Green Transformational Leadership Theory and Practice in Italian Luxury Hotels: Towards Environmental Performance and Green Image

Abstract

Purpose: Drawing upon the natural resource-based view (NRBV) and social cognitive theory (SCT), the present study explores the role of green learning orientation (GLO) and green creativity (GC) as a mediating variable in the relationship between green transformational leadership (GTL) and green innovation (GI) in the Italian hotel industry. The research further assesses environmental performance (EP) and corporate green image (CGI) as a resultant factor of GI.

Design/methodology/approach: Two studies were conducted in Italy to evaluate theoretical models with workers in the lodging industry. Study 1 employed a three-wave, two-week time-lagged design with a total sample size 303. Study 2 utilized a two-wave (four-week apart) design, with 349 participants using structural equation modelling.

Findings: The research findings emphasize that the enhancement of employees' GLO and GC can be facilitated by providing GTL. This, in turn, may lead to the enhancement of GI, which improves the EP and CGI of a hotel.

Originality/value: The study comprehensively analyzes the previously unexamined relationships of employee-driven factors associated with GLO and GC. These factors are essential for promoting GI through GTL, ultimately enhancing EP and CGI. Therefore, it contributes by explaining previously unexplored employee and organizational factors into a unified model, utilizing time-lagged data, and enhancing the understanding of how organizations can elevate EP and CGI, particularly within the Italian hospitality sector.
Keywords: Green Transformational Leadership; Green Learning Orientation; Green Creativity; Green Innovation; Environmental Performance; Corporate Green Image

1. INTRODUCTION

The hospitality industry has significantly strengthened its strategic planning by embracing sustainable practices that tackle pressing environmental challenges and drive progress toward achieving sustainable development goals (Janjua *et al.*, 2024). Sustainable practices in the hotel industry refer to the internal initiatives implemented by hotel management to incorporate environmentally sustainable actions (Khalil *et al.*, 2024). These efforts aim to promote sustainability and minimize the environmental impact of the hotel's daily operations (Lagioia *et al.*, 2024). These practices include energy conservation, water reduction, waste management, and sustainable sourcing, all designed to minimize the hotel's environmental impact while promoting sustainability and eco-friendliness (Lagioia *et al.*, 2024). Implementing these measures effectively reduces carbon emissions linked to daily operations while supporting local economies (Prakash *et al.*, 2023). Despite the various initiatives implemented within the hospitality industry, it continues encountering various environmental challenges due to its energy-intensive nature (Tanveer *et al.*, 2023).

Research indicates that Italy is home to 33,000 hotels, of which 24,200 are classified as three-star, four-star, or five-star establishments. On average, luxury hotels rated five stars and above typically use between 170 to 4,401 liters of water per guest per night (Janjua *et al.*, 2024, Sharma, 2023). Moreover, a luxury hotel generates an annual carbon dioxide (CO2) emission ranging from 160 to 200 kg per square meter of room floor area. These hotels also produce approximately 0.8 to 1.2 kg of waste per guest daily. The composition of this waste material consists of organic matter (44%), glass (16%), plastics (13%), paper (11%), and unsorted waste (7%) (Abdulredha *et al.*, 2018, Janjua *et al.*, 2024). The current scenario demonstrates an increasing emphasis on environmental sustainability, prompting hotel operators to prioritize reducing energy, waste, and water consumption. By adopting this strategy, they can significantly contribute to environmental preservation while also reaping financial benefits and sustainable growth (Janjua *et al.*, 2024, Sharma and Sharma, 2024).

Scholars increasingly acknowledge the concept of green innovation (GI) as a pivotal element for achieving sustainable growth and enhancing overall organizational performance (Begum *et al.*, 2022a, Cui *et al.*, 2023). Furthermore, it is critical in mitigating carbon emissions and addressing potential ecological threats (Appiah *et al.*, 2023, Gu, 2022). This perspective underscores the importance of integrating environmental considerations into innovation strategies to foster long-term viability and success. Substantial research has been conducted to

identify the factors that lead to environmentally friendly innovations in various industries, including the tech industry, restaurant SMEs, and manufacturing firms (Ashraf *et al.*, 2024, Begum *et al.*, 2022a, Lee *et al.*, 2022). However, research on GI has produced inconsistent findings (Awan *et al.*, 2023). By leveraging GI techniques, companies can significantly enhance the efficiency of their strategic implementations. However, the potential of these applications to enhance profitability is presently ambiguous (Zhang *et al.*, 2023). This ambiguity calls for further investigation to unlock GI's full benefits in the hospitality industry. Moreover, scholars argue that the field of environmentally sustainable innovations is still in its premature stages and has not yet achieved significant milestones (Appiah *et al.*, 2023, Khanra *et al.*, 2022). A definitive conclusion has yet to be reached (Begum *et al.*, 2022a, Janjua *et al.*, 2024). Earlier studies have emphasized that limited attention has been given to sustainable green innovation in the hospitality industry (Arici *et al.*, 2023, Janjua *et al.*, 2024). Thus, it is crucial to develop green performance indicators for effective green hotel management (Prakash *et al.*, 2023).

Green transformational leadership (GTL) has been widely recognized for its crucial role in various industries concerning environmental sustainability (Begum *et al.*, 2022a). Research indicates that GTL dramatically reduces the adverse environmental impacts of industrial pollutants (Begum *et al.*, 2022a, Cui *et al.*, 2023). Though GTL's potential benefits for businesses are widely recognized, there is still limited understanding of how these benefits can be effectively realized (Singh *et al.*, 2020). Therefore, further investigation has been suggested to comprehend the association between GTL and GI fully (Begum *et al.*, 2022a). Furthermore, Janjua *et al.* (2024), suggested the need to examine employee-level factors that connect GTL and GI better to understand their relationship within the luxury hospitality industry. The hospitality and tourism industry context is no different (Gürlek and Koseoglu, 2021). Therefore, we employ the social cognitive theory (SCT) (Bandura, 1999), to underpin the connection between GTL and GI. Based on SCT, employees' cognitive abilities can be influenced by environmental factors like GTL, resulting in the enhancement of a green learning orientation (GLO) and green creativity (GC) among employees. SCT highlights the importance of developing learning orientation beliefs as a crucial aspect of human behavior and a driving force for initiating behavioral changes (Bandura, 1999). SCT posits that learning serves as a vital connection between the environment and behavior (Huang *et al.*, 2023). Employees are more likely to experience GLO when they are motivated by GTL's clearly defined green strategic objective (Huang *et al.*, 2023). This suggests that employees under the GTL will likely

become more responsive and forthcoming due to its ability to stimulate vision-oriented motivating mechanisms that enhance GLO (Cui *et al.*, 2023). Therefore, we suggest that GTL, as an external element of the environment, boosts employees' GLO.

Moreover, GTL encourages and nurtures the development of its subordinates (Begum *et al.*, 2022a), thereby promoting the growth of employee GC in service-oriented businesses (Chen and Chang, 2013). This study posits that GTL plays a substantial role in enhancing employee GC in the hospitality industry. Employee GC can support the advancement of environmentally sustainable innovations, improve the ecological efficiency of hotels, foster the creation of original green ideas, and promote the exploration of inventive strategies to tackle environmental issues (Bhutto *et al.*, 2021). Academics have differing opinions on various issues, including the conceptual associations between GTL, GI, and GC (Arici and Uysal, 2022). Recent literature suggests that incorporating green organizational behaviours, such as GTL, GLO, and GC, is essential for fostering green and sustainable development in the hospitality sector (Bhutto *et al.*, 2021, Farooq *et al.*, 2022). Former research has proposed investigating causative factors that can strengthen the association between GTL and GI in service sectors (Begum *et al.*, 2022a). However, how employee GLO and GC mediate the association between GTL and GI remains unanswered.

