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Check-In, Check-Out, but What About the Environment? Barriers to Green Practices in Egyptian Hotels

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Abstract

This quantitative study investigates the internal and external barriers influencing the application of environmental practices in Egyptian hotels. A structured questionnaire was developed and distributed to hotel managers in four- and five-star hotels across Egypt, yielding 260 valid responses for analysis using Structural Equation Modeling (SEM). The results revealed that internal barriers—specifically staff capabilities (SC), attitude of top management (ATM), and cost considerations (CC)—alongside the external barrier of guest attitude (GA), significantly hinder the intention to apply environmental practices (EPAint). Notably, regulatory pressures from government and environmental laws were not found to be significant predictors of intention. Furthermore, EPAint was found to mediate the relationship between these key barriers and the actual adoption of environmental practices (EPA). The study provides theoretical insights into the mechanisms of environmental decision-making and offers practical strategies for overcoming these challenges, such as enhancing staff training programs, fostering leadership commitment, and advocating for a shift toward more effective government incentives.

Keywords: Internal barriers, External barriers, Hotel industry, Environmental practices, Egypt.

1. Introduction

Over recent years, the global push toward adopting sustainable practices has intensified, driven by heightened awareness of environmental degradation and resource depletion (Salem et al., 2025). In Egypt, both hotel operators and consumers increasingly recognize the urgent need to mitigate ecological impacts by conserving vital natural assets that underpin the hospitality sector. Hotels are major consumers of water and energy and generate substantial waste, exacerbating environmental stress (Abou Kamar et al., 2023). They therefore face a dual challenge: delivering high-quality guest

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experiences while managing resource consumption responsibly (Zaki, 2025).

Some hotels have implemented eco-friendly initiatives, but not always out of genuine environmental concern—in many cases, such efforts are motivated by cost reduction or profit enhancement rather than ethical commitment, sometimes resulting in superficial "green" branding (Mamadouh et al., 2022; Elshaer et al., 2024a). Meanwhile, few studies have examined the specific internal and external barriers to environmental practice adoption in Egyptian hotels, leaving a gap in understanding within the national context (Abou Kamar et al., 2023; Bakr et al., 2025).

While extensive research has explored the barriers to environmental sustainability in the global hospitality industry, a significant portion of this literature is concentrated in the context of developed, Western nations (Kazancoglu et al., 2023). This has created a notable contextual gap, as the findings from these studies cannot be readily generalized to developing countries like Egypt, which possess unique economic constraints, distinct regulatory environments, and different socio-cultural attitudes toward environmentalism. While some studies have examined drivers and challenges in Egypt (e.g., Abou Kamar et al., 2023; Mohamed et al., 2022), a comprehensive, theory-driven model that empirically tests the relationships between a wide range of barriers and adoption intention is still lacking.

Furthermore, a theoretical and mechanistic gap exists in the current body of literature. Many studies tend to identify and list barriers without empirically modeling the complex mechanisms through which these factors influence organizational action. Specifically, the role of organizational intention, a core tenet of behavioral theories like the Theory of Planned Behavior (TPB) (Yeh et al., 2021), as a critical mediator between perceived barriers and the final act of adoption remains an under-investigated area within hospitality management research (Velaoras et al., 2024). This study is strategically designed to address these gaps by not only identifying the key barriers in the Egyptian context but also by testing a mediated model that explains how these barriers exert their influence on the final adoption of environmental practices.

This research offers several significant contributions to academic theory by providing a nuanced, empirically-grounded understanding of environmental sustainability barriers. Firstly, it contributes to the literature by testing and validating an integrated theoretical framework in the under-researched context of Egypt. By confirming the central mediating role of organizational intention, the study provides strong support for the application of the Theory of Planned Behavior (TPB) at an organizational level (Yeh et al., 2021; Velaoras et al., 2024). More importantly, the findings establish a critical boundary condition for Institutional Theory. The non-significant impact of regulatory pressures, in contrast to the significant influence of market-based and internal factors, suggests that the explanatory power of coercive institutional forces is highly dependent on the perceived strength and enforcement of those institutions. This highlights the necessity of integrating theoretical lenses, as the Resource-Based View (RBV) better explained the powerful influence of internal capabilities in this context (Zaman et al., 2022). The study further enriches the RBV by empirically demonstrating that intangible assets—namely, skilled human capital (Mahmood et al., 2023) and committed leadership (Del Gaudio et al., 2024)—are the most critical "green capabilities" for fostering environmental intent.

From a practical standpoint, the study's findings provide a clear, evidence-based roadmap for industry practitioners and policymakers in Egypt and similar developing nations. It moves beyond a simple inventory of challenges by prioritizing the most critical barriers that demand immediate attention, offering managers a focused diagnostic tool. The results show that managers should concentrate their efforts on four key areas: improving staff capabilities, fostering leadership commitment, addressing cost considerations, and managing guest perceptions. Perhaps the most crucial practical insight is the confirmation that sustainability efforts depend not only on removing obstacles but on actively building and protecting the organization's collective will to act. This implies that strategic investments in training, leadership development, and fostering a pro-environmental culture are just as important as securing financial resources. Finally, the research offers direct feedback to policymakers by revealing the ineffectiveness of the current regulatory framework as a driver of change. It strongly advocates for a policy shift away from a purely compliance-based model toward a more supportive, incentive-driven approach that helps hotels overcome the significant financial barriers to green technology adoption (Ashaal et al., 2024).

