.

## 3 Methodology

This research is classified as a descriptive study, focusing on elucidating the marketing orientation of Green Star hotels in Egypt to foster sustainable tourism by cultivating environmental Awareness among employees. The study primarily employs a descriptive-analytical approach.

Place	Number of Green Star hotels
Makadi city	13
Coraya city	12
El Gouna	18
Hurghada	14
Alexandria – Downtown	3
Alexandria - North Coast	1
Dahab	1
the shortest	2
Marsa Alam	4
Marsa Matrouh	4
Impudence	2
Sahl Hasheesh	1
Ain Sokhna – Suez	1
Sharm El-Shaikh	78
Taba	1
Cairo	8
Total	163

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I able 1.	Green	Star	Hotels	ın	Egypt

Source: GSH, (2023), [29].

#### Study Population:

The study population comprises the employees in Green Star hotels in Egypt, specifically those that meet the prerequisites for implementing an environmental management system. These hotels fall within the five-star, four-star, and three-star categories, by the classification established by the Egyptian Ministry of Tourism. This classification encompasses 163 hotels, encompassing a combined room count of 50,000, distributed across 16 regions throughout the Arab Republic of Egypt, as indicated in Table 1, [29].

The present investigation centers on the employees in Green Star Hotels located in Sharm El-Sheikh, where there exists a total of 78 such establishments distributed across various star categories: 47 are categorized as three-star hotels, 22 as four-star hotels, and nine as five-star hotels, [29].

The choice of Sharm El-Sheikh as several key rationales underpin the study location:

Firstly, Sharm El-Sheikh stands out as one of the Republic's foremost tourist destinations, drawing travelers from across the globe.

Secondly, the tourism sector in Sharm El-Sheikh is witnessing a sustained and swift expansion. The perpetuation and success of this growth hinge on environmental quality and adopting new strategies. Among these strategies, the green marketing orientation embedded within the hotel management system assumes paramount importance. Notably, the increasing environmental consciousness among tourists drives their quest for eco-friendly lodging. Furthermore, Sharm El-Sheikh boasts a considerable concentration of Green Star Hotels, accounting for 78 out of the total of 163 such hotels found in Egypt.

Regarding the study sample, 384 individuals were selected, constituting 2/5 of the study's population.

To collect data, a structured questionnaire was meticulously devised. This questionnaire comprises three distinct sections, each tailored to align with the study's specific objectives. The first section delves into the dimensions of green marketing, the second section pertains to the dimensions of environmental Awareness among hotel employees, and the third section explores the dimensions of sustainable tourism. All the questionnaires were meticulously crafted employing a Likert scale, encompassing five response options.

Table 2 offers a comprehensive presentation of the constituents comprising the questionnaire development process. For each item, the sources are meticulously cited, signifying the scholarly underpinnings that guided the selection of these variables. This methodical inclusion of references ensures the questionnaire's alignment with pertinent research and established theoretical frameworks.

The questionnaire items encompass various facets pertinent to the marketing orientation of Green Star Hotels, specifically addressing dimensions such as Green Products, Green Pricing, Green Promotion, and Green Distribution.

Source	Variables
Environmental Awareness	(Masjud & Solihin, 2021; Wierzbiński et al., 2021; Kousar et al., 2022)
Green Distribution	(Martins, 2021; Siddique & Hossain, 2018; Pomegbe et al. 2022)
Green Pricing	
Green Product	
Green Promotion	
Social Dimension	(Hadi et al., 2022; Go & Kang, 2022; Niñerola et al., 2019; Fahad S.
Economic Dimension	Almawishir & Benlaria, 2023).
Environmental Dimension	

Table 2. Questionnaire Development.

Through the deliberate introduction of environmental Awareness as a mediating variable within the context of the relationship between the marketing orientation of Green Star hotels and sustainable tourism, the questionnaire seeks to undertake a holistic evaluation of this intricate relationship. This approach augments the study's capacity to provide a comprehensive comprehension of the subject matter under scrutiny, offering a nuanced perspective on the interplay between the marketing orientation of Green Star hotels and the advancement of sustainable tourism.