Finally, the extant body of literature lacks substantial research on the correlations between GI and its outcomes, such as corporate green image (CGI) and environmental performance (EP) in the hospitality and tourism sector. The effectiveness of environmental management systems in organizations is believed to be contingent on cultivating and maintaining their internal competencies and skills (Singh *et al.*, 2020). Thus, we employ the natural resource-based view (Hart, 1995) framework to understand the connection between GTL, GI, EP, and CGI. The theory highlights the importance of utilizing an organization's distinct capabilities and strengths to attain environmental performance (Awan *et al.*, 2023). The present study suggests that GTL and GI, as an establishment's internal competencies and capacities (Zhang *et al.*, 2023) is crucial for achieving environmental performance and establishing a corporate green image (Fosu *et al.*, 2023). Previous research has shown limited attention given to the influence of a hotel's GI on its EP and CGI. Therefore, it is unknown how the GI influences EP and CGI within the services sector (Fosu *et al.*, 2023). There is a notable lack of comprehensive studies in these specific areas of inquiry, highlighting the need for additional empirical research to advance our understanding (Fosu *et al.*, 2024, Singh *et al.*, 2020). This is particularly important as enterprises face pressure from their primary

stakeholders to adopt and implement environmentally sustainable management practices. The current study addresses these gaps by investigating the relationship using the NRBV theory and determining whether GI can provide hotels with EP and CGI.

In tandem with the preceding discourse, this study asserts that research has been limited to fragmented connections within a few manufacturing and service sectors, such as education, high technology, and information technology. Moreover, prior investigations have underscored the importance of explaining attributes unique to each industry. However, our knowledge of the connections between various aspects of organizational behaviour in the hospitality industry is limited. Here, we posit our three primary research inquiries: *RQ1:* What is the connection between GTL and GI? *RQ2:* To what extent do green learning orientation and green creativity mediate the interaction between GTL and GI? *RQ3:* How is green innovation associated with EP and CGI? The present study investigates the underlying hypothesis utilizing PLS Smart by analyzing multi-wave, multi-source data gathered from employees working in luxury hotels situated in various cities across Italy.

The research offers a distinctive contribution by integrating employee and organizational factors into a cohesive model, enhancing the understanding of how organizations can strengthen EP and CGI, particularly in the luxury hospitality industry. This empirical study investigates the previously unexamined intricate relationships among GTL, GLO, GC, and GI to clarify how GI influences both EP and CGI. This focus differentiates this research and enhances its contribution to the hospitality field. Furthermore, the study's rigorous analysis of these critical associations through a mediation model and a time-lagged study design provides more generalizable findings, underscoring its significance in the field.

2. THEORETICAL FOUNDATION

2.1. Social Cognitive Theory (SCT)

Social Cognitive Theory (SCT) (Bandura, 1999), emphasizing the significance of learning and social behavior provides a comprehensive framework for analyzing the complex interactions among GTL, GLO, GC, and GI. SCT demonstrates proven effectiveness in clarifying various human behaviors, including leadership, creativity, and continuous employee learning and engagement. This underscores its relevance to this investigation. The fundamental tenets of social cognitive theory (SCT) center on the interplay concerning individuals' intrinsic objectives, perceptions, and the extrinsic circumstances that shape their behavior within their environment (Bandura, 1999).

Leadership constitutes a multifaceted cognitive and behavioral endeavor within a dynamic social environment (Janjua *et al.*, 2024). Effective leadership entails the application of social influence mechanisms to organize, guide, and inspire the actions of individuals (Aslam and Sahibzada, 2024). Within the framework of this study, GTL holds a prominent place as an employee excellence model. The organization's exemplary leadership practices (GTL) contribute to increased employee GLO and GC and innovation within the industry. Their ability to inspire and motivate employees is well-documented (Aslam *et al.*, 2024, Lee and Tseng, 2024). GTL's ability to foster a culture of creativity and continuous learning, which ultimately paves the way for enhanced innovation, was further augmented by (Hui *et al.*, 2024), demonstrating the crucial link between leadership strategies and organizational growth. Furthermore, SCT highlights the significance of adopting a learning orientation and embracing creativity as essential aspects of human behavior and psychological catalysts that instigate modifications in behavior (Huang *et al.*, 2023). As a result, when employees are inspired by GTL's well-defined environmental goals, GLO and GC are likely to be enhanced (Bandura, 1999). This suggests that GTL's employees are likely to be more flexible and responsive due to their inclination to stimulate vision-driven motivational mechanisms that enhance their focus on learning and creativity (Farooq *et al.* (2022). Thus, it is proposed that GTL, as an environmental factor, can significantly elevate employees' GLO and GC, which may, in turn, positively influence GI.

2.2. Natural-Resource-Based View Theory (NRBV)

The conventional resource-based view (RBV) suggests that organizations can realize a lasting competitive edge by possessing resources and abilities that are hard to imitate, thus fostering consistent performance (Begum *et al.*, 2022a). Extended from RBV, which overlooked the natural environmental challenges, the natural-resource-based view (NRBV) suggests that strategic planning and competitive advantage in the future will depend on capabilities that support environmentally sustainable pecuniary activity (Hart, 1995).The main goal of the framework is to explain how a company's resources, competencies, and the environment interact (Begum *et al.*, 2022a). This paradigm offers three interrelated strategic competencies for allocating resources: pollution avoidance, product management, and sustainable development (Hart and Dowell, 2011). The prime objective of pollution protection is to eradicate waste, effluents, and emissions from the human environment. Second, product management focuses on mitigating the environmental effects of products and processes during their entire life cycles. This entails assessing the impact at every level of development,

encompassing enhancing energy efficiency and providing increased value to clients. Finally, a sustainable development strategy emphasizes the long-term growth of environmentally friendly products and processes while addressing economic and social considerations (Hart and Dowell, 2011). These behaviors are fundamental to GI, which seeks to safeguard the environment and promote more ecologically responsible energy consumption (Appiah *et al.*, 2023).

3. HYPOTHESES DEVELOPMENT

3.1. Green Transformational Leadership and Green Innovation

Green transformational leader (GTL) denotes a leader's offering of motivation and inspiration to fulfill the organization's environmental objectives (Chen and Chang, 2013). GTL is a set of impalpable resources, including the ability to inspire others and develop novel solutions to problems, all of which can be used to further environmental objectives (Singh *et al.*, 2020). GTL is a firm's greatest valued asset because it is the cornerstone upon which a new product and process can be built (Chen and Chang, 2013). According to the NRBV theory, a hotel can instill a green vision among its staff and inspire them if the hotel leader embodies a green mindset and uses the GTL style, resulting in enhanced GI (Begum *et al.*, 2022a). GTL fosters the mindset and resilience required to create, communicate, and execute environmental-friendly initiatives (Begum *et al.*, 2022a). Moreover, these leaders emphasize nurturing a green environment and motivating employees to acquire market knowledge to adapt to unstable market situations (Begum *et al.*, 2022a). Former research has demonstrated that GTL substantially influences organizational innovation (Begum *et al.*, 2022a).

Many scholarly inquiries have identified various factors that contribute to green innovation. These factors include the presence of green intellectual capital in large manufacturing organizations (Cui *et al.*, 2023), the green-absorptive capability in the electric power industry (Pacheco *et al.*, 2018), external information-sharing in manufacturing organizations (Zhang *et al.*, 2020), and the use of GTL in the high-tech industry (Begum *et al.*, 2022a). Consequently, we expect GTL to play a vital part in encouraging environmentally friendly practices and delivering the necessary resources for green initiatives in the hospitality sector.

H1: Green transformational leadership significantly impacts green innovation.

3.2. Green transformational leadership, green learning orientation, and green innovation

Green learning orientation (GLO) is defined by D'Angelo and Presutti (2019) as the guiding principles that direct employees toward acquiring environmental competence; this study defines GLO as shared values that direct hotel employees to pursue green knowledge. Through green values of culture, hotel workers will obtain, exchange, exploit, and develop green knowledge that could contribute remarkably to any hotel's performance (Fong and Chang, 2012).

It has been noted that GTL prioritizes change and actively pursues challenges, which is essential for fostering employees' GLO (Huang *et al.*, 2023). Fostering a green culture can significantly enhance the performance of any organization, as its employees will develop the ability to acquire, apply, and create green knowledge (Fong and Chang, 2012). Moreover, a shared set of guiding principles motivates individuals to be diligent and ardent about GI (Fong and Chang, 2012). Hotels that prioritize GLO are inclined to invest in their employee's education and training to enhance their knowledge of sustainable practices (Wang *et al.*, 2020). Consequently, the employees' vast knowledge and experience in environmental sustainability will make a valuable contribution to the GI (Zhang *et al.*, 2023).