Given the pressing environmental challenges facing Egypt—including water scarcity and climate vulnerability that heighten the importance of effective sustainability practices in hotels (Fathy et al., 2025d; Salem et al., 2025; Elsawy et al., 2024)—this study aims to achieve the following objectives: (1) identify the key internal and external barriers to implementing environmental practices in Egyptian hotels, (2) develop and test a conceptual model to assess how these barriers relate to the intention and actual adoption of environmental practices, and (3) propose theoretical and practical strategies for overcoming the identified obstacles.

2. Literature Review

2.1 Theoretical Lens

This study is grounded in a robust, integrated theoretical framework with a clear conceptual hierarchy to comprehensively model the determinants of environmental practice adoption in the hotel industry. At its core, the framework is structured around the Theory of Planned Behavior (TPB), which provides the central process model explaining how attitudes, barriers, and actions are linked. To enrich this foundation, the framework incorporates Institutional Theory and the Resource-Based View (RBV), which together add explanatory depth by accounting for external and internal influences, respectively. Through this integration, the model captures not only the factors that influence environmental adoption but also the mechanisms through which they exert their influence.

The model’s central mechanism is an organizational-level application of Ajzen’s Theory of Planned Behavior. In this adaptation, the 'individual' decision-maker is conceptualized as the collective management team, and 'intention' represents the shared strategic resolve formulated by these key organizational agents. TPB posits that the most direct predictor of any behavior is the intention to perform it (Yeh et al., 2021). In this study, Environmental Practices Application Intention (EPAint) represents that intention, functioning as a key mediating variable that reflects the collective commitment of hotel management to engage in green initiatives. Internal and external barriers serve as antecedents to this intention, aligning with TPB’s three core constructs. The Attitude toward the behavior is expressed through the Attitude of Top Management (ATM) and perceived Guest

Attitude (GA), which highlight organizational evaluations of environmental adoption. Subjective Norms, or perceived social pressures, are represented by Governmental Bodies (GB) and Environmental Legalization (EL). Meanwhile, Perceived Behavioral Control (PBC), defined as the perceived ease or difficulty of engaging in the behavior, is reflected in internal constraints such as Cost Consideration (CC) and Staff Capabilities (SC), which reveal how organizations evaluate their ability to overcome financial and human resource barriers (Velaoras et al., 2024).

While TPB provides the structural backbone, Institutional Theory offers further insight into the external pressures that drive organizational behavior in pursuit of legitimacy. Governmental requirements and legal regulations represent coercive pressures, compelling hotels to comply with environmental standards, whereas changing guest preferences and industry norms introduce normative pressures, encouraging hotels to align with prevailing sustainability expectations (Wijethilake et al., 2017). Complementing this perspective, the Resource-Based View highlights the importance of internal resources in building a sustainable competitive advantage. RBV emphasizes that a firm's unique and inimitable assets, such as skilled staff, financial capital, and proactive leadership, are not just operational necessities but strategic enablers of environmental practices (Zaman et al., 2022). Conversely, a lack of these "green capabilities" constitutes a critical barrier to successful environmental adoption.

In synthesis, the integration of TPB, Institutional Theory, and RBV provides a comprehensive and non-redundant framework for understanding environmental adoption in the hotel industry. TPB clarifies the psychological process underpinning intention, Institutional Theory explains the external forces shaping behavior, and RBV highlights the strategic importance of internal capabilities. Together, these perspectives allow for a holistic and rigorous investigation into the complex interplay of factors that ultimately determine a hotel's environmental performance.

2.2 Barriers to the Adoption of Environmental Practices

The successful integration of sustainable practices within the hospitality industry is frequently impeded by a range of complex challenges. Scholarly research consistently seeks to classify these impediments to better understand and address them. A predominant and highly functional framework, which this study adopts, categorizes these challenges into two main domains: internal barriers, which are factors within the hotel's direct control, and external barriers, which originate from the broader market and regulatory environment (Kazancoglu et al., 2023; Fan et al., 2024). This distinction is vital for developing targeted strategies, as internal factors can be managed through organizational change, while external ones often require adaptation and strategic navigation.

2.3 Internal Environmental Barriers

Internal barriers are organizational or operational factors that inhibit the adoption of green initiatives. These are hindrances that originate within the firm itself but can theoretically be overcome through dedicated resources, strategic planning, and managerial commitment (Ashaal et al., 2024).

2.4 Staff Capabilities (SC)

The workforce is a critical component in the execution of environmental strategies, yet deficiencies in staff capabilities often emerge as a primary obstacle. A significant challenge is the lack of specialized knowledge and technical

skills required to operate and maintain green technologies (Yu et al., 2022). This knowledge gap is exacerbated by insufficient or ineffective training programs, which can foster employee resistance (Fathy et al., 2025a). When staff do not understand the rationale or benefits of new environmental protocols, they may perceive them as an additional, unrewarded burden on their daily workload, leading to low morale and poor implementation (Fathy et al., 2025b,c; Fouad et al., 2025; Mahmood et al., 2023). Furthermore, a lack of clearly defined environmental roles and responsibilities can result in a diffusion of accountability, where no single employee or department takes ownership of the hotel's green performance. Thus, H1: Staff capabilities negatively influence the intention to apply environmental practices (EPAint).

2.5 Attitude of Top Management (ATM)

The commitment and vision of senior leadership are paramount in driving any significant organizational change, including the shift towards sustainability. A major barrier arises when top management maintains a traditional, short-term focus on profitability, viewing environmental initiatives primarily as a cost center rather than a long-term investment in value and resilience (Yenidogan et al., 2021). This perspective leads to a reluctance to allocate necessary financial and human resources. Managers may also act as risk-averse gatekeepers, vetoing green projects due to fears of disrupting established operational routines or, crucially, compromising guest satisfaction with changes like reduced water pressure or automated climate controls (Del Gaudio et al., 2024; Elshaer et al., 2025a; Elshaer et al., 2025b). Without proactive and visible support from the top, environmental policies are unlikely to be effectively adopted or sustained. To overcome this, a shift in leadership style is required. Rather than acting as risk-averse gatekeepers, leaders who adopt a transformational leadership style can significantly boost employee satisfaction and organizational commitment (Fayed & Fathy, 2022). This type of leadership, which inspires and motivates employees toward a common goal—such as sustainability—is essential for fostering the collective resolve needed for successful implementation. Thus, H2: The attitude of top management negatively influences the environmental practices application intention (EPAint).

