The Influence of Green Innovations on the Environmental performance of the Hotel Industry in Ghana: Does the Moderating role of Green Transformational Leadership Matter

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Abstract

This study examined the effect of green innovations (GI) on the environmental performance (EP) of the hotel industry (HI) in Ghana, focusing on the moderating role of green transformational leadership (GTFL). Data from 500 hotel staff were analyzed using Structural Equation Modeling to analyze the data. The outcome showed that green innovation and transformational leadership positively and significantly influence the environmental performance of the hotel industry in Ghana. Furthermore, the finding indicated that green transformational leadership significantly moderated green innovation on the hotel industry's environmental performance, highlighting leadership's crucial role in promoting sustainability. This study explores the relatively unexplored interaction between green transformational leadership and green innovations within the context of the Ghanaian hotel industry. The unique combination of these factors adds a novel dimension to the existing literature on environmental performance in Ghana's hotel sector.

Keywords: *Environmental Performance, Green Innovation, Green Transformational Leadership, Hotel Industry, Ghana.*

INTRODUCTION

Environmental degradation is a pressing global issue, prompting firms to adopt green innovation strategies to balance financial gains with environmental preservation (Jayaraman et al., 2022). Green innovation, encompassing improvements in processes, technology, products, and management methods, aims to mitigate the environmental impact of production and processes (Zhao et al., 2023). It represents a critical avenue for addressing environmental challenges while enhancing financial, social, and environmental outcomes (Li, 2023).

Due to their energy consumption, waste generation, and resource usage, hotels are significant contributors to environmental degradation and face increasing pressure to adopt environmentally responsible practices (Dar et al., 2022; Chiu, 2023; Mohamed et al., 2023). The hotel industry accounts for approximately 8% of greenhouse gas emissions, highlighting the urgency for sustainability measures (Lenzen et al., 2018).

Leadership plays a pivotal role in shaping environmental initiatives within organizations, with green transformational leadership emerging as a critical factor in promoting sustainability (Du and Yan, 2022). This leadership style emphasizes inspiration, empowerment, and a clear vision, driving employee engagement and innovation (Xu et al., 2022; Sidney et al., 2022). Effective leadership fosters a culture of environmental responsibility, aligning individual and organizational goals.

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While previous research has acknowledged the influence of green transformational leadership on environmental performance in the hotel industry (Zain et al., 2023; Cop et al., 2021; Robertson & Barling, 2017), there remains a gap in understanding its moderating role in the relationship between green innovation and hotel environmental performance, particularly in Ghana. This study addresses this gap by investigating the interplay between green innovation, green transformational leadership, and environmental performance in Ghanaian hotels.

By exploring these relationships, this study seeks to advance theoretical understanding and offer practical insights for hotel management. Understanding the moderating role of green transformational leadership can inform strategies for enhancing environmental performance and sustaining competitive advantage. This research contributes to the broader discourse on sustainable business practices, aligning with global trends towards eco-friendly operations.

In subsequent sections, we will review relevant literature, outline our methodology, present our findings, discuss implications, and conclude with limitations and recommendations for future research.

LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Resource-Based View Theory (RBV)

In this section, we delve into the RBV theory, as conceptualized by Barney (1991), to elucidate how green innovation, encompassing both products and processes, influences the EP of hotels. The RBV theory posits that an organization's performance and competitive advantage depend on its adept utilization of costly strategic resources to gain and sustain competitiveness, which is rare in availability and difficult for competitors to replicate (Barney, 1991). From this perspective, when an organization possesses strategic resources that are scarce and challenging for rivals to duplicate or replace with alternatives of comparable functionality, it gains a significant advantage in long-term performance enhancement and sustained competitive superiority.

This research considers GI and GTFL as essential organizational strategic resources. These resources play a pivotal role in fostering an environment that inspires and motivates individuals to create novel products and innovative service delivery methods aimed at addressing environmental issues, including, but not limited to, water, noise, waste, and air pollution.

Transformational Leadership Theory

Transformational leadership encourages flexibility, accountability, ownership, and a commitment to organizational goals, ultimately fostering the desire to help the business thrive (Boer et al., 2016). Leaders in this style guide their teams, closely considering their needs. They possess diverse visions and exhibit attitudes that followers aspire to emulate. This leadership approach motivates followers to prioritize organizational objectives over personal interests, emphasizing the development of trust and inspiration collaboratively, leading to overall improvement. Transformational leaders convey that achieving organizational goals is more significant than individual welfare. Changes implemented through this leadership style may stimulate employees' willingness to exert additional effort to reach their performance potential. A transformative leader can enhance overall work performance within the organization. With this theory, researchers can explore how GTLS impacts GI and the EP of the HI through hypothesis development and empirical testing.