Previous research has identified several organizational factors that contribute to the success of GI, for instance, knowledge-sharing (Rafique *et al.* (2022), external information-sharing (Zhang *et al.* (2020), and GTL (Begum *et al.*, 2022a). Recent research has also demonstrated that organizational GLO is a crucial precursor to GI (Cui *et al.*, 2023), which enables us to conceive of the relationship between GTL, the employee's GLO, and GI. Additionally, the SCT theory underscores the significance of learning orientation beliefs as essential elements of human behaviours. These beliefs serve as psychological triggers that can effectively facilitate behaviours change. By understanding and leveraging these beliefs, individuals can enhance their motivation and adaptability in various contexts (Huang *et al.*, 2023). This study addresses a previously unexplored gap in literature by hypothesizing employee GLO, thus making a valuable and novel contribution to the field of research. Thus, it is hypothesized that employees' efforts to obtain and implement novel insights regarding environmental sustainability may yield a twofold result. First, it can significantly improve the environmental sustainability of hotel organizations. Second, based on SCT principles, evidence suggests it can improve employee learning. This enhancement can be attributed to GTL's effective communication of environmental concerns, which facilitates GI within the organization.

H2: Green transformational leadership substantially impacts green learning orientation.

H2a: Green learning orientation substantially impacts green innovation.

H2b: Green learning orientation mediates the link between green transformational leadership and green innovation.

3.3. Green Transformational Leadership, Green Creativity, and Green Innovation

Green creativity (GC) is the behavior of employees who can contemplate creative ways for the company to achieve its environmental goals (i.e., green innovation), foster green initiatives to augment the green performance of the hotel, reconsider green concepts, and look for inventive solutions to environmental issues (Bhutto *et al.*, 2021). The notion of green creativity relates to the conduct of personnel within the hospitality sector who exhibit a greater propensity to devise innovative approaches for their organizations to achieve their ecological objectives (i.e., green innovation), advocate for green concepts to enhance their hotel's green performance, reconsider novel green ideas, and explore inventive resolutions to environmental problems (Chen and Chang, 2013).

Much evidence suggests that GTL is associated with GC (Farooq *et al.*, 2022). Research conducted in the past has found that GTL enhances and stimulates GC in employees across several sectors, such as IT, education, tourism, and hospitality (Arici and Uysal, 2022, Aslam *et al.*, 2024, Begum *et al.*, 2022a, Farooq *et al.*, 2022). This correlation may also be deemed credible considering the fundamental tenet of SCT theory, which asserts that behavioral modifications are possible by leveraging individual factors.

Scholars have contended that businesses must prioritize the implementation of GTL to cultivate GC and GI (Li *et al.*, 2020). Organizations that utilize GTL are more inclined to implement environmentally friendly practices by developing innovative products and processes (Chen and Chang, 2013). Creativity revolves around the creation of ideas, whereas innovation underscores the execution of these ideas and concepts. Therefore, creativity is a crucial driver of innovation (Anderson *et al.*, 2014, Arici and Uysal, 2022, Chen and Chang, 2013).

H3: Green transformational leadership substantially impacts green creativity.

H3a: Green creativity substantially impacts on green innovation.

H3b: Green creativity mediates the relationship between Green transformational leadership and green innovation.

3.4. Green innovation and environmental performance

Green innovation (GI) refers to improving products and processes within the hotel industry that prioritize energy conservation, pollution mitigation, waste management, and creating green product designs (Asadi *et al.*, 2020). GI is defined as developing solutions that reduce environmental risks (Arici and Uysal, 2022). Research on organizational behavior indicates that prioritizing ecological performance can result in lessening waste and redesigning products and processes, leading to a decrease in an organization's environmental impact (Awan *et al.*, 2023). GI can deliver social, ecological, and economic benefits due to reduced costs and less waste (Gu, 2022). GI is essential for an organization since it is intricately connected to its environmental strategy(Aftab *et al.*, 2023).

The management agenda has increasingly prioritized green products and processes due to the rise of corporate environmentalism (Awan *et al.*, 2021). In this study, a hotel's environmental performance (EP) refers to the outcome of its environmental activities intended to minimize harmful effects on the environment (Kim *et al.*, 2019). Several scholarly studies have indicated a noteworthy link between GI and EP in various contexts (Aftab *et al.*, 2023, Singh *et al.*, 2020). Research suggests that the EP of organizations is impacted by various elements, such as eco-friendly product quality, the execution of environmentally friendly procedures, and the incorporation of ecological principles into corporate procedures and the creation of products (Asadi *et al.*, 2020, Baah *et al.*, 2024, Dubey *et al.*, 2015, Singh *et al.*, 2019). Previous research has shown limited attention given to the influence of a luxury hotel's GI on EP. The relationship between GI and its influence on EP in luxury hospitality remains unclear. Further research is needed to elucidate how these factors interact and impact overall service delivery and performance (Fosu *et al.*, 2023). There is a notable lack of comprehensive studies in these specific areas of inquiry, highlighting the need for additional empirical research to advance our understanding (Fosu *et al.*, 2024, Singh *et al.*, 2020). This is particularly important as enterprises face pressure from their primary stakeholders to adopt and implement environmentally sustainable management practices. GI frameworks have traditionally been perceived as mechanisms for addressing the demands of stakeholders. Conversely, it is posited that organizations should take a proactive approach to enhance their EP (Baah *et al.*, 2024, Kratzer *et al.*, 2017, Singh *et al.*, 2020). Based on this, we contend that a correlation exists between GI and EP (Singh *et al.*, 2020). Therefore, we propose:

H4: Green innovation substantially impacts environmental performance.

3.5. Green innovation and Corporate Green Image

Rising environmental consciousness and the pursuit of sustainable development have led to the emergence of GI as a critical component of CSR (Fosu *et al.*, 2023). Green innovation denotes hi-tech developments that aim to conserve energy, reduce pollution, promote waste recycling, and incorporate environmentally conscious product design and operational environmental management (Fosu *et al.*, 2023). GI can improve a company's environmental performance in various ways while also providing a competitive edge through a favorable green corporate image (CGI) (Fosu *et al.*, 2023). The notion of CGI relates to the environmental or green-related aspects of a company that stakeholders perceive (Amores-Salvadó *et al.*, 2014). Similarly, this study adopted Martinez (2015) the definition refers to a hotel's environmental or green-related aspects that stakeholders perceive.

Investigating how GI practices can improve CGI or encourage EP is a promising area for further studies in the hotel industry (Kim *et al.*, 2019). Former studies have studied the impact of CSR on CGI (Alam and Islam, 2021, Ali *et al.*, 2023) as well as the utilization of CGI as a mediator variable in the correlation between CSR and corporate-social-performance (Fosu *et al.*, 2023). These studies have focused on eco-friendly management practices, illustrating that integrating CSR initiatives with efficient environmental management improves CGI. The argument is further substantiated by the natural resource-based view (NRBV), which underscores the significance of leveraging an organization’s unique capabilities and strengths to achieve optimal environmental performance (Awan *et al.*, 2023). The theory suggests the potential use of strategic resources to drive green innovation, which can ultimately lead to the acquisition of CGI (Fosu *et al.*, 2023). Thus, we hypothesize the following. (See Table1)

H5: Green innovation substantially influences the corporate green image.