2.7 Cost Consideration (CC)

Financial constraints remain one of the most widely cited and formidable barriers to greening the hotel industry (Fouad et al., 2025). The implementation of meaningful environmental practices often requires substantial initial capital investment in areas such as energy-efficient HVAC systems, water-saving technologies, solar panel installation, and waste management infrastructure (Ashaal et al., 2024). Beyond the initial purchase, costs associated with ongoing maintenance, specialized staff training, and sourcing premium-priced sustainable or organic products can further strain operational budgets. This high perceived cost, especially when coupled with uncertainty about the return on investment (ROI), often leads management to delay or reject green projects in favor of more immediate financial priorities. Thus, H3: High cost considerations negatively influence the environmental practices application intention (EPAint).

2.8 External Environmental Barriers

External barriers are factors outside the direct control of the hotel, relating to market conditions, government action, and stakeholder attitudes. These forces shape the context in which a hotel operates and can significantly

impede the implementation of environmental strategies.

2.9 Governmental and Regulatory Framework

The external policy environment can act as either a catalyst or a barrier. To capture its multifaceted nature, this study distinguishes between two related but conceptually distinct components: the formal laws on the books (Environmental Legislation - EL) and the actions of the institutions responsible for their implementation (Governmental Body - GB). This distinction separates "policy on paper" from "policy in practice," which is a critical nuance in understanding the true impact of the regulatory landscape.

Environmental Legislation (EL) refers to the set of formal, codified rules, regulations, and legal standards pertaining to environmental protection. A significant impediment arises when these laws are perceived as weak, ambiguous, or poorly designed, providing little incentive for hotels to move beyond minimum compliance (Alharethi, et al., 2024). Thus, we hypothesize:

H4: Perceived weakness or ambiguity in environmental legislation negatively influences the intention to apply environmental practices (EPAint).

Governmental Body (GB), in contrast, pertains to the perceived effectiveness, support, and efficiency of the agencies and institutions responsible for enforcing laws and promoting sustainability. Barriers in this domain include a lack of supportive government initiatives—such as tax credits for green technology adoption or streamlined certification processes—and the presence of complex bureaucratic procedures for retrofitting or modifications, which can disincentivize action (Fathy, 2023). Ineffective enforcement also fails to motivate hotels to undertake voluntary improvements. Therefore, we hypothesize:

H5: A perceived lack of support or effective enforcement from governmental bodies negatively influences the intention to apply environmental practices (EPAint).

2.10 Guest Attitude (GA)

While there is a growing market for sustainable tourism, guest attitudes and behaviors present a complex external barrier (Elshaer et al., 2024a). A well-documented phenomenon is the "attitude-behavior gap," where guests express support for environmentalism but are unwilling to sacrifice comfort, luxury, or convenience during their stay (Elshaer et al., 2024b). Practices such as lower-flow showerheads, reduced frequency of linen changes, or sensor-based lighting can be perceived as a decline in service quality (Elshaer et al., 2025c). Moreover, a significant portion of the market remains price-sensitive and is unwilling to pay a "green premium" for accommodations, forcing hotels to absorb the costs of sustainability initiatives themselves, which can deter investment (Ivanov & Webster, 2022). Thus, H6: Negative guest attitudes toward environmental practices negatively influence the environmental practices application intention (EPAint).

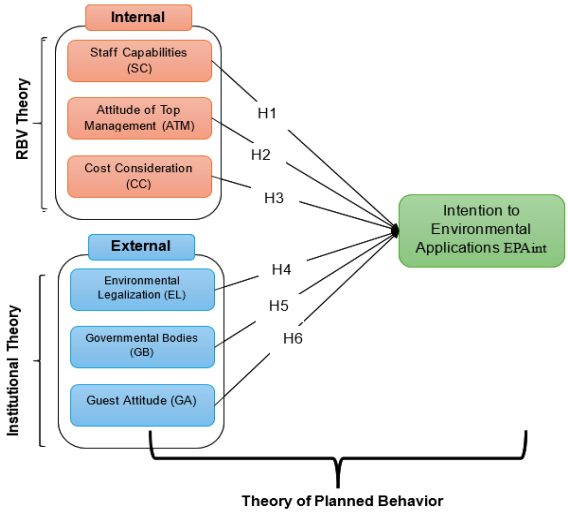

Fig. 1: Hypothesized Model

3. Methodology

3.1 Research Design and Data Collection

3.1.1 Research approach

This study employed a quantitative, cross-sectional survey design to empirically test the hypothesized relationships among environmental barriers, application intention, and adoption of environmental practices. The primary research instrument was a structured questionnaire, with items developed based on an extensive review of established literature in the fields of hospitality management and environmental sustainability. To ensure the instrument's validity and reliability, it underwent a rigorous, multi-stage validation process. Initially, a panel of four academic experts reviewed the items for content validity and clarity. Subsequently, the questionnaire was pre-tested with five hospitality researchers to refine its logical flow, and finally, it was pilot-tested with 10 senior hotel managers to confirm its practical relevance and ease of comprehension. All constructs were measured using a 5-point Likert scale, ranging from 1 (Strongly Disagree) to 5 (Strongly Agree).