Green Innovation (GI)

This reduces adverse environmental effects by substituting conventional tactics with more environmentally sustainable approaches, including renewable energy sources (Jayaraman et al., 2023). It includes solutions for reducing energy use, safeguarding the environment, recycling waste, and preventing pollution (Nabi et al., 2022). In a broader context, green innovation entails conceiving fresh and valuable concepts while considering environmental concerns, ultimately creating new products, services, procedures, and methodologies (Guinot et al., 2022). Furthermore, it encompasses various methods for producing ecologically friendly goods and procedures, such as using more environmentally friendly raw materials, reducing

emissions, applying eco-design principles to minimize material consumption, and minimizing water and power usage (Bhardwaj et al., 2023).

GI encompasses green products, marketing, processes, and management, collectively aiming to foster an eco-friendly environment, lower energy consumption, enhance resource efficiency, control pollution emissions, facilitate waste recycling, elevate organizational performance, and provide society with access to a pollution-free environment (Jayaraman et al., 2023). Researchers categorize GI into organizational, product, process, and technology domains (Sarfraz et al., 2022; Qing et al., 2022), emphasizing its distinct or modified systems, processes, products, and activities that benefit the environment while supporting business sustainability (Jayaraman et al., 2023).

For instance, green product innovation focuses on designing and developing more environmentally friendly products while mitigating the adverse environmental impacts of the product life cycle (Bhardwaj et al., 2023). Green process innovation encompasses initiatives linked to pollution prevention, waste recycling, and energy conservation (Bhardwaj et al., 2023; Nabi et al., 2022), involving administrative, physical, chemical, and biological adjustments to create more sustainable and innovative technologies, especially in the service sector (Mazon et al., 2023). These environmentally friendly technologies are crucial for business success and serve as a means for organizations to diminish the adverse effects of their operations on society and the environment (Mphela et al., 2022).

Green Innovation and Environmental Performance

The adverse environmental conditions, often associated with hotel business operations, have garnered significant attention in the literature. Sobaih et al. (2022) define environmental performance as the effectiveness with which a business utilizes its resources to execute environmentally friendly projects that align with the firm's environmental objectives and positively contribute to the sustainability of its operating environment. Another aspect of EP involves conserving natural resources while protecting the environment (Hasan, 2022). These efforts include installing low-flow showerheads and faucets, implementing towel and sheet reuse programs to conserve water, reducing waste emissions through rechargeable soap dispensers, and implementing recycling initiatives. Additionally, hotels play a crucial role in educating and raising awareness about environmental issues.

Asadi et al. (2020) investigated the impact of GI on sustainable performance within the Malaysian hotel industry. Their findings revealed that green innovation strategies significantly and positively influenced the financial performance of hotels. Similarly, Elzek et al. (2021) examined the benefits of GI on sustainable performance in Egypt's hotel and tourism sectors. Their study found that technological advancements, green products, processes, and organizational changes enhanced sustainability performance. A study by Saudi et al. (2019) on Malaysian manufacturing enterprises concluded that developing environmentally friendly products and processes improved financial and environmental performance. Wang et al. (2021) explored the impact of green product and process innovation on financial performance among 642 Chinese businesses. Their research demonstrated that these innovations significantly enhanced organizational financial success.

Adegbile et al. (2017) also highlighted the significant improvement in environmental performance from deploying green technology. Yusr et al. (2020) discovered, in a study involving 143 Malaysian companies, that using green technology domestically and internationally fosters information exchange and enhances the capacity for green innovation, ultimately reducing environmental problems. Hussain et al. (2022) surveyed 226 Pakistani firms and found that green innovation, green capacity, and green strategy contributed to improved environmental performance. Moreover, Frempong et al. (2021) researched Ghana and found that green innovation capabilities indirectly impacted a company's performance and social and economic sustainability. Based on this literature review, we hypothesize that:

H1: Green innovations have a positive and significant impact on the environmental performance of the hotel industry in Ghana.

Green Transformational Leadership.

Leadership plays a crucial role in shaping environmental initiatives, fostering teamwork, promoting employee innovation, and enhancing organizational creativity (Xu et al., 2022; Sidney et al., 2022). Effective leadership drives progress and helps businesses sustain their competitive edge (Sentosa, 2021). Transformational leadership, in particular, encourages individuals to prioritize the organization's goals over their own while instilling values such as autonomy, fairness, honesty, and humanism (Santoso et al., 2022). Leaders who inspire their teams with a compelling vision and high expectations are likelier to motivate their employees to help the organization achieve its objectives.

According to Du and Yan (2022), GTFL goes beyond traditional leadership styles by focusing on inspiring, exciting, and providing employees with a clear vision while addressing their developmental needs. This leadership style includes critical components such as personalized concern, intellectual stimulation, motivation, and appeal (Hameed et al., 2022). Intellectual stimulation enhances subordinates' abilities, making developing practical solutions to challenges easier, thereby boosting their creativity and innovation potential. Furthermore, GTFL promotes employee learning and actively engages them in projects related to the innovation of green products and processes.