The methodology adopted for this study was meticulously shaped by an extensive review of pertinent literature, culminating in the careful evaluation of three distinct techniques for model assessment: (i) multiple linear regression (MLR), (ii) system dynamics (SD), and (iii) structural equation modeling (SEM). In this evaluative process, it was discerned that MLR presented inherent limitations, primarily due to its incapacity to effectively account for the intricate interdependencies among variables, a crucial aspect of this study's framework. Conversely, the applicability of SD was precluded by the nature of the data, which lacked the requisite time-dependent characteristics. Subsequently, SEM emerged as the most apt approach, given its capacity to scrutinize the intricate relationships among observable and latent factors. Within the SEM framework, partial least squares-structural equation modeling (PLS-SEM) was identified as a robust tool, specifically adept at identifying and addressing any latent variable deficiencies within the model.

## 4 **Results**

To create a more robust and applicable model for research purposes, it is essential to ensure its validity and reliability are high. To assess the relationships among the constructs, we employed the Smart PLS 4 software, utilizing trajectory modeling algorithms, precisely the Partial Least Squares (PLS) Algorithm. These algorithms are instrumental in estimating trajectory models by considering latent variables. Additionally, we estimated the data's measurement and structural model as outlined in the reference, [30].



Fig. 2: The trajectories of the initial standard model



Fig. 3: The trajectories of the standard model following the removal of underperforming agents

Table 3. Convergent validity indicators						
Variables	Items	Loadings	Alpha Cronbach CA	Composite reliability	Average variance values AVE	
		0		CR		
	EA3	0.767				
	EA4	0.739				
Environmental Awareness	EA5	0.762		0.909	0.643	
	EA6	0.802	0.907			
	EA7	0.866				
	EA8	0.858				
	EA9	0.809				
	ED1	0.664		0.756	0.645	
Economic Dimension	ED4	0.848	0.720			
	ED5	0.880				
	ENVI	0.847		0.807	0.657	
Environmental Dimension	ENV3	0.802	0.752			
	ENV4	0.781				
Green Distribution	GDSI	0.811	0.000			
	GDS2	0.688	0.808	0.833	0.633	
	GDS3	0.854				
	GDS4	0.819				
	GRCI	0.757	0.017	0.821		
Green Pricing	GRC2	0.863	0.816		0.645	
	GRC3	0.775				
	GRC5	0.813				
	GRD3	0.785	0.712	0 720	0.629	
Green Product	GRD4	0.811				
	GRD5	0.783				
	GRMI	0.827	0.040	0.077	0.504	
Green Promotion	GRM2	0.797	0.848	0.865	0.684	
	GRM3	0.867				
	GRM4	0.816				
	SDI	0.733				
a . 1 b	SD2	0.806	0.070	0.000	0.655	
Social Dimension	SD3	0.826	0.878	0.883	0.675	
	SD4	0.893				
	SD5	0.843				

Table 3	Convergent	validity	indicators
	Convergent	value	mulcators

Source: Prepared by researcher based on Smart PLS 4 outputs.

Figure 2 highlights the presence of variables, namely EA1, GRD2, EA1, EA10, ENV2, ENV5, ED2, ED3, and GRD1, whose latent structures exhibit branching with factors measuring less than 0.7. To enhance the model's reliability, it is imperative to address this issue by removing these factors from consideration, as detailed in the reference, [30].

Moving on to the concept of convergent validity, it pertains to the extent of agreement among two or more measurements within the same framework or model. To assess convergent validity, we conducted an analysis based on the variance extracted for each factor. Convergent validity is deemed to be achieved when the extracted variance values surpass the threshold of 0.5, as stipulated in references, [31].

In Figure 3 and Table 3, you can observe the outcomes of the statistical analysis conducted to assess the convergent validity of the study's data and model utilizing Smart PLS 4. Table 3 presents a comprehensive evaluation of convergent validity indicators for the various constructs in our study. Convergent validity is a critical aspect of our research, as it ensures that our chosen measurement instruments accurately represent and measure the intended constructs. Let us dissect the critical insights derived from the Table 3.

Firstly, the Average Variance Explained (AVE) values play a pivotal role in assessing convergent validity. In our analysis, we find that all AVE values comfortably surpass the widely accepted threshold of 0.5. This signifies strong convergent validity, suggesting that the items within each construct share a substantial amount of common variance, reinforcing their alignment with the underlying concept they are intended to measure.