Table 1: Previous studies on (Types) Leadership and (Types) Innovation

Author (s)/ Year	Leadership (Types)	Mediator	Moderator	Green Innovation (Types)	Control Variable	Industry	Country	Findings
Begum *et al.* (2022a)	Green Transformational Leadership	Creative process engagement and green thinking	N/A	Green innovation	Employee experience, firm size, Firm age, Industry Type	High-tech industry	China	The study found that GTL encourages green thinking, CPE, and innovation. GTL-GI is mediated by green thinking and CPE.
Idrees *et al.* (2023)	Leadership and management support	Green knowledge acquisition	Green absorptive capacity	Radical green innovation and Incremental green innovation	Firm type, ownership, firm size, and firm age	Large-size manufacturing firms	Pakistan	Leadership and management encourage "incremental-green -innovation" more than "radical-green-innovation". Leadership and management encourage "radical" and "gradual green- innovation" through "green knowledge acquisition". When "green absorptive capacity" is high, "green knowledge acquisition" affects leadership and management- support and "GI" more.
Shehzad *et al.* (2024)	Knowledge-oriented leadership and Green entrepreneurial orientation	Knowledge creation, knowledge acquisition, knowledge sharing, and knowledge application	N/A	Green product innovation and green process innovation	Firm size	Manufacturing enterprises	Pakistan	According to the findings, KM enablers affect green-product and process innovation and KM processes. KM procedures also improve two GI aspects.
Cui *et al.* (2023)	Green Transformational Leadership	Organizational green learning	N/A	Radical Green Innovation	N/A	Manufacturing industry	China	"Radical green innovation" inverts the R-I ratio, whereas "green transformational leadership" increases it. "U-shaped green" R&D investment moderates the "R-I ratio"- "green transformational leadership" relationship. Environmental regulation improves green transformational leadership and the R-I ratio.
Pham *et al.* (2023)	Green Transformational Leadership	Green supply chain learning	N/A	Green Product innovation and Green Process innovation	N/A	Construction firms	Vietnam	"Transformational leadership" enhances "green learning" and "innovation", notably "product and process innovation". Additionally, "green learning" promotes "green process innovation". Research reveals that "green learning" mediates "transformational leadership" and "green process innovation".

Şengüllendi *et al.* (2023)	Ethical leadership	Green organizational culture	N/A	Green Product innovation and Green Process innovation	N/A	SMEs	Turkey	"Ethical leadership" may help SMEs build a "green culture". Research also shows that "green organizational culture" mediates "ethical leadership" and "green product and process innovations".
Akhtar *et al.* (2023)	Responsible leadership	organizational ethical culture	Strategic posture	Green Product innovation and Green Process innovation	Gender, age, education, experience	Hospitality Organizations	Pakistan	Research shows "responsible leadership" encourages "green innovation". "Organizational ethical culture" and strategy posture moderate the direct relationship between "responsible leadership" and "green innovation". "Green innovation" benefits more from "responsible leadership" in progressive strategic settings.
Tian *et al.* (2023)	Digital Leadership	Green organizational identity	digital threat and technology for social good	Radical green innovation	N/A	Manufacturing Industry	China	This study demonstrated that GOI partially mediates the positive effect of the four DL dimensions on RGI. TSG positively regulates DL and GOI, while DT adversely moderates them—DT and TSG moderates GOI's partial DL and RGI mediation.
Chen *et al.* (2023)	Green transformational leadership	Green knowledge sharing	Innovation Climate	Green Product innovation and Green Process innovation	N/A	Mega projects	China	GTL promotes green products and process innovation. Additionally, GKS mediates "GTL" and the two GI components. Additionally, IC favorably moderates the relationship between GTL, GKS, and the two GI characteristics.
(Begum *et al.*, 2022b)	Green transformational leadership	Creative process engagement	N/A	Green Product innovation and Green Process innovation	N/A	High-tech Manufacturing Industries	China	"Green transformational leadership" and "creative process involvement" foster "green product and process innovation". "Green transformative leadership2 embraces "creativity". Creativity influences "green transformative leadership", "process and product innovation".
Singh *et al.* (2020)	Green transformational leadership	Green HRM practices	N/A	Green Product innovation and Green Process Innovation and environmental performance	N/A	SMEs	UAE	The study found that "green transformational leadership" improves "creativity" and the "environment". "Transformational leadership", "innovation", and "environmental performance" are mediated by "green HRM".
He *et al.* (2023)	Environmental leadership	Proactive environmental strategy	Organizational structure	Green Product innovation and Green Process innovation	education, firm size, and ownership structure	Metal Enterprises, Mining Industry, Printing Industry, Food, and Beverage Industries	China	"Environmental leadership" boosts "green product and process innovation", the study showed. "Environmental leadership"-"green innovation performance" is also mediated by practical environmental actions. "Green product" and "process innovation performance" are included.

Source Author(s)

4. RESEARCH METHODOLOGY

4.1. Measures

For each construct in the theoretical model, validated measures were employed by the researchers in the present study, which was sourced from prevailing literature and assessed using a "seven-point Likert scale" spanning from 1 (strongly disagree) to 7 (strongly agree). Please see Table 2 for a comprehensive list of constructs and their corresponding measurement items and loadings.

Table 2. Constructs, Measurement Items, and Factor Loadings for Study 1 and Study 2

Constructs and Measurement Items	**Λ** Study 1 (Study 2)	**α** Study 1 (Study 2)	**CR** Study 1 (Study 2)
Green Transformational Leadership (Chen and Chang, 2013)		0.907 (0.911)	0.928 (0.931)
The leader of the hotel			
….. inspires subordinates with hotel environmental plan.	0.859 (0.811)		
….. provides subordinates with a clear environmental vision.	0.870 (0.832)		
….. encourages subordinates to work on environmental plans.	0.829 (0.860)		
….. encourages employees to attain environmental goals.	0.825 (0.829)		
….. considers environmental beliefs of subordinates.	0.800 (0.851)		
….. stimulates subordinates to think & share their green ideas.	0.775 (0.809)		
Green Learning Orientation (Fong and Chang, 2012)		0.795 (0.896)	0.868 (0.927)
Employees think learning ability is important to ensure our hotel's survival and competitive advantage.	0.698 (0.848)		
Employees identify our hotel's goals and vision and are willing to accept new green knowledge.	0.827 (0.883)		
Our hotel's organizational structure is helpful for sharing and creating green knowledge.	0.822 (0.873)		
Our hotel leaders encourage employees to share and create green knowledge to expedite green innovation.	0.801 (0.887)		
Green Creativity (Chen and Chang, 2013)		0.859 (0.921)	0.899 (0.938)
The employees of our hotel			
….. suggest new ways to achieve environmental goals.	0.817 (0.865)		
….. new green ideas to improve environmental performance.	0.838 (0.853)		
….. promote and champion new green ideas to others.	0.811 (0.842)		
….. develop adequate plans for the implementation of new green ideas.	0.790 (0.746)		
….. would rethink new green ideas.	0.741 (0.899)		
….. out creative solutions to environmental problems.	*Deleted (0.871)		
Green Innovation (Chen *et al.*, 2006)		0.855 (0.940)	0.891 (0.951)
Our hotel has			
….. selected environmentally friendly raw materials in product development.	*Deleted (0.857)		
….. used energy-efficient raw materials in product development.	0.724 (0.832)		
….. carried out efficiency of raw materials for the production process in product development.	0.732 (0.866)		
….. evaluated that the product is easy to reuse, recycle, and decompose.	*Deleted (0.888)		
….. effectively reduced the emission of hazardous substances or waste in the production process.	0.709 (0.851)		

….. effectively recycled waste and emissions in the production process.	0.786 (0.860)		
….. effectively reduced the consumption of water, electricity, or oil in the production process.	0.815 (0.816)		
….. effectively made innovations to reduce the use of raw materials in the production process.	0.793 (0.747)		
Environmental Performance (Kim *et al.*, 2019)		(0.943)	(0.952)
Environmental management within our hotel			
….. has been increasing.	(0.846)		
….. has reduced waste.	(0.862)		
….. has conserved water usage.	(0.871)		
….. has conserved energy usage.	(0.823)		
….. has reduced purchases of non-renewable materials, chemicals, and components.	(0.836)		
….. has reduced overall costs.	(0.867)		
….. has improved its position in the marketplace.	(0.794)		
….. has helped enhance the reputation of our hotel.	(0.862)		
Corporate Green Image **(**Martinez, 2015)		(0.912)	(0.934)
The environmental commitments of this hotel company are generally reliable.	(0.840)		
The environmental performance of this hotel company is generally dependable.	(0.860)		
The environmental argument of this hotel company is generally trustworthy.	(0.855)		
The environmental concerns of this hotel company meet my expectations.	(0.893)		
This hotel company is sincere and honest about its environmental protection.	(0.850)		
Note: 1 = Strongly Disagree, 2 = Disagree, 3 = Neutral, 4 = Agree, 5 = Strongly Agree			

Source Author(s)

4.2. Data Collection and Participants for Study 1

Study 1 studied our mediated model using a "time-lagged research design". A survey was conducted online using the Prolific-data-collection-service to gather data from workers working in the hospitality sector in Italy. The current study was executed in 3 different stages, with a 2-week gap among each stage(Rasheed *et al.*, 2023). 347 participants provided information regarding their supervisor's GTL approach at the initial time point (T1). At (T2), 321 individuals completed GLO and GC assessments. Following the T2 wave, 321 participants were requested to rate the GI during the T3 phase. 303 valid responses remained for analysis after removing 18 identified as multivariate outliers.