Green Transformational Leadership Style and Environmental Performance

Research has highlighted the significant impact of transformational leadership and green human resource management (HRM) on EP and GI. Usprech and Palmert (2023) found that GTFL significantly accelerates the development of eco-friendly procedures and products. Their study demonstrated that green HRM practices mediate the relationship between GTFL and GI, which in turn influences the environmental performance of a company.

Özgül and Zehir (2023) research examined the effect of managers' GTFL on company performance, GI, and environmental strategy. They found that GTFL impacts financial performance (FP) both directly and indirectly through corporate environmental strategy (CES) and green process innovation (GPI). Their findings highlighted that managers' GTFL enhances companies' environmental strategies and innovation processes.

Majali et al. (2022) explored the relationship between GPI, green entrepreneurial orientation, GTFL, and the performance of SMEs in Amman, Jordan. Their study discovered that GPI and transformational leadership significantly impact the success of SMEs, indicating that these elements are essential for fostering innovation and enhancing business performance.

Sachdeva and Singh (2023) focused on the hotel industry and found that GTFL positively affects hotel staff members' pro-environmental behavior. This study underscores the importance of leadership in promoting environmentally friendly practices among employees.

Zain et al. (2023) investigated the interplay between GTFL, GI, corporate social responsibility, and sustainable business performance in Pakistan. Their results indicated that GTFL, GI, and corporate social responsibility all contribute to improving long-term business performance.

Additionally, Cop et al. (2021) asserted that GTFL enhances green creative behaviors and improves EP. Similarly, Nisar et al. (2017) found that GTFL significantly boosts green inventive performance in Pakistan. Robertson and Barling (2017) also noted a positive correlation between GTFL and employees' voluntary adoption of eco-friendly practices. Based on these findings, we hypothesize:

H2: Green transformational leadership positively and significantly influences the environmental performance of hotels in Ghana.

Green Transformational leadership Style Moderates' Green Innovations and Environmental Performance In the Hotel Industry

Goni et al. (2023) examined the influence of GI on the EP of Nigerian hotels, focusing on the role of GTFL. Their findings revealed that GI significantly and positively impacts hotels' EP, with GTFL moderating this relationship.

Previous literature supports the notion that GI positively affects the EP of the HI (Elzek et al., 2021; Saudi et al., 2019; Wang et al., 2021; Adegbile et al., 2017). Additionally, research has shown that GTFL contributes to better EP in the HI (Zain et al., 2023; Cop et al., 2021; Robertson & Barling, 2017). This indicates a potential moderating role of GTFL in the association between GI and hotel environmental performance.

Despite recognizing GI's impact on the HI's environmental performance, more research needs to be done on how GTFL moderates this relationship, particularly in Ghana. Addressing this theoretical gap, we hypothesize that:

H3: Green transformational leadership moderates the relationship between green innovation and environmental performance in the Ghanaian hotel industry.

This hypothesis aims to explore whether the presence of green transformational leadership enhances the positive effects of green innovations on environmental performance. It would provide a more comprehensive understanding of how leadership can influence sustainable practices in the Ghanaian hotel industry.

Conceptual Framework

The framework offers a diagrammatic representation illustrating the moderating impacts of GTFL on the EP of Ghanaian hotels. The EP of hotels in Ghana is the dependent variable, while GI is the independent variable.

Measurement of Variables

This study's adapted operationalized measurement variables are derived from prior research. Five environmental performance indicators of the hotel industry, such as energy efficiency, water conservation, waste management, carbon emissions, and air pollution, have been adapted from previous studies (Ahmed et al., 2022; Albort-Morant et al., 2018, 2017; Huang & Li, 2017).

Additionally, the measurement of GI, which includes green products, services, technologies, processes, organizational innovation, and renewable energy sources, is adapted from Singh et al. (2020) and Elzek et al. (2021).

GTFL indicators such as visionary leadership, employee motivation, intellectual stimulation, inspiration, and individualized consideration are adapted from Kusi et al. (2021) and Hameed et al. (2022).