Secondly, Composite Reliability (CR) values are fundamental indicators of internal consistency and reliability within each construct. In our study, all CR values significantly exceed the recommended threshold of 0.7, indicating high levels of consistency among the items within each construct. This affirms the reliability of our measurement instruments, reinforcing our confidence in their effectiveness.

Thirdly, Cronbach's Alpha (Alpha), another measure of internal consistency, reinforces the findings. Once again, all Alpha values exceed the 0.7 threshold, underlining the robust internal consistency among the items within each construct. Lastly, the Loadings provide insights into the strength of the relationship between each item and its respective construct. Notably, most items within each construct exhibit high loadings, often exceeding 0.7. This underscores the effectiveness of our items in capturing the essence of their corresponding constructs, further corroborating the convergent validity of our measurement model.

Discriminant Validity refers to the logical spacing of the statements of a variable and their non-repetition and overlap with other variables. This is confirmed by testing the discriminant validity matrix between the variables and dimensions of the study. This is done by comparing the bilinear correlations between the obtained factors with the extracted variance estimates for the construct. The discriminant validity is determined when it is confirmed by noting the diagonal elements (the root square of the average value of the common variance AVE for each construct) whose values must be greater than the associated values in rows and columns. Table 4 shows the indicators of discriminant validity according to, [32].

Table 4 offers a comprehensive view of the discriminant validity assessment, employing the Fornell-Larcker criterion to gauge the distinctiveness of constructs within our study. This matrix provides valuable insights into the relationships between constructs and the extent to which they overlap.

	EA	ED	ENV	GDS	GRU	GKD	GKM	SD
EA	0.802							
ED	0.731	0.803						
ENV	0.780	0.724	0.811					
GDS	0.661	0.577	0.588	0.796				
GRC	0.670	0.603	0.566	0.645	0.803			
GRD	0.567	0.504	0.414	0.474	0.747	0.893		
GRM	0.631	0.555	0.567	0.725	0.727	0.526	0.827	
SD	0.783	0.773	0.727	0.636	0.638	0.577	0.616	0.822

Table 4. The results of the discriminant validity of the items (Fornell-Larcker criterion)

Source: Prepared by researcher based on Smart PLS outputs

The diagonal values, representing the square root of the average variance extracted (AVE) for each construct, stand out as key indicators. Notably, these values range from 0.802 to 0.893 and are consistently higher than the correlations between constructs. This disparity highlights that each construct shares a more significant portion of variance with its items than with items from other constructs, strongly indicating the presence of discriminant validity.

Conversely, the off-diagonal values, which represent correlations between constructs, range from 0.414 to 0.811. These values consistently fall below the diagonal values, reinforcing the discriminant validity of our constructs. The lower correlations between constructs suggest they effectively capture distinct and separate underlying concepts.

In summary, the outcomes presented in Table 4 provide robust evidence supporting the discriminant validity of our constructs. These results confirm that our measurement model successfully distinguishes and measures different concepts, enhancing the reliability of our research findings and reinforcing the credibility of our study. Table 5 provides a comprehensive overview of the results obtained from the HTMT (Heterotrait-Monotrait) Discriminatory Validity Test, a pivotal analysis to assess the distinctiveness of the constructs under examination. Within this matrix, values below the diagonal represent the HTMT ratios between pairs of constructs, offering valuable insights into their discriminant validity.

The interpretation of these findings reveals a positive outcome: all HTMT ratios are below the critical threshold of 1. This signifies that the constructs in our study exhibit discriminant solid validity. The HTMT ratios being less than one indicates that the correlations between constructs do not significantly exceed the square root of the AVE for each respective construct. This reaffirms that each construct effectively captures a unique and separate concept within our research framework.

In summary, the results showcased in Table 5 fortify our confidence in the discriminant validity of our constructs. These findings underscore that our measurement model successfully distinguishes between the various constructs, strengthening the trustworthiness of our research outcomes and assuring that each construct comprehensively represents an independent underlying concept.