Males comprised 62.4% of the 303 participants comprising the total sample. The research indicated that 35.6% of the participants were between 30 and 39 years old, while 24.8% were between 20 and 29. In addition, 48.2% of the participants were found to have a master's degree, and 40.9% had 11–15 years of hospitality experience.

4.3. Data Collection and Participants for Study 2

We obtained information for Study 2 from Italian hotel employees using the Prolific data collection service once more. The second study was executed in two separate stages, with a 1-month gap. Former studies on leadership have indicated that there should be a one-month time interval between each round of data collection (Khan *et al.*, 2021). During the preliminary data-collection (T1) stage, only 401 responses were received about GTL, GLO, GC, and participants' demographic details, including age, city, education level, gender, and overall experience. During the T2 stage, 401 participants who had previously contributed to the T1 wave delivered information on GI, EP, and CGI. Out of these, 360 participants actively took part. After eliminating eleven responses as multivariate outliers, we were left with 349 responses for the final analysis.

Out of the 349 survey participants, 63.3% were male. In addition, 35.2% of the participants were within the age bracket of 30 to 39, while 25.8% were between 20 and 29. Furthermore, a significant portion of individuals possessed extensive experience in the hotel industry, with 38.4% having 11 to 15 years of professional background. Additionally, a notable 47.6% held master's degrees.

5. DATA ANALYSIS and Results

In both studies, we employed the same criteria when screening for hospitality professionals with 1 year of full-time work experience. Specifically, we utilized the same data screening procedure.

5.1. Common Method Bias (CMB) and Multi-Collinearity

To mitigate the risk of bias, the current investigation adhered to the procedural measures delineated by (Podsakoff *et al.*, 2003). First, a pretesting process was carried out during the preparation phase of the questionnaire. The purpose was to identify any areas that needed improvement in the survey's layout and items to reduce the workload for the respondents. In addition, the questionnaire was intentionally created to distinguish between dependent and independent variables clearly. The items were randomized to ensure an unbiased approach toward specific responses. Hence, all potential phrasing or arrangement of variables that might have caused an effect of priming were intentionally evaded. Second, a test designed by Harman to assess a single factor was conducted. The test did not reveal any immediate problems, as a single component explained 34.9 % of the disparity in the sample, which falls far below the 50% threshold. Therefore, there is no need to be concerned about common method bias (Volberda *et al.*, 2012). In addition, a thorough examination was conducted to analyse the

correlations between the constructs. The results showed that the correlations were relatively weak, with values above 0.90 (Lowry and Gaskin, 2014). Finally, we evaluated vertical and lateral collinearity between each construct by assessing the variance inflation factors (VIFs) (Kock, 2015). According to Kock (2015), a collinearity test could be employed to assess the bias of common methods employed in research that use computational modelling of structural equations. By analyzing variance inflation factors (VIFs), we may ascertain whether common method bias does not impact the model. The model is considered unbiased if the Variance Inflation Factors (VIFs) are 3.30 or lower. Based on the results of the entire collinearity test, which showed a maximum VIF below 3.30 (range from 2.711 to 3.15), it can be inferred that there were no problems related to common method bias in the sample of this study.

5.2. Testing Measurement Model (Study 1)

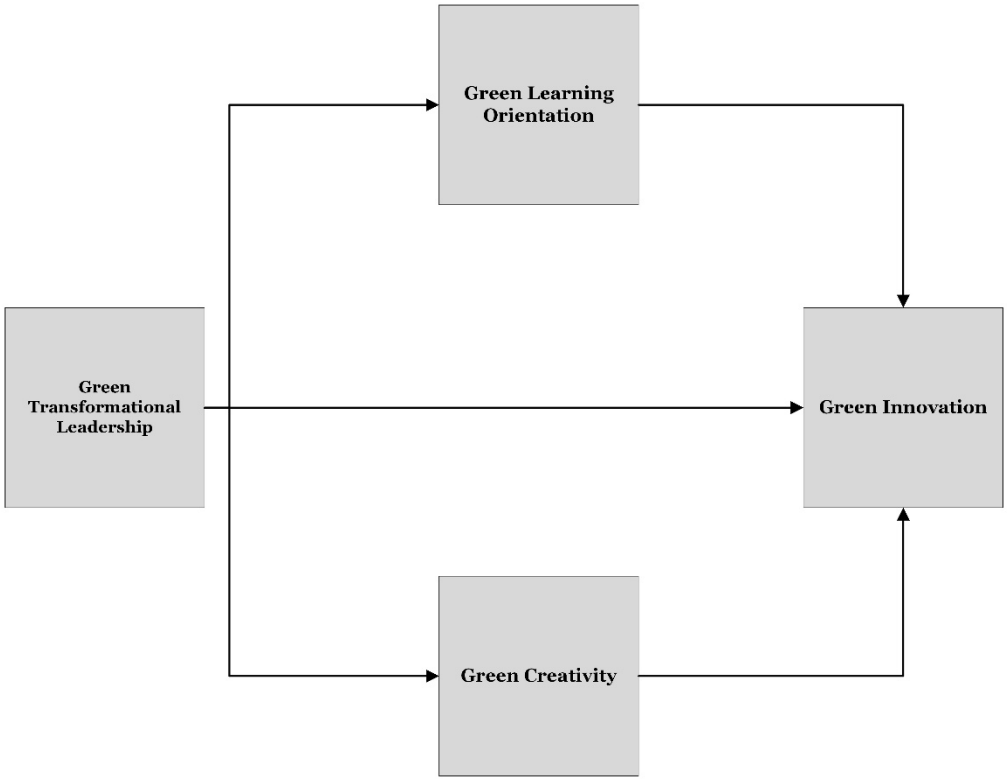

Figure 1: *Conceptual Framework for Study 1 (Source Authors)*

The values of Cronbach's alpha and CR were above 0.7, demonstrating a high level of internal consistency in the measurements (Nunnally, 1967). Table 2 displays internal consistency. The measurement model eliminated one item measuring green creativity (GC6) and two items measuring green innovation (GI1 & GI4) due to their factor loadings being below 0.7.All of the remaining outer loadings demonstrated a value of over 0.70 and were statistically significant, while the AVE ratings were also over 0.5, thereby confirming the convergent validity (Hair *et al.*, 2017).

The discriminant validity was assessed using the "Fornell Larcker criterion", which states that each latent variable's square root of the "average variance extracted" (AVE) should be larger than the inter-construct correlation (Fornell and Larcker, 1981). Table 3 displays the results of the tests for discriminant validity.

Table 3: Discriminant Validity (Fornell and Larcker Criterion)

	Mean	**SD**	**AVE**	**GTL**	**GLO**	**GC**	**GI**
GTL	3.79	.88	.623	**.91**	.78	.58	.33
GLO	3.35	.85	.612	.61	**.86**	.45	.47
GC	3.62	.85	.556	.34	.20	**.86**	.60
GI	3.15	1.03	.633	.11	.22	.36	**.87**

Diagonal: *construct reliability; Above the diagonal: correlations; Below the diagonal: squared correlations*

Source Author(s)

5.3. Testing Structural Model (Study 1)

Inspecting the structural model involved a thorough step-by-step analysis of each hypothesis. Initially, the influence of GTL on GI was investigated. Study 1 examined the correlations between GTL, GC, and GLO. This was then followed by an analysis of the effects of GC and GLO on GI. The purpose of using 5,000 bootstrap resamples was to evaluate the importance of indirect paths by examining the estimated mean errors (Ringle, 2005).

Table 3 shows no substantial effect of GTL on GI ($\beta = 0.40$, $t = 1.45$, $p = .146$), which does not provide evidence for hypothesis 1.

Furthermore, it is evident that GTL has a substantial influence on GC ($\beta = .66$, $t = 17.04$, $p < 0.001$) and T2-GLO ($\beta = .48$, $t = 10.48$, $p < 0.001$), providing support for Hypotheses H2 and H3.