3.1.2 Population and Sampling Strategy

The target population for this research comprised senior managers in four- and five-star hotels across Egypt. This group was selected using a purposive sampling strategy, as these individuals are directly involved in strategic decision-making and have the authority and knowledge relevant to the implementation of environmental initiatives. The rationale for selecting this specific sample was threefold. First, senior managers act as the primary agents of organizational change; their perceptions of barriers directly shape the strategic intention and subsequent adoption of environmental practices, making them the most relevant unit of analysis for this study. Crucially, they serve as key informants, providing a reliable report on the collective strategic posture of the organization, rather than merely their personal opinions. Second, four- and five-star hotels were chosen because they represent a critical segment of the industry due to their substantial consumption of resources (e.g., water, energy) and significant waste generation. Furthermore, these establishments typically possess greater financial and human capital to invest in green initiatives, making an investigation into the barriers they face particularly insightful. If significant barriers exist in this resource-rich segment, they are likely to be even more pronounced in other segments. Finally, the purpose of this targeted approach was to gather high-quality, informed data from key informants, thereby ensuring the findings accurately reflect the strategic challenges of implementing sustainability in a vital portion of Egypt's hospitality sector. .A total of 390 questionnaires were distributed to this target sample. After discarding incomplete or invalid responses, a final sample of 260 usable questionnaires was obtained for analysis, representing a robust response rate of 67%. This sample size was deemed sufficient for the complex statistical analysis planned for the study.

3.1.3 Data Collection Procedure

The data collection process was conducted over an eight-week period from March to May 2023. An introductory email was sent to the senior managers identified in the sampling frame. This email included a cover letter that clearly explained the study's purpose, guaranteed the anonymity and confidentiality of all participants and their affiliated hotels, and confirmed that participation was entirely voluntary. The email also contained a direct link to the online questionnaire, which was hosted on a secure survey platform.

A total of 390 questionnaires were distributed. To maximize the response rate, two follow-up

reminder emails were sent at two-week intervals to non-respondents. After the data collection period concluded, the responses were carefully screened for completeness and potential issues like straight-lining. Incomplete or invalid responses were discarded, resulting in a final sample of 260 usable questionnaires for analysis. This yielded a robust response rate of 67%, and the final sample size was deemed sufficient for the complex statistical analysis planned for the study.

3.1.4 Measures

All constructs in the study were operationalized using multi-item scales adapted from established and recent literature to ensure strong content validity. Respondents were asked to indicate their level of agreement on a 5-point Likert scale, where 1 represented 'Strongly Disagree' and 5 represented 'Strongly Agree.' The independent variables, representing the key environmental barriers, were measured as follows. Staff Capabilities (SC) were assessed using a four-item scale adapted from Jaouadi (2022) to capture the lack of employee training and skills. Similarly, the Attitude of Top Management (ATM) was captured with an three-item scale informed by Fathy et al. (2025), Fouad (2019), and Gopalakrishna-Remani et al., (2022) focusing on perceived commitment from senior leadership (e.g., "Our top management does not consider environmental sustainability a top priority"). Financial hindrances, under Cost Consideration (CC), were assessed with a three-item scale adapted from Fathy (2019), while perceptions of Guest Attitude (GA) were measured with a eight-item scale based on Widayat, et al. (2021). (e.g., "Our guests are generally unwilling to accept changes in service for the sake of the environment"). Environmental Legalization (EL) was measured using five-items from Fathy (2019). Governmental Bodies (GB) was measured using three items from Papadomichelaki and Mentzas (2012).

The study's key outcome variable, Environmental Practices Application Intention (EPAint), was measured to capture organizational, rather than individual, intent. To ensure the theoretical fidelity of adapting TPB to the firm level, the construct was carefully operationalized to distinguish it from individual-level cognition. Following a key informant approach, the survey items were intentionally phrased in collective terms to prompt senior managers to report on the shared strategic commitment of the leadership team. The five-item scale was adapted from organizational studies that have successfully applied TPB in similar contexts (Fathy & Fouad, 2022; Okumus et al., 2019; Shawky et al., 2019). A sample item asked respondents to rate their agreement with the statement, "Our management team is strongly committed to applying more environmental practices in the near future." This phrasing explicitly measures the perceived collective resolve of the organization, which is the appropriate analogue to individual intention within the TPB framework when applied at an organizational level."

3.1.5 Data analysis

Data analysis was conducted using Structural Equation Modeling (SEM) with IBM AMOS 24.0 software, following the widely recommended two-step approach (Hair et al., 2022). The first step involved validating the measurement model through a Confirmatory Factor Analysis (CFA). This procedure rigorously assessed the psychometric properties of the survey instrument, confirming the reliability of constructs using Cronbach's Alpha, establishing convergent validity through Average Variance Extracted (AVE) and standardized factor loadings, and ensuring discriminant validity via the Fornell-Larcker

criterion. In the second step, the structural model was tested to evaluate the hypothesized path relationships among the latent variables. The overall model fit was assessed using a range of key indices, including the Comparative Fit Index (CFI), Tucker-Lewis Index (TLI), Root Mean Square Error of Approximation (RMSEA), and the Standardized Root Mean Square Residual (SRMR). To specifically test the mediating role of Environmental Practices Application Intention (EPAint), a bootstrapping procedure with 2,000 resamples was employed, as this method provides robust estimates and confidence intervals for indirect effects (Preacher & Hayes, 2008).