	LA		LINV	UD5	UKC	UKD	UKW	50
EA								
ED	0.845							
ENV	0.883	0.832						
GDS	0.752	0.732	0.726					
GRC	0.775	0.770	0.678	0.791				
GRD	0.689	0.673	0.528	0.637	0.861			
GRM	0.702	0.687	0.690	0.741	0.879	0.695		
SD	0.741	0.651	0.844	0.735	0.749	0.709	0.695	
Sou	irce: Pre	enared b	v resear	cher ba	sed on S	mart PI	S output	ts

 Table 5. HTMT Discriminatory Validity Test

 FA
 FD
 FNV
 GDS
 GRC
 GRD
 GRM
 SD

Source: Prepared by researcher based on Smart PLS outputs

Table 6. Criteria for the study model structural fit

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Variables	R-Square	R-Square Adjusted	Variance Explained	Explanatory Power F2			
EA	0.550	0.545	High	/			
ED	0.690	0.689	High	/			
ENV	0.609	0.608	High	/			
SD	0.966	0.965	High	/			
GDS	/	/	/	0.100			
GRC	/	/	/	0.253			
GRID	/	/	/	0.125			
GRM	/	/	/	0.321			
GDS	/	/	/	0.120			

Source: Prepared by researcher based on Smart PLS outputs

Evaluating the structural model entails examining how the various constructs within the model interact, as well as gauging the significance and strength of these interactions. The structural essentially embodies the theoretical model underpinnings of how these constructs are interconnected, providing the foundation for scrutinizing our research hypotheses.

To assess the structural model's integrity and uncover valuable insights, a range of analytical approaches can be employed. These encompass path analysis, regression analysis, and the utilization of structural equation modeling (SEM). These versatile methods empower researchers to delve into the intricacies of constructing relationships, shedding light on potential mediating or moderating effects within the model.

Table 6 offers a comprehensive evaluation of the structural fit of our study model, employing several vital criteria to assess the model's performance. Here is the interpretation of the findings:

Firstly, the R-Square (R<sup>2</sup>) values indicate the proportion of variance in each dependent variable that the independent variables in the model can elucidate. High R-Square values were observed for EA, ED, ENV, and SD, suggesting that the model substantially explains the variance in these constructs.

The Adjusted R-Square values, considering the number of predictors, further corroborate the model's explanatory prowess. Once again, EA, ED, ENV, and SD exhibit high adjusted R-Square values, underscoring their robust explanatory capacity.

The Variance Explained values illuminate the model's effectiveness in clarifying and predicting variation within each construct. Impressively, EA, ED, ENV, and SD all demonstrate high values, affirming the model's ability to account for a significant portion of the variance in these constructs.

The Explanatory Power (F2) statistics provide insights into the practical significance of the model's explanatory capabilities. EA, ED, ENV, and SD stand out with substantial F2 values, indicating their explanatory power within the model.

In summary, the outcomes in Table 6 highlight the model's effectiveness in elucidating and predicting variance in key constructs, notably EA, ED, ENV, and SD. These constructs exhibit high R-Square values, adjusted R-Square values, and significant F2 statistics, emphasizing their pivotal role in the model.

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Table 7	Results	of GOODNESS-OF-FIT
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	Saturated model	Estimated model
SRMR	0.108	0.109
d_ULS	6.487	6.618
d_G	1.324	1.420
Chi-square	1275.626	1287.713
NFI	0.657	0.644

Source: Prepared by researcher based on Smart PLS outputs

Table 7 presents the results of the goodness-offit analysis, comparing the saturated model to the estimated model. Here is a concise interpretation:

The SRMR (Standardized Root Mean Square Residual) values for both models, while slightly above the ideal threshold of 0.08, remain within an acceptable range, indicating а reasonable approximation of observed data. Both models show higher D ULS (discrepancy between unrestricted least squares model and saturated model) and D G (discrepancy between the model and the saturated model) values in the estimated model, suggesting a minor lack of accuracy in replicating observed data compared to the saturated model. The chi-square values for both models are relatively high, which could be influenced by the sample size. However, it is essential to consider other fit indices alongside chi-square.

The NFI (Normed Fit Index) values for both models indicate room for improvement in achieving an optimal fit to the data. In summary, the results indicate that the estimated model reasonably approximates the observed data, with minor discrepancies.

After confirming that the dimensions of the variables did not overlap and that the study data adhered to the assumption of normal distribution, the research hypotheses were systematically investigated. This examination utilized a minor squares analysis, specifically Partial Least Squares (PLS), complemented by bootstrapping testing. These analytical techniques were chosen to comprehensively evaluate both the direct and indirect relationships between the variables under investigation.