This framework ensures that the study's variables are clearly defined and grounded in existing literature, providing a solid foundation for analyzing their relationships.
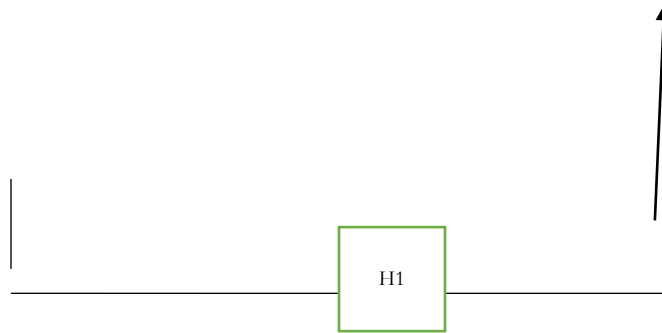
Conceptual Framework Diagram
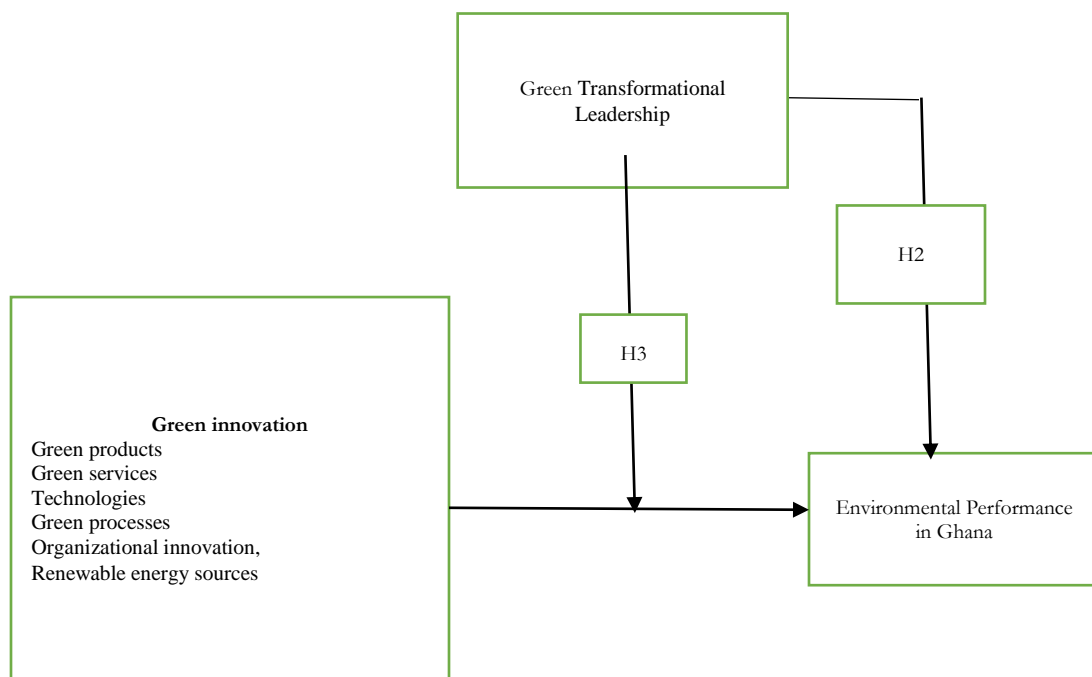
Figure 1: Conceptual framework diagram

Source: Derived from Literature review (2024).

Research Methodology

Research Approach and Design

The present investigation utilized quantitative research to examine the correlations among diverse variables. Quantitative research facilitates the identification of study factors and hypotheses for cause-and-effect interactions by providing numerical data (Sturmberg & Marcum, 2023). A cross-sectional design was used to gather data from many subjects simultaneously (Margolis et al., 2020). Explanatory research helps analyze the relationship between GI, GTFL, and the EP of the hotel industry, creating hypotheses (Piccioni, 2023).

Population and Sample

The study's population encompasses all hotel staff in Ghana, explicitly targeting 600 staff/leaders/managers and owners/CEOs who work at hotels. Using a purposive sampling technique, we selected sixty hotels in the Greater Accra region for the study. The chosen 60 hotels adequately reflect the diversity and characteristics of the entire population of the hotel industry. Once we had the list of 60 purposively selected, we visited each of the selected hotels and randomly selected ten (10) staff/managers/leaders or executives from each hotel selected.

We then employed simple random sampling to select ten (10) staff/ managers/leaders and executives from the chosen 60 hotels, totaling 600. This was determined based on feasibility, resource availability, and the ability to represent the target population effectively within the study's constraints. The total sample size retrieved and used for the data analysis was 500 after data screening. The reduction of the population to 500 was due to the exclusion of responses with data quality issues to ensure the integrity of the dataset used for the analysis. Five hundred (500) completed surveys returned, yielding an impressive 83.33% response rate.

Research Instrumentation and Data Collection of the Study

We administered a questionnaire to gather data from staff/leaders/managers and executives who are rightly involved in decision-making. Six hundred questionnaires were distributed to hotel staff in the Greater Accra region. This high response rate indicates strong engagement from participants, enhancing the reliability of the study's findings. The survey employed a Likert scale with five possible outcomes, from strongly disagree (1) to strongly agree (5), to capture the respondents' opinions. Before distribution, we did validity tests to ensure the questionnaires were appropriate and relevant. Primary data obtained through the completed questionnaires was the primary source of information for this investigation.

Data Collection and Analysis

Primary data for this study was collected through a questionnaire survey, and structural equation modeling (SEM) was employed for data analysis using Smart PLS 3.0. SEM allows for examining complex relationships

among multiple variables, making it a robust method for investigating the relationship between GI, GTFL, and EP in the HI.