Additionally, the statistical analysis revealed that both GLO (β =.40, t = 6.73, p < 0.001) and GC (β =.46, t = 6.86, p < 0.001) significantly impacted GI. H2a and H3a were therefore validated (Refer to Table 4).

Table 4: Structural Equation Model

Hypotheses	Relationship	Standardized weight	Standard error	*t*-statistics	*p*-values
H1	GTL -> GI	0.40	0.06	1.45	0.146
H2	GTL -> GLO	0.48	0.04	10.48	0.000
H2a	GLO -> GI	0.40	0.05	6.73	0.000
H3	GTL -> GC	0.66	0.03	17.04	0.000
H3a	GC -> GI	0.46	0.06	6.86	0.000

Source Author(s)

5.4. Study 1: Mediation Analysis

The study explored the mediating effect of GTL and GI on the indirect effects of GTL on GI through GC and GLO, as evidenced by H2b and H3b. The findings suggest that the direct effect is positive but lacks statistical significance (β = .40, t = .50, p = .10) when the mediator is added to the model. The research results demonstrated that the indirect effect for GC (β =.31, t = 6.18, p <.001) and GLO (β =.20, t = 5.28, p <.001) was statistically significant. The results thus suggest that full mediation occurred. This result supports hypotheses H2b and H3b by demonstrating that GC and GLO entirely mediate the GTL effect on GI (Refer to Table 5).

Table 5: Mediation Outcomes

Total effect (GTL -> GI)		Direct effect (GTL-> GI)		Indirect Effects of GTL on GI				
Coefficient	*p*-value	Coefficient	p-value		Coefficient	SD	*t* value	*p*-values
.50	< .001	.40	0.01	**H2b: GTL -> GC -> GI**	.310	.050	6.177	<.001
				H3b: GTL -> GLO -> GI	.197	.037	5.276	<.001

Source Author(s)

5.5. Testing Measurement Model (Study 2)

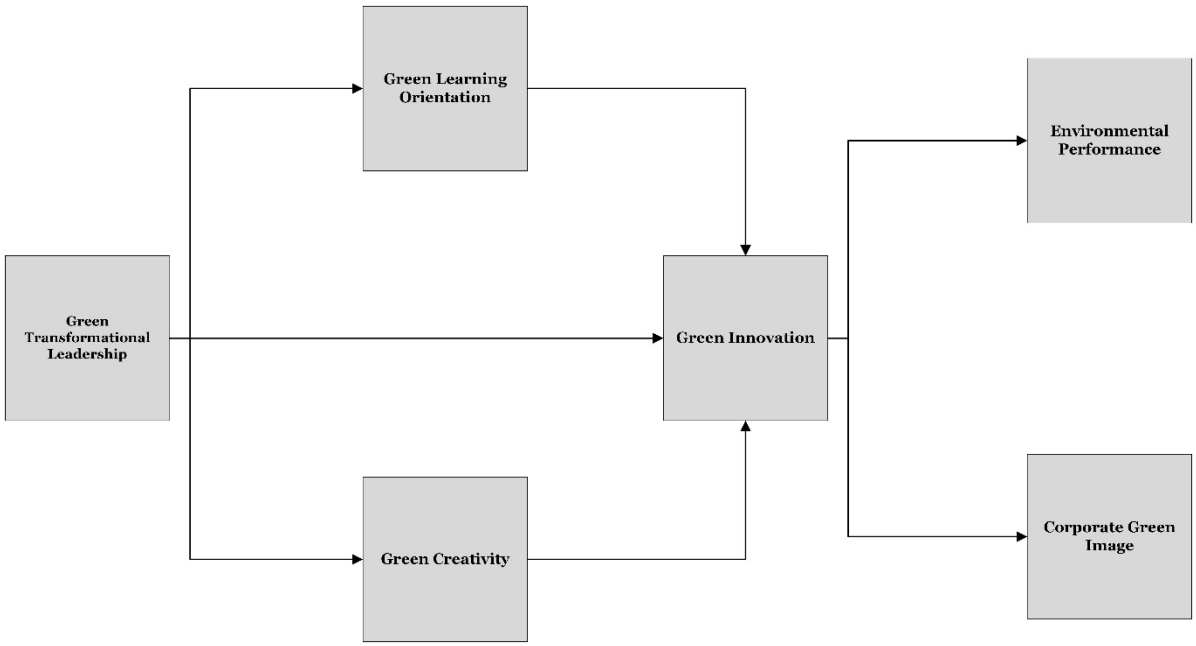

Figure 2: *Conceptual Framework for Study 2 (Source Authors)*

The conceptual model established in Study 1 is expanded in Study 2 by including two outcome variables, namely CGI and EP. The research examined the study 2 model by assessing its internal consistency using Cronbach's and composite-reliability (CR) metrics. The study assessed the model's convergent and discriminant validity by an analysis of outer loadings, average variance extracted (AVE), and Fornell-Larcker criteria(Hair *et al.*, 2017). To ensure the study's reliability, the values of Cronbach's alpha and CR must surpass the lowest satisfactory level of 0.7, as stipulated by (Nunnally, 1967). Table 2 presents findings that demonstrate internal consistency. The study also assessed the convergent validity of the indicators by evaluating outer loadings. All items exhibited a significant loading (larger than 0.70) toward perspective constructs (Hair *et al.*, 2017). Each AVE value exceeds the threshold of 0.5, thereby establishing convergent validity (Hair *et al.*, 2017).

In Study 2, after confirming convergent validity, we investigated discriminant validity by ensuring that the intra-construct correlation surpassed the inter-construct correlations (Hair *et al.*, 2017). The Fornell-Larcker criterion was used to verify that the square root of the average variance extracted (AVE) for each latent variable exceeds the inter-construct correlation (Fornell and Larcker, 1981). Study 2 successfully demonstrated discriminant validity through rigorous testing. (Refer to Table 6)

Table 6: Discriminant Validity (Fornell and Larcker Criterion)

	Mean	SD	AVE	GTL	GLO	GC	GI	EP	CGI
GTL	4.03	.95	.693	**.84**	.83	.76	.78	.63	.62
GLO	4.01	.96	.762	.84	**.85**	.66	.75	.61	.66
GC	4.07	.98	.718	.82	.72	**.81**	.74	.60	.63
GI	4.05	.97	.706	.78	.76	.78	**.79**	.55	.69
EP	3.97	.93	.715	.73	.60	.70	.73	**.87**	.78
CGI	4.13	.94	.739	.66	.61	.69	.64	.76	**.83**

Diagonal: *construct reliability; Above the diagonal: correlations; Below the diagonal: squared correlations*

Source Author(s)

5.6. Structural Model Evaluation of Study 2

The structural model assessment entailed a systematic analysis of all hypotheses sequentially. Initially, an investigation was undertaken to assess the effect of GTL on GI. Subsequently, the effects of GC and GLO on GI were examined. Furthermore, the inquiry also evaluated the impacts of GI on EP and CGI. To ascertain the suitability of estimated average errors and direct pathways, 5,000 bootstrap resamples were utilized (Ringle, 2005).

The influence of GTL on GI was substantially evident in Table 4, with a β value of 0.20 and a t-value of 2.94, which was statistically significant ($p < .01$), thereby supporting H1. Furthermore, GTL demonstrated a considerable influence on both GC ($\beta = 0.912$, $t = 52.18$, $p < 0.001$) and GLO ($\beta = .862$, $t = 35.27$, $p < 0.001$). It is determined that hypotheses H2 and H3 are supported. Moreover, the effects of GC ($\beta = .45$, $t = 6.68$, $p < 0.001$) and GLO ($\beta = .320$, $t = 4.81$, $p < 0.001$) on GI were statistically significant. Thus, both H2a and H3a are supported according to table 7.