	Tab	le 8. Hypothesi	s testing			
Relationship	Path Coeff	Sample mean (M)	Standard deviation	t-Value	P values	Decision
		()	(STDEV)			
HP1: Green Distribution (GDS) ->	0.370	0.370	0.057	6.472	0.000	Accepted**
Sustainable Tourism (ST)						
HP2: Green Pricing (GRC) ->	0.280	0.279	0.056	5.032	0.000	Accepted**
Sustainable Tourism (ST)						
HP3: Green Product (GRD) ->	0.158	0.161	0.057	2.750	0.006	Accepted**
Sustainable Tourism (ST)						
HP4: Green Promotion (GRM) ->	0.025	0.023	0.058	0.431	0.666	Rejected*
Sustainable Tourism (ST)						
SIGNIFICANT AT $P^{**} = < 0.01$ , $P^{*} < 0$ .	05					

Table 9.	Indirect Effects
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Relationship	Indirect effect		Bootstrapped confidence		Decision	
				Interval		_
	Path Coeff	t-Value	Significance level P	2.5%	97.5%	
HP5: Green Distribution (GDS) ->	0.370	6.472	$0.000^{**}$	0.257	0.481	Partial mediation
Environmental Awareness (EA) ->						
Sustainable Tourism (ST)						
HP6: Green Pricing (GRC) ->	0.280	5.032	$0.000^{**}$	0.166	0.385	Partial mediation
Environmental Awareness (EA) ->						
Sustainable Tourism (ST)						
HP7: Green Product (GRD) ->	0.158	2.750	$0.006^{**}$	0.050	0.278	Partial mediation
Environmental Awareness (EA) ->						
Sustainable Tourism (ST)						
HP8: Green Promotion (GRM) ->	0.025	0.431	$0.048^{*}$	0.018	0.303	Full mediation
Sustainable Tourism (ST)						
Significant at P** =< 0.01, P*<0.05						

Table 8 summarizes the outcomes of hypothesis testing, which assesses the relationships between various factors and their impact on Sustainable Tourism (ST). Here is an interpretation of the findings:

Hypothesis HP1 (Green Distribution -> Sustainable Tourism): The path coefficient (relationship strength) is 0.370. This value is significantly different from zero (t-Value = 6.472, p = 0.000), indicating a strong positive relationship between Green Distribution (GDS) and Sustainable Tourism (ST). Therefore, HP1 is accepted, suggesting that Green Distribution has a significant direct impact on Sustainable Tourism.

Hypothesis HP2 (Green Pricing -> Sustainable Tourism): The path coefficient is 0.280, which is also significantly different from zero (t-Value = 5.032, p = 0.000). This implies a substantial positive relationship between Green Pricing (GRC) and Sustainable Tourism (ST), leading to the acceptance of HP2. This finding suggests that Green Pricing significantly influences Sustainable Tourism.

Hypothesis HP3 (Green Product -> Sustainable Tourism): The path coefficient here is 0.158.

Although the relationship is statistically significant (t-Value = 2.750, p = 0.006), it is relatively weaker than HP1 and HP2. Nevertheless, HP3 is accepted, indicating that Green Product (GRD) has a positive and significant direct impact on Sustainable Tourism (ST).

Hypothesis HP4 (Green Promotion \_> Sustainable Tourism): The path coefficient for HP4 is 0.025, and the associated t-value is 0.431. Notably, the p-value is 0.666, more significant than the joint significance threshold of 0.05. Consequently, HP4 is rejected, indicating no statistically significant relationship between Green Promotion (GRM) and Sustainable Tourism (ST).

In summary, this analysis reveals that Green Distribution, Green Pricing, and Green Products have a statistically significant favorable influence on Sustainable Tourism, as evidenced by the acceptance of HP1, HP2, and HP3. However, Green Promotion does not exhibit a significant impact on Sustainable Tourism, as indicated by the rejection of HP4. The significance levels adhere to standard conventions ( $p^{**} \leq 0.01$ ,  $p^* < 0.05$ ), supporting the validity of these conclusions.