Informed Consent

We spoke to the authorities of the chosen hotels to get informed permission, ensuring that they were aware of the study's goals and their rights to participate. The authorities received guarantees about the privacy and anonymity of the information gathered.

Validity tests

Validity tests included content and construct validity were assessed. Convergent validity was confirmed with AVE values exceeding 0.50, and discriminant validity was confirmed using the Fornell-Larcker criterion. Internal consistency was evaluated using Cronbach alpha coefficients, above 0.70 (Chahoud et al., 2017). Content validity was ensured through expert review. Data was screened for accuracy and analyzed using SPSS software.

Use of Structural Equation Modeling (SEM), SPSS, and Data Screening Process

We used SEM with Smart PLS 3.0 for data analysis to examine the proposed relationships. After data collection, we rigorously screened the dataset to ensure integrity and reliability, excluding responses with data quality issues.

RESULTS

This section presents the analysis results using Smart PLS 3.0 and SPSS to test hypotheses through a structural equation model. The analysis covers measurement and structural models, evaluating relationships between key variables.

Measurement Model

We assess the dataset's validity and reliability using factor loadings (FL), Cronbach alpha (CA), composite reliability (CR), and average variance extracted (AVE). The FL, CA, CR, and AVE values demonstrate the validity and convergence of the assessment items, which are more significant than the 0.5, 0.7, 0.7, and 0.5 thresholds (Hair et al., 2016; Sarstedt et al., 2019).

Factor Loading

The loading displays the correlation between the chosen principal component and each element of the correlation matrix. The factor loadings are displayed in Table 2. Marklinder et al. (2022) state that a factor loading of 0.5 is sufficient to form a factor structure. All items had factor loadings greater than 0.5.

Reliability Analysis

Table 2 displays CA and CR data. Both values exceed the suggested standards (0.7), demonstrating the validity and reliability of the measuring items (Sarstedt et al., 2019).

Convergent Validity

Hair (2021) asserts that when the AVE values exceed the suggested cut-off point of 0.5, they show the CV and reliability of the test questions. The AVE findings in Table 1 demonstrate that AVE is accurate because the values of the measurement items are more significant than 0.5.

Table 1: Measurement model

Construct	Code	Factor Loading	CA(α)	CR	AVE	Decision
Green Innovation Indicators	GI		0.863	0.898	0.596	
Green product	GP1	0.666				
Green Process	GP2	0.839				
Green Services	GP3	0.838				
Green Technology	GP4	0.783				
Green Organization	GP5	0.754				
Green Renewable Energy Sources	GP6	0.739				
Green **Transformational Leadership** Indicators	GTLS		0.847	0.891	0.621	
Visionary leadership	GTLS1	0.838				
Employee Motivation	GTLS2	0.820				
Intellectual Stimulation	GTLS3	0.831				
inspiration	GTLS4	0.766				
Individualized Consideration	GTLS5	0.671				
Environmental performance of HI Indicators:	GTLS6		0.885	0.916	0.686	
Energy efficiency	EP1	0.835				
Water conservation	EP2	0.836				
Waste management	EP3	0.856				
Carbon emissions	EP4	0.782				
Air pollution	EP5	0.829				

Source: Authors own (2024)

Indicator multicollinearity

We evaluate the multicollinearity of the indicators using the Variance Inflation Factor (VIF) statistic (Fornell, 1981). VIF values are less than 5, showing no multicollinearity problem (Hair et al., 2016). The VIF indicators in Table 2 are all below the advised limit.

Table 2: Indicator multicollinearity

Outer	VIF Values
Green product	1.544
Green Process	2.444
Green Services	2.458
Green Technology	1.870
Green Organization	1.696
Green Renewable Energy Sources	1.543
Visionary leadership	2.344
Employee Motivation	2.368
Intellectual Stimulation	2.486
Inspiration	1.823
Individualized Consideration	2.194
Water conservation	2.098

Waste management	1.975
Carbon emissions	2.105
Air pollution	1.751
Energy efficiency	1.460

Source: Authors own (2024)

Discriminant Validity- Fornell-Larcker Criterion

The results show good discriminant validity by demonstrating that a construct's relationship with other constructs is lower than its square root of AVE **(see bold italics)**. Table 3 presents the outcomes.

Table 3: Discriminant Validity (Fornell-Larcker Criterion)

	EP	GTLS	GI
EP	**0.828**		
GTLS	0.794	**0.788**	
GI	0.760	0.657	**0.772**

Source: Authors own (2024)

Model Fit Analysis

The standardized root mean square (SRMR) method for model fit analysis is used in this current study (Henseler et al., 2014). The ideal SRMR value for fitting the data is between 0 and 1, with a value close to 0. In Table 4, the model fit summary shows that the SRMR is 0.070, more closely associated with 0. According to Dijkstra and Henseler (2015), if the values of unweighted least squares discrepancy (d_ULS) and geodesic discrepancy (GD) are more significant than 0.05, then d_ULS and GD values are significant to show robust model fit. The model fits this study as the values are more significant than 0.05(d_ULS=0.672 and d_G=0.312).