The study's results displayed that the connection between GI and EP ($\beta = 0.865$, $t = 33.50$, $p < 0.001$) and amongst GI and CGI ($\beta = 0.884$, $t = 39.66$, $p < 0.001$) were both statistically significant. Hence, H4 and H5 are supported. (See table 7)

Table 7: Structural Equation Model

Hypotheses	Relationship	Standard coefficient	Standard error	*t*- statistics	*p* values
H1	GTL -> GI	0.203	0.069	2.945	0.003
H2	GTL -> GLO	0.862	0.024	35.272	0.000
H2a	GLO -> GI	0.320	0.066	4.812	0.000
H3	GTL -> GC	0.912	0.018	52.187	0.000
H3a	GC -> GI	0.451	0.068	6.675	0.000
H4	GI -> EP	0.865	0.026	33.504	0.000
H5	GI -> CGI	0.884	0.022	39.666	0.000

Source Author(s)

5.7. Study 2 Mediation Analysis

Lastly, study 2 assessed the mediating roles of GC and GLO between GI and GTL. Notably, GC (β=0.41, t=6.74, p<.001) and GLO (β=0.28, t=4.77, p<.001) exhibited significant indirect effects. Consequently, the results show that there is partial mediation. The impact of GTL on GI is solely transmitted through GC and GLO. Therefore, both H2b and H3b are substantiated. (See table 8)

Table 8: Mediation Outcomes

Total effect (GTL-> GI)		Direct effect (GTL-> GI)		Indirect Effects of GTL on GI				
Coefficient	**P-value**	**Coefficient**	**p-value**		**Coefficient**	**SD**	**T value**	**P-Values**
.89	<0.001	.20	<.01	**H2b: GTL -> GC -> GI**	.411	.06	6.74	.001
				H3b: GTL -> GLO -> GI	.276	.06	4.78	.001

Source Author(s)

5.8. Assessing the predictive relevance using PLS Predict

The R^2 statistics mentioned earlier indicate the model's explanatory power within the sample. We have utilized PLS Predict to assess the out-of-sample predictive relevance of our model for CGI (Shmueli *et al.*, 2016). This is based on the principles of using training samples, which are a subset of the data set used to estimate the model, and holdout samples, which are the remaining portion of the data set not used for parameter estimation (Hair *et al.*, 2019, Shmueli *et al.*, 2016). PLS $_{Predict}$ is a procedure that utilizes holdout samples to generate predictions at the case or item level. This indicates that PLS $_{Predict}$ can evaluate the precision of a model while simultaneously predicting the result value of new cases (Shmueli *et al.*, 2016). Following the recommendations provided by Shmueli *et al.* (2019) and Hair *et al.* (2019) on the assessment of our model's predictive significance, we commenced the PLS $_{Predict}$ procedure with 10 folds (k = 10). The training sample in each fold was carefully verified to ensure that it still satisfied the minimal sample size criteria, as determined by (Kock and Hadaya, 2018) and calculated using G* Power software. Firstly, the study analyzed the $Q^2_{Predict}$ values of the PLS-SEM model. The positive $Q^2_{Predict}$ value, shown for CGI, suggests that the PLS-SEM analysis for indicators of our main target construct performs better than the simplest benchmark linear regression model (LM) (i.e. the average values of the indicators from the training sample). Subsequently, the study analyzed the dispersion of estimate errors in our model and observed asymmetrical distribution. Therefore, we utilized the mean absolute error (MAE) data acquired for partial least squares structural equation modeling (PLS-SEM) in conjunction with the LM

benchmark. Table 9 clearly shows that the MAE values for most of the indicators in the PLS-SEM analysis had reduced prediction errors compared to the LM. This indicates that our model has a moderate predictive capacity (Shmueli *et al.*, 2019).

Table 9: Assessment of predictive relevance for sustainable performance

	PLS-SEM		LM	PLS-SEM – LM
Items of the dependent variable	MAE	Q^2 Predict	MAE	MAE
CGI1	0.811	0.274	0.934	–0.061
CGI2	0.938	0.219	0.925	–0.031
CGI3	0.756	0.353	0.779	–0.017
CGI4	0.827	0.327	0.849	–0.004
CGI5	0.719	0.240	0.741	–0.009

Source Author(s)

6. DISCUSSION

This research aimed to investigate the extent to which GTL contributes directly and indirectly to GI within the hospitality sector through the mediation of GC and GLO. We further investigated how GI affects EP and CGI in Italian luxury hotels. We employed social cognitive theory (SCT) to identify employee GC and GLO as mediating mechanisms that elucidate the relationship between GTL and GI. In contrast, the natural-resource-based view (NRBV) has been applied to explain the connections between GTL, GI, EP, and CGI. The research revealed significant correlations among GTL, GC, and GLO in both studies. Furthermore, these variables demonstrate substantial correlations with the GI of hotel organizations. Additionally, the second study demonstrated that GI substantially affects EP and CGI in a hotel environment. The findings indicate that hospitality professionals can drive innovation by optimizing internal operations, including check-in and check-out procedures, inventory management, and housekeeping schedules. Hotels can enhance efficiency and lower operational costs by incorporating automated systems, AI solutions, and mobile technology. Additionally, enhancing customer service processes with improved communication channels or implementing AI chatbots for booking and inquiries creates a smoother guest experience. Furthermore, employees can propose enhancements to feedback systems, allowing immediate responses to guest issues and fostering a more responsive environment. The study's findings indicate substantial empirical evidence for significant connections among GTL-GI, GTL-GC, GTL-GLO, GC-GI, GLO-GI, GI-EP, and GI-CGI. This is congruent with former research results e.g., (Arici and Uysal, 2022, Begum *et al.*, 2022a, Farooq *et al.*, 2022, Gürlek and Koseoglu, 2021, Singh *et al.*, 2020).

First, the study identified a significant impact of GTL on GI within the Italian hospitality sector. The findings indicate that GTL can potentially engage and motivate individuals to advocate for GI by integrating them into sustainable practices and strategies. The findings also support earlier research suggesting that GTL can effectively motivate and inspire employees to engage actively in corporate sustainability initiatives in high tech industry (Aslam *et al.*, 2024, Begum *et al.*, 2022a, Janjua *et al.*, 2024). By promoting sustainable practices and strategies, organizations can foster a culture where employees feel empowered to contribute to environmental and social governance efforts. Employees exhibit environmentally conscious actions when the organization's ecological initiatives are explicitly outlined and effectively communicated. GTL emphasizes achieving the organization's goals while simultaneously addressing the individual needs of fellow employees. It provides guidance to help them generate and disseminate ideas and plans that minimize the hotel's carbon emissions and waste production. In addition, the results were also congruent with the theoretical premises of social cognitive theory. The interaction of GTL may impact employees' cognitive capacities, specifically their GC and GLO, as per SCT theory. The augmentation of the GC and GLO of personnel can positively influence the behavioral outcomes of green innovation, which can be leveraged to tackle environmental issues (Cui *et al.*, 2023).

Second, it was noted that the mediation analysis provided distinct outcomes for both studies. Study 1 demonstrated complete mediation, while the findings of Study 2 showed only partial mediation. Preceding research has studied the role of mediators, including green thinking and green process engagement (Begum *et al.*, 2022a) and organizational green (Cui *et al.*, 2023) in the link between GTL and GI. The current investigation aimed to address a notable gap in hospitality literature by exploring the employee-driven factors that potentially contribute to the previously unexplored relationship with GI. This research underscores the importance of understanding how employee attributes and behaviors can influence GI within the hospitality sector. The results of Study 1 support our proposed hypotheses by demonstrating that GC and GLO mediate in connection amid GTL- GI in hotels. In the absence of GC, the findings of Study 1 indicate that the relationship between GTL and GI was considered insignificant. Consequently, this supports the conclusion of full mediation. The findings of Study 1 suggest that GTL is not the exclusive determinant of GI within hotel enterprises. The link between GTL and GI is mediated by the GC of employees. Thus, hospitality personnel's green creativity drives product and process innovation (Bhutto *et al.*, 2021). The GC and GLO of employees facilitate the relationship between GTL and GI. Therefore, it can be inferred that GTL

significantly enhances the GC and GLO of subordinators, which ultimately leads to increased product and process innovation. The results show that the proactive behavior of employees in introducing innovative solutions to environmental concerns, disseminating eco-friendly concepts to colleagues, and advocating for sustainable initiatives in their job, combined with their proficiency in product and process knowledge acquired through hotel training, shape employees' perceptions of their organizations' GI. This highlights the criticality of consistent green training initiatives for employees in improving their ability to engage in GC, which is a prerequisite for the productive execution of GI (Farooq *et al.*, 2022).