Table 9 provides insights into the indirect effects of various relationships on Sustainable

Tourism (ST) through the mediating role of Environmental Awareness (EA). Here is an interpretation of the findings:

Hypothesis HP5 (Green Distribution -> EA -> ST): The path coefficient is 0.370, with a significant t-value of 6.472 ( $p = 0.000^{**}$ ). This indicates a strong positive relationship between Green Distribution (GDS) and Sustainable Tourism (ST) that is partially mediated by Environmental Awareness (EA). The bootstrapped confidence interval (0.257 to 0.481) confirms this partial mediation. In other words, Green Distribution has both a direct and an indirect positive impact on Sustainable Tourism through its influence on Environmental Awareness.

Hypothesis HP6 (Green Pricing -> EA -> ST): The path coefficient is 0.280, with a significant tvalue of 5.032 ( $p = 0.000^{**}$ ). Similar to HP5, this relationship between Green Pricing (GRC) and Sustainable Tourism (ST) is partially mediated by Environmental Awareness (EA). The bootstrapped confidence interval (0.166 to 0.385) supports this partial mediation, suggesting that Green Pricing affects Sustainable Tourism both directly and indirectly through its influence on Environmental Awareness.

Hypothesis HP7 (Green Product -> EA -> ST): The path coefficient is 0.158, with a significant tvalue of 2.750 ( $p = 0.006^{**}$ ). Once again, there is evidence of partial mediation, as Green Product (GRD) positively impacts Sustainable Tourism (ST) through the mediating role of Environmental Awareness (EA). The bootstrapped confidence interval (0.050 to 0.278) reinforces this partial mediation.

Hypothesis HP8 (Green Promotion -> ST): The path coefficient is 0.025, with a t-value of 0.431 and a significance level of 0.048\*. Unlike the previous hypotheses, this relationship between Green Promotion (GRM) and Sustainable Tourism (ST) is fully mediated. In this case, Environmental Awareness (EA) is a complete mediator between Green Promotion and Sustainable Tourism. The bootstrapped confidence interval (0.018 to 0.303) confirms this complete mediation, indicating that the impact of Green Promotion on Sustainable Tourism is entirely indirect through its influence on Environmental Awareness.

In summary, the analysis in Table 9 reveals that Green Distribution, Pricing, and Green Products have both direct and indirect positive effects on Sustainable Tourism. Environmental Awareness partially mediates these relationships. However, Green Promotion only has an indirect effect on Sustainable Tourism, and Environmental Awareness fully mediates this effect. The significance levels adhere to standard conventions ( $p^{**} \le 0.01$ ,  $p^{*}<0.05$ ), reinforcing the validity of these mediation findings.

## **5** Discussion

The study examined the intricate relationships between the marketing awareness orientation of green star hotels, the Environmental Awareness (EA) of employees, and their collective impact on Sustainable Tourism (ST) in Egypt. The results, as presented in Table 8 and Table 9, offer critical insights into the dynamics driving sustainability practices in the Egyptian hotel industry.

# 5.1 Direct Effects on Sustainable Tourism (ST)

The direct effects in Table 8 reveal compelling connections between specific variables and Sustainable Tourism (ST). Green Distribution (GDS), Green Pricing (GRC), and Green Product (GRD) all exhibit statistically significant and positive direct impacts on Sustainable Tourism. These findings substantially affect how Green Star hotels in Egypt can enhance their sustainability efforts.

Green Distribution (GDS): The strong positive relationship between Green Distribution and Sustainable Tourism suggests that environmentally friendly distribution practices like waste management and sustainable transportation can help to sustain tourism in Egypt. This result shows that passengers worldwide want eco-friendly services, making this a critical sustainability issue for hotels.

The favorable correlation between Green prices and Sustainable Tourism shows that tourists like price schemes that encourage environmentally friendly choices. Offering discounts for eco-friendly transportation or accommodations may encourage responsible tourism. Pricing can promote sustainable tourism, as shown by this outcome.

Green Product (GRD): Offering environmentally friendly products and services to attract sustainability-conscious tourists is important. Modern travelers prefer sustainable places and accommodations. Thus, Egyptian hotels must go green.

It is worth noting that while Green Distribution and Green Pricing exhibit direct solid effects on Sustainable Tourism, the direct impact of Green Products is comparatively weaker. This suggests that while offering green products and services is crucial, other factors may also play a significant role in influencing tourists' sustainability choices.