Table 4: Model Fit Summary

	Saturated Model	Estimated Model
SRMR	0.070	0.070
d_ULS	0.672	0.672
d_G	0.312	0.312

Source: Authors own (2024)

Coefficient of Determination (R^2)

The R^2 shows how much of the variance in the dependent variable in a regression model can be explained by the independent variables. It shows the regression model's goodness of fit and the degree to which the independent variables can account for variations in the dependent variable. (R^2) is 73.1%, or 0.731. This shows that independent variables GI account for 73.1% of the effects of GI on EP in Ghanaian hotels.73.1% of the variance in hotel EP can be attributed to the independent factors studied. The moderated GTFL is associated with EP and GI in Ghanaian hotels. In this context, the adjusted R2 is used to reflect the influence of this interaction effect. The remaining variables not covered in this study account for 26.9% of the variation in hotel EP. We do not consider these factors in the current research model. However, they still may impact the dependent variable (environmental performance in hotels in Ghana) and account for 26.9% of its variation.

Table 5: Coefficient of Determination

R Square	R Square	R Square Adjusted
EP	0.731	0.730

Source: Authors own (2024)

Structural Model

A structural model assesses the hypothesis links and provides evidence supporting the hypothesis. To assess how predictors and outcomes are related, the study put various hypotheses forth, and we show the results in Table 6 and Table 7 and Figures 2 and 3, depicting both direct and moderating structural results, respectively.

Direct Structural Hypothesis Testing Results

Hypothesis 1

H1: Green innovations have a positive and significant impact on the environmental performance of the hotel industry in Ghana.

The study confirmed the first hypothesis by showing that GI significantly impacts Ghanaian hotels' EP. H_1 (β = 0.420, t = 10.058, p <.005,). Hypothesis 1 (H_1) was supported. Implementing green practices can significantly improve the EP of Ghanaian HI
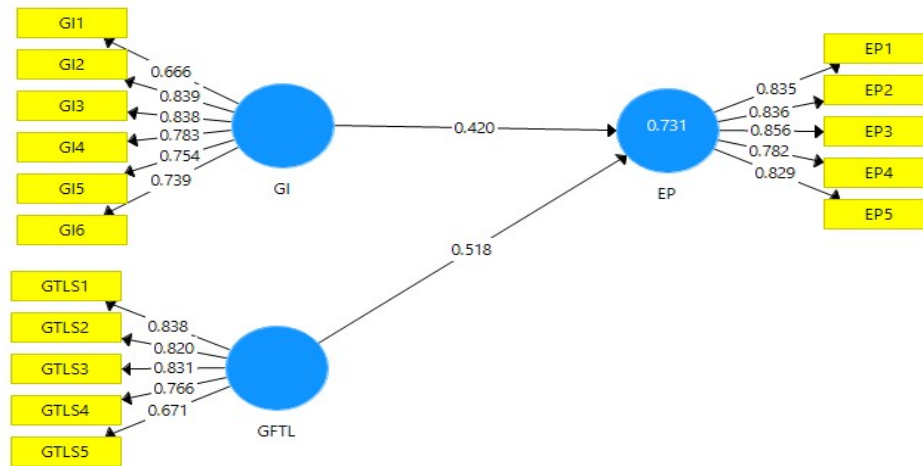
Hypothesis 2

H_2: Green transformational leadership positively and significantly impacts Ghanaian hotels' environmental performance. The conclusion demonstrates that GTFL positively and significantly impacts Ghanaian hotels' EP. H_2: β = 0.518, (t = 12.959, p <.005,). Hypothesis 2 (H_2) was supported.

Table 6: Structural model: Direct hypothesis testing

Hypotheses	Variables	Structural paths relationship	Beta	T/value	P values	Hypothesis results
H_1	Green innovation	GI --->EP	0.42	10.058	0.000	Supported
H_2	Green transformational leadership	GTLS--->EP	0.518	12.959	0.000	Supported

Source: Authors own (2024).

Figure 2: Measurement model

Source: Authors' Computation (2024)

Moderating Structural Hypothesis Testing Results-

Using SEM, we analyze how the GTFL moderates GI to enhance EP in Ghanaian HI. The result is shown in Table 7.

Hypothesis 3

H3: A green transformational leadership moderates the association between green innovation and environmental performance in Ghanaian hotels.

The third hypothesis (H$_3$) investigates whether GTFL may moderate the connection between GI and EP in Ghanaian HI. The findings show that GTFL significantly moderates the association between GI and EP in Ghanaian HI. H$_3$ (, β = 0.301, t = 9.121, p <.005). Hypothesis 3 (H$_3$) was supported.