4. Results

The final sample for this study consisted of 260 senior hotel personnel. The demographic profile of the respondents was predominantly male, comprising 80% of the sample, with the remaining 20% being female. The age of the participants ranged from 25 to 69 years, with a mean age of 40, and a significant majority (73%) were married. In terms of educational background, the sample was highly educated, with 78% of respondents holding a university degree. Professionally, the sample was well-balanced across hotel operations, with 55% working in front-of-house departments such as front office and concierge, and the remaining 45% representing back-of-house sections like kitchen and stewarding. The majority of participants (81%) were employed by chain-affiliated hotels, compared to 19% from independent properties. Furthermore, the sample was heavily weighted towards the four-star hotel sector, which accounted for 75% of respondents, with the remaining 25% working in five-star establishments.

4.1 Common method bias

Given that the data for both independent and dependent variables were collected from a single source at a single point in time, precautions were taken to minimize and assess the potential for Common Method Bias (CMB). To address this issue proactively, several procedural remedies were embedded into the research design. The anonymity and confidentiality of all participants were guaranteed to reduce the likelihood of social desirability bias. Furthermore, the questionnaire was structured to create psychological separation between the constructs; items measuring the predictor variables (barriers) were placed before those measuring the criterion variables (intention and adoption). The clarity and conciseness of the survey items, which were adapted from previously validated scales, also helped to reduce ambiguity that could lead to method-based artifacts (Podsakoff et al., 2012).

In addition to these procedural safeguards, post-hoc statistical analyses were conducted to test for the presence of CMB. First, Harman's single-factor test was performed as a preliminary diagnostic (Podsakoff et al., 2012). The results of an exploratory factor analysis, where all items were loaded onto a single factor, revealed that this factor accounted for less than the 50% threshold of total variance, providing an initial indication that CMB was not a pervasive issue. To conduct a more rigorous assessment, the unmeasured latent method construct (ULMC) technique was employed. This involved adding a common method factor to the original CFA model, with all manifest variables loading on both their theoretical constructs and this single method factor. The results showed that the inclusion of the ULMC did not significantly alter the standardized regression weights of the structural model, suggesting that the observed relationships were not artificially inflated by the data collection method (Hair et al., 2014). Collectively, these procedural and statistical checks provide confidence that common

method bias does not pose a significant threat to the validity of the study's findings.

4.2 Examination of the Measurement Model

Following the recommended two-step approach for Structural Equation Modeling, the measurement model was first evaluated to establish its psychometric properties. A Confirmatory Factor Analysis (CFA) was conducted using IBM AMOS 24.0 to assess the model's reliability, convergent validity, and discriminant validity. The overall fit of the measurement model to the data was also examined using a range of standard indices. The results confirmed that the model was robust and provided a solid foundation for testing the structural hypotheses. The overall model fit indices were well within acceptable thresholds (χ^2 = 532.393, df = 55, χ^2/df = 9.68; CFI = 0.913, TLI = 0.908, RMSEA = 0.058), indicating a good fit between the proposed model and the collected data.

The reliability and convergent validity of the constructs were strongly supported by the data, as detailed in Table 1. Reliability, which assesses the internal consistency of the scales, was confirmed as the Composite Reliability (CR) values for all latent variables ranged from 0.82 to 0.94, comfortably exceeding the recommended threshold of 0.70. Convergent validity, which ensures that the items for a specific construct are indeed measuring that construct, was established through two criteria. First, the Average Variance Extracted (AVE) for each construct was greater than the minimum benchmark of 0.50, indicating that more than half of the variance in the items was explained by their respective latent factor. Second, all standardized factor loadings were statistically significant ($p < 0.001$) and well above the acceptable minimum of 0.50, further demonstrating that the indicators converged on their intended constructs.

Table 1: Convergent Validity and Reliability of Constructs

Construct	Item	Factor Loading	Composite Reliability (CR)	Average Variance Extracted (AVE)
Staff Capabilities (SC)	SC1	0.85	0.94	0.71
	SC2	0.9		
	SC3	0.88		
	SC4	0.79		
Attitude of Top Management (ATM)	ATM1	0.73	0.91	0.63
	ATM2	0.81		
	ATM3	0.85		
Cost Consideration (CC)	CC1	0.71	0.83	0.59
	CC2	0.82		
	CC3	0.75		
Guest Attitude (GA)	GA1	0.89	0.92	0.69
	GA2	0.78		
	GA3	0.81		
	GA4	0.84		
	GA5	0.85		
	GA6	0.79		
	GA7	0.88		
	GA8	0.79		
EPA Intention (EPAint)	EPAint1	0.8	0.82	0.73
	EPAint2	0.92		
	EPAint3	0.79		
	EPAint4	0.89		
	EPAint5	0.77		
Environmental Legalization (EL)	EL1	0.66	0.86	0.62
	EL2	0.8		
	EL3	0.78		
	EL4	0.73		
	EL5	0.87		
Governmental Bodies (GB)	GB1	0.81	0.87	0.69
	GB2	0.85		
	GB3	0.82		

Discriminant validity, which ensures that the constructs in the model are statistically distinct from one another, was assessed using the Fornell-Larcker criterion. This criterion requires that the square root of each construct's AVE must be greater than its correlation with any other construct in the model. As shown in Table 2, the diagonal values, which represent the square root of the AVEs (in bold), are consistently higher than the off-diagonal inter-construct correlations in their respective columns and rows. This result confirms that each construct shares more variance with its own indicators than it does with other constructs, thereby establishing strong discriminant validity for the measurement model.