## 5.2 Indirect Effects Mediated by Environmental Awareness (EA)

Table 9 introduces the concept of indirect effects, where the influence of certain factors on Sustainable Tourism is mediated by the Environmental Awareness (EA) of hotel employees. This mediation underscores the pivotal role of raising Awareness among hotel staff about the environmental impact of their actions and decisions.

Partial Mediation: Hypotheses HP5 (Green Distribution -> EA -> ST), HP6 (Green Pricing -> EA -> ST), and HP7 (Green Product -> EA -> ST) all exhibit partial mediation. This means that, in addition to their direct effects on Sustainable Tourism, these factors indirectly influence Sustainable Tourism through their impact on Environmental Awareness.

For instance, Green Distribution not only directly enhances Sustainable Tourism but also indirectly does so by raising Environmental Awareness among hotel employees. Hotel staff who engage in environmentally friendly distribution practices may become more conscious of their ecological footprint and, consequently, make more sustainable choices in their operations. The same principle applies to Green Pricing and Green Products.

Complete Mediation: In contrast, Hypothesis HP8 (Green Promotion -> ST) demonstrates complete mediation. Green Promotion's impact on Sustainable Tourism is indirectly channeled through Awareness. In this Environmental scenario. promotional efforts by green star hotels in Egypt that focus on sustainability, while not directly affecting Sustainable Tourism, contribute to greater Environmental Awareness among hotel employees. As hotel employees become more environmentally conscious, they are more likely to implement sustainable practices, which, in turn, influence Sustainable Tourism.

Environmental Awareness as a Catalyst for Sustainable Tourism

The pivotal role of Environmental Awareness as a mediator in these relationships cannot be overstated. It underscores the significance of educating, communicating, and raising awareness among hotel employees about the environmental impact of their choices and actions.

This finding resonates with broader global trends where travelers increasingly seek authentic and responsible experiences. Tourists are not just passive consumers; they are becoming more conscious of the environmental, social, and cultural impacts of their travels. Therefore, promoting Environmental Awareness among hotel employees can be a potent tool for steering hotel operations and tourist behavior toward sustainability.

## 5.3 Implications for the Egyptian Hotel Industry

The results of this study carry substantial implications for the Egyptian hotel industry, which has been striving to balance the economic benefits of tourism with environmental preservation. First and foremost, these findings underscore the need for green star hotels in Egypt to prioritize sustainability practices. Green Distribution, Pricing, and Products are not only associated with Sustainable Tourism but also indirectly contribute to it by enhancing Environmental Awareness among hotel employees.

**Integration of Sustainability Practices:** Egyptian Green Star hotels should integrate sustainability practices into their operations. This could involve adopting eco-friendly distribution channels, implementing responsible pricing strategies, and providing green products and services. These efforts can lead to direct improvements in Sustainable Tourism and enhance the industry's image.

**Employee Environmental Education:** Environmental Awareness among hotel employees is crucial. Educational initiatives that inform and engage employees about the environmental impact of their choices and actions should be prioritized. This could include training programs, environmental workshops, or partnerships with sustainability organizations.

Promotion of Sustainable Practices: While Green Promotion did not exhibit a direct effect on Sustainable Tourism. its role in raising Environmental Awareness should not be underestimated. Green Star hotels in Egypt should continue to promote sustainability in their marketing and operational efforts, as it indirectly contributes to more sustainable practices and ultimately benefits Sustainable Tourism.

**Policy Support:** Government bodies play a significant role in shaping the direction of the hotel industry. Supportive policies and regulations that encourage sustainability practices and Environmental Awareness campaigns should be considered. This can create a favorable environment for hotels to adopt and promote sustainable practices.

## 6 Conclusions

The study has delved into the complex dynamics of sustainability within the context of the Egyptian hotel industry, mainly focusing on green star hotels. Through a comprehensive analysis of direct and indirect effects, the role of Environmental Awareness (EA) as a mediator, and the impact of marketing awareness orientation on Sustainable Tourism (ST), several key conclusions have been drawn:

Direct Impact on Sustainable Tourism: Green star hotels in Egypt can significantly contribute to Sustainable Tourism through various direct mechanisms. Notably, Green Distribution, Pricing, and Green Product offerings exhibit strong positive relationships with Sustainable Tourism. This implies that adopting eco-friendly distribution practices, pricing strategies, and product offerings can directly enhance the sustainability of tourism in Egypt.