Table 7: Structural model: Moderating hypothesis testing

Hypotheses	Variables	Structural relationship	Beta	T/Stat	P values	Hypothesis results
H3	Green transformational leadership	GI -> GFFL -> EP	0.301	9.121	0.005	Supported

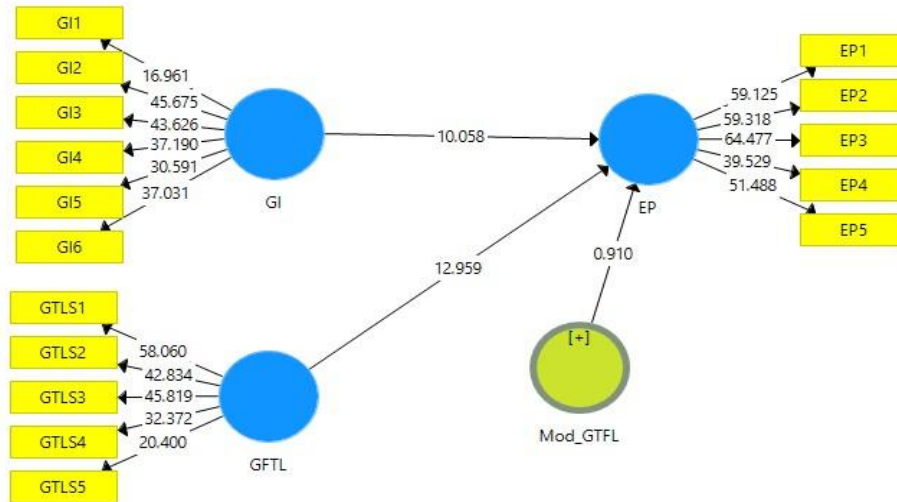Source: Authors own (2024)

Figure 3: Structural Model Result

Source: Source: Authors own Computation (2024)

DISCUSSIONS AND IMPLICATIONS

This research examines the effect of GI on the EP of the HI in Ghana, focusing on GTFL's moderating role.

First, the finding of the study hypothesis (H1) testing exposed that the EP of HI in Ghana is positively and significantly impacted by GI, including those related to products, processes, services, technology, green renewable energy sources, and organizational innovation. In Ghana, hotel management often introduces new goods, services, organizational changes, and technologies to enhance the consumer experience while being mindful of environmental concerns. Research findings by Asadi et al. (2020), Elzek et al. (2021), Saudi et al. (2019), and Wang et al. (2021) supported the notion that implementing green innovations positively impacts an organization's environmental performance. Similar positive findings across different countries may be due to the global nature of the hospitality industry, shared environmental challenges, and the potential existence of universal principles regarding the positive impact of green innovations.

Second, the study hypothesis (H2) test findings revealed that GTFL positively and significantly impacts the EP of HI in Ghana. This leadership includes visionary, inspiring, staff motivation, intellectual stimulation, and customized consideration. This finding is in line with previous research conducted by Sachdeva and Singh (2023), Cop et al. (2021), Zafar et al. (2017), Li et al. (2022), and Bahzar (2019), which found that GTFL had a positive impact on GI practices. In turn, this led to improved EP across various hotel industries. The similarity in findings across different countries regarding the positive impact of GTFL on EP in the hotel industry may be attributed to the global applicability of leadership styles. With its focus on vision, inspiration, staff motivation, intellectual stimulation, and customized consideration, GTFL might be universally effective in fostering GI practices.

Lastly, the study hypothesis (H3) finding also showed that GTFL moderated the association between GI and the EP of the Ghanaian HI. The present discovery aligns with previous studies by Goni et al. (2023). The Goni et al. (2023) study confirmed that GTFL moderated GI on the EP of hotels in Nigeria. The consistent finding of the moderating effect of GTFL on GI and EP across different countries may be explained by the global relevance of leadership styles in influencing organizational outcomes. GTFL's ability to facilitate and

enhance the positive impact of GI could be a universal principle. Shared environmental concerns, similar challenges in the hotel industry, and a global push for sustainable practices may contribute to the observed consistency.

This finding lends credence to the theory that green transformational leadership promotes environmental performance by motivating and inspiring individuals within the company to adopt eco-friendly, cutting-edge practices. However, businesses like the hotel industry must develop green products, services, and technologies to reduce environmental impact. They also need to implement innovative organizational and process strategies that motivate the management and staff of hotels with green initiatives to pursue environmentally friendly service and product delivery facilities and foster an environment that will motivate them to use their green initiatives to benefit the environment. Hotel management can only motivate workers to fulfill environmental goals by giving them environmental plans, a clear environmental vision, opportunities to explore and share green ideas, encouragement to work on environmental plans, and consideration of their environmental values.