Table 2: Discriminant Validity – Fornell-Larcker Criterion

Construct	SC	ATM	CC	GA	EPAint	EL	GB
SC	**0.84**	0.62	0.55	0.58	0.61	0.5	0.54
ATM	0.62	**0.79**	0.6	0.57	0.63	0.49	0.51
CC	0.55	0.6	**0.77**	0.53	0.56	0.52	0.5
GA	0.58	0.57	0.53	**0.83**	0.59	0.55	0.6
EPAint	0.61	0.63	0.56	0.59	**0.85**	0.6	0.64
EL	0.5	0.49	0.52	0.55	0.6	**0.79**	0.59
GB	0.54	0.51	0.5	0.6	0.64	0.59	**0.83**

Note: Bold diagonal values are the square root of the Average Variance Extracted (AVE).

4.3 Path model

Following the successful validation of the measurement model, the structural model was tested to evaluate the hypothesized relationships between the identified environmental barriers and the intention to apply environmental practices (EPAint). The analysis aimed to determine which barriers are the most significant predictors of an organization's commitment to future environmental action. The structural model demonstrated a strong fit to the data (CFI = 0.92, TLI = 0.90, RMSEA = 0.055), providing a robust foundation for interpreting the path coefficients. The results of the path analysis are summarized in Table 3 and visualized in Figure 2.

The analysis of the path coefficients revealed that several internal and market-based barriers significantly predict the intention to adopt green practices. The results showed that a perceived lack of Staff Capabilities (SC) had the most substantial negative impact on EPAint ($\beta = -0.38$, $p < 0.001$). This was closely followed by a negative Attitude of Top Management (ATM) ($\beta = -0.25$, $p < 0.001$), indicating that a lack of leadership commitment is a major deterrent. Furthermore, Guest Attitude (GA) ($\beta = -0.19$, $p < 0.01$) and Cost Consideration (CC) ($\beta = -0.16$, $p < 0.05$) also emerged as significant negative predictors. These findings suggest that as perceptions of these barriers intensify, the collective organizational intention to implement environmental practices significantly diminishes.

In contrast, the external regulatory barriers of Environmental Legalization (EL) ($\beta = -0.07$, ns) and Governmental Bodies (GB) ($\beta = -0.04$, ns) did not have a statistically significant influence on EPAint. This suggests that, within this study's context, pressures from government regulations and bodies are perceived as less influential on organizational intent compared to internal resource constraints and direct market feedback from guests. Collectively, the model explained 43% of the variance in Environmental Practices Application Intention ($R^2 = 0.43$).

Table 3: Results of Hypotheses Testing for Predicting EPA Intention

Hypothesis	Path	Estimate (β)	P-value	Result
H1	SC → EPAint	-0.38	< 0.001	Supported
H2	ATM → EPAint	-0.25	< 0.001	Supported
H3	CC → EPAint	-0.16	< 0.05	Supported
H4	GA → EPAint	-0.19	< 0.01	Supported
H5	EL → EPAint	-0.07	>0.05	Not Supported
H6	GB → EPAint	-0.04	> 0.05	Not Supported

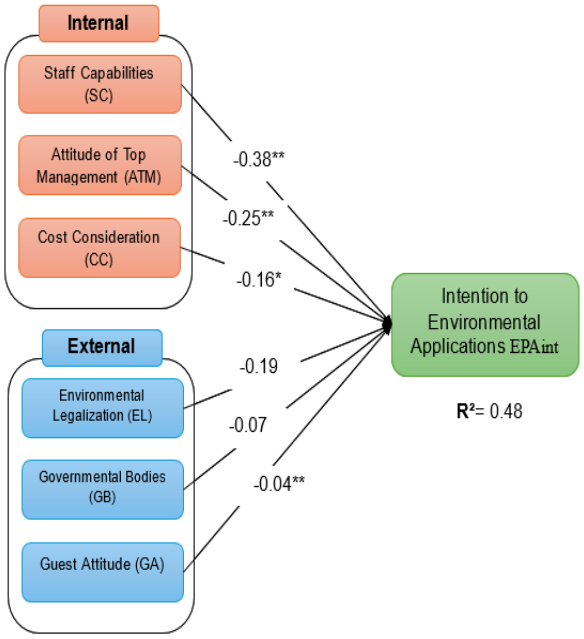

Fig. 2: Results of Hypothesized Model

5. Discussion

This study set out to investigate the internal and external barriers that influence the intention to adopt environmental practices within four- and five-star hotels in Egypt. The findings provide a nuanced understanding of the complex interplay of factors shaping sustainability decisions in this specific context. The structural model demonstrates substantial explanatory power, accounting for 43% of the variance in Environmental Practices Application Intention (EPAint). While this indicates that the identified barriers are highly significant predictors, it also suggests that organizational intention is a complex phenomenon shaped by other factors not included in this study's scope. This model reveals that the journey toward environmental sustainability is predominantly shaped by internal capabilities and direct market pressures, rather than by the external regulatory framework.

The most striking finding of this study is the substantial negative impact of Staff Capabilities (SC) on the intention to implement environmental practices (β = -0.38). This positions the lack of employee knowledge, skills, and training as the single most formidable barrier, a result that strongly aligns with previous research highlighting the critical role of human capital in sustainability initiatives (Mahmood et al., 2023; Yu et al., 2022). In the context of the Egyptian hospitality sector, this pronounced effect may be amplified by several factors. High employee turnover rates can make investments in extensive training seem futile, while the prevailing educational and vocational systems may not adequately equip graduates with the specialized knowledge needed for green technologies and practices. Furthermore, without a clear understanding of the "why" behind these practices, employees may perceive them as an unrewarded addition to their already demanding workloads, leading to resistance and poor execution, which management anticipates and thus lowers its own intention to proceed.