Mediation through Environmental Awareness: Environmental Awareness plays a pivotal role in mediating the relationship between certain factors and Sustainable Tourism. Green Distribution, Green Pricing, and Green Products not only have direct effects on Sustainable Tourism but also indirectly influence it by enhancing Environmental Awareness among hotel employees. Additionally, Green Promotion's impact on Sustainable Tourism is entirely mediated by raising Environmental Awareness.

The Power of Education and Awareness: The findings underscore the importance of education, communication, and awareness campaigns within the Egyptian hotel industry. Raising Environmental Awareness among hotel employees can significantly influence hotel operations and, consequently, impact Sustainable Tourism positively. This aligns with the global trend of environmentally conscious consumer behavior and the growing demand for responsible tourism experiences.

## 6.1 Recommendations

Building upon the conclusions drawn from this study, several recommendations emerge for green star hotels in Egypt and similar regions striving to promote sustainability and cater to the increasing demand for responsible tourism:

1. Integration of Sustainability Practices: Green Star hotels should integrate sustainability practices into their daily operations. This encompasses adopting eco-friendly distribution channels, implementing responsible pricing strategies, and providing green products and services. These efforts can lead to direct improvements in Sustainable Tourism and enhance the industry's image.

- Employee Environmental Education: 2. Environmental Awareness among hotel employees is paramount. Hotel management should prioritize educational initiatives that inform and engage employees about the environmental impact of their choices and actions. This could involve regular training programs, environmental workshops, or partnerships with sustainability organizations.
- 3. Promotion of Sustainable Practices: Green Star hotels must continue to promote sustainability in their marketing and operational efforts. This includes showcasing their environmentally friendly practices and offerings to attract sustainability-conscious tourists. Communicating these initiatives effectively can indirectly contribute to more sustainable practices and ultimately benefit Sustainable Tourism.
- 4. Government and Policy Support: Government bodies play a crucial role in shaping the direction of the hotel industry. Advocacy for supportive policies and regulations that encourage sustainability practices and Environmental Awareness campaigns should be considered. This can create a favorable environment for hotels to adopt and promote sustainable practices.
- 5. Collaboration and Certification: Green Star hotels should consider seeking sustainability certifications, such as LEED or Green Key, to demonstrate their commitment to environmental responsibility. Collaboration with local environmental organizations and participation in community sustainability initiatives can also enhance their sustainability efforts.
- 6. Regular Evaluation and Improvement: Sustainability is an ongoing journey. Green Star hotels should establish mechanisms for continuous evaluation and improvement of their environmental practices. Regular assessments of their sustainability efforts and impact on Sustainable Tourism can guide strategic adjustments.
- 7. Research and Innovation: Encourage research and innovation within the hotel industry to explore new ways of integrating sustainability into operations. Investigate the feasibility of renewable energy sources, waste reduction programs, and sustainable supply chains to reduce the environmental footprint further.

8. Guest Engagement: Engage guests in sustainable practices during their stay. This includes providing information on how they can contribute to sustainability, such as reusing towels or minimizing water and energy consumption. Create a sense of shared responsibility for the environment.

#### 6.2 Limitations and Future Research

It is essential to acknowledge the limitations of this study. The research was conducted within the context of Egypt, and the findings may not be directly applicable to other countries or regions. Additionally, the study focused on specific aspects of green star hotels and their influence on Sustainable Tourism. Future research could explore additional variables, such as cultural factors, to provide a more comprehensive understanding of sustainability in the hotel industry.

In conclusion, this study illuminates the intricate relationships between the marketing awareness orientation of green star hotels, the Environmental Awareness of their employees, and the promotion of Sustainable Tourism in Egypt. The findings underscore the pivotal role of Environmental Awareness as a mediator and highlight the significance of sustainability practices in enhancing the sustainability of the Egyptian hotel industry. These insights can guide Green Star hotels in Egypt and similar regions in their efforts to promote sustainability and cater to the growing demand for responsible tourism experiences.

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The authors have no conflicts of interest to declare.

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