Theoretical Implications

According to the RBV framework, companies can achieve a competitive advantage by acquiring and utilizing unique and valuable resources. In the hotel industry, green innovations can be considered a distinctive competence. These innovations include sustainable practices, waste-reduction techniques, and energy-efficient equipment. These resources should be identified in the study, as well as how they affect environmental performance. Green technologies and sustainable practices are valuable strategic assets. The study can explore how these resources support the long-term viability of hotels in Ghana by using the RBV lens. Examine these materials' uniqueness, worth, and imitability in the Ghanaian hotel sector. Green innovations may be both static resources and dynamic capabilities that constantly improve and adapt to changing environmental requirements. Motivating and inspiring staff members to adopt sustainable practices is critical to green transformational leadership. To thoroughly understand how resource-based and leadership-based perspectives affect the environmental performance of hotels in Ghana, integrate the RBV framework with the theory of transformational leadership to execute green technologies successfully. By presenting empirical data on the favorable and noteworthy impact of GI on EP in Ghana's hotel sector, the study adds to the body of knowledge on GI and EP. The study bolsters earlier research findings highlighting the value of GI and transformational leadership in pursuing environmental sustainability. This study adds empirical data from Ghana's hotel business to the knowledge of green transformational leadership.

Practical Implications

The study has practical implications for hotel management in encouraging them to create new, environmentally friendly goods and services and investigate creative, novel ways to provide their offerings while keeping the environment in mind. Hotel management must ensure that the materials they use create as few environmental problems as possible; they must also always look for and adopt materials that use less energy and resources. Facilities must be easily recyclable, reusable, and decomposable and products should support eco-friendly goods and services. This suggests that hotel management should find innovative ways to provide services while considering the environment. To be more precise, the hotel's service delivery procedures should efficiently minimize the use of energy and water, reduce the amount of waste or hazardous materials, and incorporate new or modern technologies to guarantee efficient use of the hotel's amenities. Green technology can significantly enhance environmental performance by impacting environmental management plans significantly. The research also accentuates the worth of green transformational leadership in motivating staff members to adopt eco-friendly creative practices and foster an environment that supports adopting eco-friendly initiatives to benefit the environment. The report provides practical recommendations

for policymakers to promote and support green innovation and transformational leadership approaches in the hotel industry to achieve environmental sustainability.

Policy Implications

Legislators should promote green transformational leadership and innovation in the hotel sector to achieve environmental sustainability. The report emphasizes how important it is for governments to encourage and incentivize the creation of green goods and services and implement eco-friendly procedures and technology in the hotel sector. The study also offers policy recommendations for legislators to support and foster the growth of green transformational leadership practices in the hospitality sector to motivate staff to adopt eco-friendly innovative practices and make a positive environmental impact.

CONCLUSION

The study concludes that GI and GTFL positively and significantly impact Ghanaian hotels' EP. The findings also demonstrated that GTFL moderated the connection between GI and Ghanaian hotels' EP. Accordingly, implementing a GTFL enhances GI and, in the end, raises the EP of Ghanaian HI. This means that hotel management should actively seek new products and services that enhance the customer experience while preserving the natural environment. Specifically, hotels should use facilities that improve the environmental condition, pay special attention to electrical facilities and equipment that consume less energy, use materials that are easy to recycle and decompose, and deploy items that help to deliver environment-friendly services in a better manner that satisfies customers. Additionally, hotels should make extraordinary investments in research and development to explore new ways to deliver more efficient and effective services to customers while positively impacting the environment. Hotels' service delivery processes should effectively reduce hazardous substances or waste, use more efficient means that minimize energy or water consumption, and deploy modern or new technologies in service delivery processes to ensure efficiency in hotel facilities.

This study contributes to understanding the connection between EP, GI, and GTFL in the hotel business. Using the RBV paradigm, this study enhances the theoretical knowledge of how green innovations and transformational leadership may be considered strategic resources in the hotel business. Our comprehension of the connection between green innovations and environmental performance is improved by recognizing the moderating function of green transformational leadership. This insightful point of view enhances our comprehension of the processes in businesses striving to be ecologically friendly. The research offers insights for hotels to improve environmental performance. The emphasis on eco-friendly corporate operations and applying state-of-the-art technologies align with global trends in eco-friendly business practices.

However, the study has several limitations. The study focused on Ghana's hotel industry, and the findings must not be more generalizable to other sectors or countries. Self-reported data, prone to social desirability bias, may have been used in this study and may not fully represent the participants' actual behaviors. The study's cross-sectional nature makes determining if the factors are causally related is more challenging over time. The study ignored other potential influences on environmental performance. It concentrated on the influence of green products, services, technologies, process innovation, and transformational leadership on hotel environmental performance. The lack of a control group in the study makes it more difficult to compare the outcomes with those of a group that did not receive the intervention. It is essential to acknowledge these limitations to ensure accurate interpretation of results and guide future research and directions.

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Conflict of Interest

The study's authors affirm no conflict of interest in this work.

Data Availability Statement

The data is available upon request from the correspondence author

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