Closely following in significance is the Attitude of Top Management (ATM) (β = -0.25). This finding reinforces the widely accepted notion that senior leadership acts as the primary gatekeeper for organizational change (Yenidogan et al., 2021; Del Gaudio et al., 2024). Without proactive and visible support from the top, environmental policies are unlikely to gain traction. In the competitive and often volatile Egyptian tourism market, hotel managers are under immense pressure to prioritize short-term financial survival and operational efficiency. This economic uncertainty fosters a risk-averse mindset where long-term investments with uncertain returns—like many environmental initiatives—are relegated to a lower priority. This perspective frames sustainability as a cost center rather than a strategic investment in resilience and brand value, leading managers to veto or delay green projects to avoid perceived financial risks or disruptions to established routines.

The study also confirmed the significant, albeit less pronounced, influence of market-based factors. Perceived Guest Attitude (GA) (β = -0.19) and Cost Consideration (CC) (β = -0.16) were both identified as significant deterrents. The negative impact of guest attitude supports the concept of the "green premium paradox," where guests may express pro-environmental values but are unwilling to sacrifice comfort or pay more for sustainable accommodations (Ivanov & Webster, 2022). Hotel managers in Egypt, operating in a price-sensitive market, are likely hyper-aware of this dynamic and hesitant to implement changes—such as lower-flow showerheads or reduced linen services—that could risk negative reviews and impact occupancy rates. Similarly, the role of cost as a barrier, while a consistent theme in the literature (Ashaal et al., 2024), is acutely amplified by Egypt's specific economic context. Persistent economic volatility and currency fluctuations make the cost of importing foreign-made green technologies (e.g., energy-efficient systems, solar panels) not only high but also unpredictable. This uncertainty complicates return-on-investment (ROI) calculations, making a commitment to large capital outlays a significant financial gamble for many operators. Coupled with limited access to affordable "green financing," the initial capital outlay for meaningful environmental projects becomes a particularly daunting, and often insurmountable, obstacle for many hotels.

Perhaps the most revealing finding of this study is the statistically non-significant impact of the external regulatory barriers, namely Environmental Legalization (EL) and Governmental Bodies (GB). While seemingly counterintuitive, this result offers a profound insight into the operational realities of the Egyptian hospitality sector and provides a critical boundary condition for Institutional Theory. The ineffectiveness of these coercive pressures can be explained by several interconnected contextual factors:

First, there is a likely "enforcement gap," a common phenomenon in many developing economies where a disconnect exists between official legislation and on-the-ground implementation (Wijethilake et al., 2017). Hotel managers may perceive that while environmental laws exist, the capacity for consistent monitoring and the imposition of meaningful penalties for non-compliance are limited. When the perceived risk of sanction is low, the regulation loses its power as a behavioral driver.

Second, in the highly competitive and price-sensitive Egyptian tourism market, managers are rationally compelled to prioritize more immediate and tangible pressures. The direct financial implications of Cost Considerations (CC) and the immediate market feedback from Guest Attitudes (GA) have a much stronger and more certain impact on daily operations and profitability than the distant and abstract threat of regulatory action.

Finally, the regulatory framework may be perceived as primarily punitive rather than supportive. Without a corresponding suite of governmental incentives—such as green subsidies, tax breaks, or technical assistance programs—the regulations are viewed as an additional cost burden rather than a collaborative effort toward a shared goal. Consequently, hotel managers appear to be far more responsive to the immediate, tangible pressures of internal resource limitations and direct market feedback from guests than to the more abstract influence of the regulatory environment. This underscores that the impetus for change in this context is currently bubbling up from within the organization and its market, rather than being effectively mandated from the top down by institutional authorities.

5.1 Theoretical implications

This study offers several significant theoretical implications that contribute to and refine the existing literature on environmental management in the hospitality industry. By integrating the Theory of Planned Behavior (TPB), the Resource-Based View (RBV), and Institutional Theory, this research provides a more holistic and nuanced understanding of the determinants of environmental practice adoption.

First, this study successfully validates and provides a contextual refinement for the Theory of Planned Behavior (TPB) at the organizational level within a non-Western, developing country context. While TPB is traditionally used to predict individual behavior, our findings demonstrate its robustness in modeling the collective intention of a management team (EPAint). More specifically, the pronounced impact of Staff Capabilities and Cost Consideration underscores that Perceived Behavioral Control (PBC)—the organization's assessment of its ability to perform the behavior (Ajzen, 1991)—is a more powerful predictor of intention than the Subjective Norms represented by regulatory pressures. This provides a valuable refinement to TPB, suggesting that in resource-constrained environments like Egypt's, the practical question of "can we do it?" often precedes the normative question of "should we do it?", a finding that aligns with research highlighting the primacy of PBC in complex decision-making (Velaoras et al., 2024).

Second, the research contributes to the Resource-Based View (RBV) by empirically identifying and prioritizing the specific "green capabilities" most critical for fostering environmental intent. While RBV posits that unique and valuable resources lead to competitive advantage (Barney, 1991), this study operationalizes what these resources look like in a sustainability context. The finding that Staff Capabilities and the Attitude of Top Management are the most significant internal barriers provides strong evidence that intangible assets—namely, human capital and strategic leadership capability—are paramount (Zaman et al., 2022). This extends the RBV by emphasizing that possessing green technology (a tangible resource) is insufficient without the skilled personnel to manage it and the leadership vision to champion it, thereby reinforcing the primacy of intangible, knowledge-based resources in driving sustainability efforts (Mahmood et al., 2023).

Finally, and perhaps most critically, this study offers a significant contribution by establishing a boundary condition for Institutional Theory. While the theory posits that organizations conform to coercive pressures (from government and laws) to gain legitimacy (DiMaggio & Powell, 1983), our findings reveal that these factors were non-significant predictors of intention in the Egyptian hotel context. In contrast, normative pressures from the market (Guest Attitude) were significant. This suggests that the explanatory power of coercive isomorphism is highly dependent on the perceived strength and enforcement of the institutional framework (Wijethilake et al., 2017). In contexts where regulatory enforcement is perceived as weak or inconsistent, the direct pressures from the market and internal resource constraints (as explained by RBV) become the dominant forces shaping organizational intent. This finding challenges a universal application of Institutional Theory and highlights the necessity of integrating it with other theoretical lenses to account for contextual variations in institutional power.

5.2 Practical implications

The findings of this study offer several critical, actionable insights for hotel industry practitioners and policymakers, specifically

tailored to the operational and economic realities of Egypt and similar contexts.

For hotel managers and senior leaders, the results underscore that the journey toward sustainability requires a strategic approach grounded in current challenges. To counter the significant negative impact of the Attitude of Top Management (ATM), leaders must champion sustainability by integrating clear environmental KPIs into the core business strategy. However, in a context of high tourism seasonality and economic uncertainty, this championship must be pragmatic. Rather than pursuing large, high-risk projects initially, managers should address the Cost Consideration (CC) barrier by adopting a phased strategy. This involves starting with low-cost/no-cost initiatives (e.g., waste segregation programs, water usage monitoring) that generate immediate operational savings, which are particularly valuable during the lean off-season. These early wins can build financial momentum and organizational confidence to justify larger investments when capital is available.

This internal focus must also be directed at the most formidable barrier identified: the lack of Staff Capabilities (SC). In a labor market often characterized by high turnover, investing in single, intensive training workshops is inefficient. Instead, Human Resources departments should implement a Green Human Resource Management (GHRM) approach (Renwick et al., 2013) that is resilient to staffing changes. This requires developing continuous, modular, and role-specific on-the-job training, formally embedding environmental duties into job descriptions, and using performance appraisals and reward systems to reinforce desired behaviors. This creates a sustainable culture of competence rather than a reliance on a few highly trained individuals who may leave.

Finally, the study's finding that regulatory pressures were not significant drivers of intention sends a clear message to government and policymakers. The current compliance-based approach is insufficient. To overcome the significant financial barriers, government bodies should pivot to a supportive, incentive-driven model. Recognizing the severe challenges hoteliers face with foreign currency constraints and high import duties, these incentives must be highly specific. For example, policymakers could introduce low-interest "green loans" denominated in local currency to mitigate exchange rate risk, or offer tax credits and waivers specifically on the import duties for certified energy-efficient technologies. Furthermore, to address the Guest Attitude (GA) barrier, the government can develop and promote a credible, nationally recognized eco-certification program. Actively marketing this certification to international tour operators—key players in Egypt's tourism ecosystem—would create a tangible market advantage for certified hotels, fostering a symbiotic relationship between the industry and its regulatory environment.

5.3 Limitations and Future Research

While our model provides a robust framework for understanding key barriers, it is important to acknowledge its explanatory boundaries. The model accounts for 43% of the variance in environmental intention (EPAint), a substantial figure that confirms the importance of the selected variables. However, the remaining 57% of unexplained variance indicates that other factors also contribute to shaping a hotel's commitment to sustainability. Future research could build upon our findings by exploring these additional drivers. For instance, organizational-level variables such as ownership structure (chain vs. independent), the presence of a dedicated sustainability manager, or a pre-existing pro-environmental organizational culture may play a crucial role. At the managerial level, the personal

environmental values, risk tolerance, and educational background of key decision-makers could offer further explanatory power. Finally, other external factors, such as normative pressures from industry associations or coercive pressures from powerful corporate clients with their own green supply chain requirements, represent fruitful avenues for investigation. Integrating these factors could lead to an even more comprehensive model of environmental decision-making in the hospitality sector.

Like all empirical research, this study is subject to several limitations that, while not undermining the validity of its findings, provide important context and open avenues for future investigation. First, the study's cross-sectional design captures a single snapshot in time. This methodology is effective for identifying significant relationships but cannot definitively establish causality. Managerial intentions and organizational practices are dynamic and may evolve in response to changing market conditions or policy shifts (Elshaer et al., 2024c; Fouad et al., 2024). Second, the research relies on self-reported data exclusively from senior hotel managers. While these individuals are key informants, their perceptions may be influenced by social desirability bias, and their views may not fully represent the experiences of other crucial stakeholders, such as front-line employees or hotel owners, who might perceive the barriers differently (Nassar & Fouad, 2022). Finally, the study's focus on four- and five-star hotels within Egypt limits the generalizability of the findings to other hotel segments (e.g., budget hotels, eco-lodges) or to different national and cultural contexts where the hierarchy of barriers may vary significantly.

These limitations naturally give rise to several promising directions for future research. To address the constraints of the cross-sectional design, a longitudinal study could be conducted to track hotels over several years. This would allow researchers to observe how changes in barriers—such as the introduction of a new government incentive or a shift in tourist demographics—impact environmental intentions and adoption rates over time, providing stronger evidence of causality. Furthermore, future research should adopt a multi-stakeholder perspective by collecting data from different groups, including front-line employees, department heads, and even guests. This would enable a richer, more nuanced analysis by comparing the perceptions across different organizational levels and market segments, potentially revealing critical disconnects (e.g., management believes staff are capable, while staff feel they lack adequate training). Finally, comparative studies are needed to test the model's validity across different contexts. Future research could compare the findings from Egypt with those from other developing countries in the MENA region or other continents, as well as conduct cross-segment analyses comparing luxury hotels to budget or independent properties. Such studies would be invaluable in developing a more comprehensive and globally relevant theory of the barriers to environmental sustainability in the hospitality industry.

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