Furthermore, the findings of Study 2 validate the significant influence of GTL on GI, GTL on GC, and GTL on GLO, which collectively contribute to a marked improvement in GI. Therefore, this analysis indicates partial mediation. The findings suggest that GTL cultivates a culture of environmental consciousness among its employees, which in turn promotes the development of green innovative behavior among hotel staff. Transformational leaders actively cultivate an environment that nurtures innovative thinking, empowers the implementation of groundbreaking ideas, and establishes a supportive framework that enhances creativity and its vital mechanisms (Sun *et al.*, 2023). The implementation of GLO can effectively cultivate a green culture within a hotel, resulting in improved EP (Fong and Chang, 2012). The results clearly demonstrate the employees' enhanced capabilities to effectively acquire, implement, and deepen their understanding of sustainable practices. Furthermore, GTL possesses the capacity to inspire employees to develop innovative solutions for current environmental challenges. This leadership approach also promotes the re-evaluation and enhancement of existing green initiatives within the workplace, ultimately contributing to an improved GI.

Lastly, the study results show that GI directly impacts EP and CGI. The findings suggest that a hotel organization's GI can contribute to a hotel's EP and CGI. These findings align with previous studies conducted outside of the hospitality industry context (Akhtar *et al.*, 2024, Ha *et al.*, 2024, Mehmood *et al.*, 2024). The study findings suggest that by adopting green innovations and sustainable practices, hotels can significantly minimize carbon emissions, reduce food and water wastage, and lower the carbon footprint associated with long transportation distances. Renewable energy sources can significantly reduce greenhouse gas emissions and improve environmental performance. This approach not only maintains but can also enhance a hotel's operational efficiency and green image, positively influencing all

stakeholders' perceptions. These green initiatives diminish the industry's ecological impact, ensuring compliance with global sustainability objectives.

6.1.Theoretical implications

The research has significant theoretical implications for leadership, organizational behavior, and green innovation. This study integrates various organizational and employee factors by employing the paradigms of GTL, GC, GLO, GI, EP, and CGI within a cohesive model. This framework delineates the crucial strategies that hotel organizations may undertake to augment employees of GC and GLO. Through the effective execution of these strategies, organizations will foster successful GI, culminating in notable advancements in EP and CGI. The current research highlights how GTL contributes to organizational GI and provides innovative insights into how the hospitality sector can improve existing practices to promote GI, ultimately leading to enhanced EP and CGI. Research has demonstrated that employee creativity and a learning-oriented mindset are vital components for fostering innovation within an organization (Cui *et al.*, 2023, Farooq *et al.*, 2022). This study corroborates prior research while exploring two unexplored alternative pathways of employee GC and GLO that link GTL and organizational GI within the hospitality industry context.

Second, the study demonstrates that GTL is a notable precursor to GI and an enhanced manifestation of GI conduct. As a result, our contribution expands upon the existing body of literature that predominantly concentrated on substantiating the correlation between transformative leadership and organizational innovation (Rafique *et al.*, 2022). Although academics have investigated the variables influencing GTL and GI, their analyses have predominantly focused on measuring innovation solely from the organizational perspective (Cui *et al.*, 2023, Zameer *et al.*, 2022). The hospitality industry is increasingly prioritizing sustainable development and environmentally responsible practices. Our research indicates that GTL practices can enhance GI and offer valuable guidance on promoting GC and GLO behaviors among hotel staff.

Third, the study highlights the intricate nature of the association between management and employees by proposing that the mediating effects of GC and GLO accentuate the influence of GTL on GI. Integrating employees' GLO and GC cultivates a synergistic environment conducive to the flourishing of green innovation. This integration guarantees that sustainability is not merely a directive imposed by the organizational leadership but a collaborative initiative that empowers both leadership and employees. As a result, it contributes to the hotel's EP and

CGI. Moreover, in the context of GTL, previous research has demonstrated that leaders may significantly impact behavioral effects such as GI, commitment, green creativity, and innovation of organization (Begum *et al.*, 2022a, Farooq *et al.*, 2022). However, there is a notable gap in scholarly research regarding the influence of GTL on GI, particularly concerning employee-driven mediating factors. Therefore, this study offers fresh theoretical insights within this context.

Fourth, the study employs Bandura's social cognitive theory, which offers a dynamic framework for comprehending employee behavior. This approach considers individual characteristics, environmental influences, and behavioral outcomes. Moreover, SCT blends cognitive, behavioral, and sentimental procedures to explain behavioral changes, providing a foundation for proposing GTL as an environmental variable that interrelates with the GC and GLO of employees to bring about a behavior change that could result in augmented GI. SCT underscores the significance of GC and GLO as cognitive abilities through which the exemplary conduct of GTL leaders inspires employees to foster innovation within the hotel industry. Previous research has highlighted a range of beneficial outcomes associated with the green creativity and learning orientation characteristic of organizations (Farooq *et al.*, 2022, Wang *et al.*, 2020). Our study distinctly examines employees' green learning orientation specifically within the hospitality industry, setting it apart from existing research. Additionally, recent findings unequivocally highlight the potential of GTL to significantly enhance employees' creativity, thereby bolstering their ability to achieve innovation (Begum *et al.*, 2022a). Undoubtedly, our study indicates a robust connection between GTL and the employees' GLO and GC, ultimately resulting in the hotel's GI. This strong relationship further enhances the EP and CGI of hotel organizations.

Finally, our research contributed to the existing literature by extending the natural resource-based view (NRBV) theory articulated by (Hart, 1995). This extension enhances the understanding and elucidation of the determinants influencing GTL, GI, EP, and CGI. The exploration of the NRBV relates to how GTL leverages its organizational competencies and resources to enhance the promotion of GI, EP, and CGI within the hospitality sector. We, therefore, contended that GTL is a vital resource for the hotel organization. Leaders' primary obstacle is recognizing, developing, and utilizing critical resources and competencies (Ahmad *et al.*, 2022). Leaders' primary challenge is identifying, cultivating, and effectively leveraging essential resources and competencies. This involves understanding their employees' strengths and weaknesses and fostering an environment where these resources can be maximized for

organizational success. Leaders are equipped to confront complex challenges and propel their organizations toward attaining sustainable objectives by emphasizing development and the strategic application of resources.

6.2. Managerial implication:

Our study's findings have significant implications for both (a) management practice and (b) education. By utilizing these insights, hotel organizations could refine their strategic approaches. At the same time, educational institutions can enhance their curricula to better equip students for the real-world challenges in tourism and hospitality management. First, regarding management practices, our research findings strongly support the adoption of GTL among hotel employees to enhance GI within the service sector. In the context of ethical and green business practices, hotels must prioritize GTL conduct. This focus ensures that ethical and sustainable considerations take precedence in their operations, fostering trust and integrity within the industry. By aligning their policies and practices with GTL principles, hotels can contribute to a more sustainable and responsible business environment. This approach enhances their reputation and positively impacts their relationships with all the stakeholders (Shah and Soomro, 2023). Thus, luxurious hospitality organizations must prioritize and encourage the implementation of GTL practices by their executives to augment their environmentally friendly initiatives.

Second, we found that implementing GTL practices is crucial for augmenting the green learning orientation and employees' green creativity in the services industries, which acts as a bridge between the two. Executives must regularly evaluate the cultural values upheld by their organization, the level of sustainability knowledge possessed by hotel staff, and the provision of training opportunities to augment employees' comprehension of sustainable practices. Moreover, increasing employees' green creativity requires a substantial investment in resources. By implementing green transformational leadership, organizations can cultivate a culture that boosts ecologically friendly outlook among employees. This can be achieved by dedicating more resources and fostering a shift in the organization's mindset towards environmental fortification. To foster GC among staff members, the hotel organization must integrate green innovation and the notion of green transformational leadership into their overarching environmental strategies. Consequently, the GI will benefit significantly from the

employees' extensive environmental sustainability knowledge and experience (Zhang *et al.*, 2023).

Third, the study's findings also indicate that leaders and managers in the hotel industry ought to recognize green innovation as a strategic asset, leveraging it to fulfill the organization's environmental management objectives effectively. Hotel leaders are encouraged to provide a comprehensive framework of support, resources, open communication, and recognition to inspire employees to engage in innovative thinking concerning environmental challenges and actively participate in green initiatives. This approach fosters a dynamic and sustainable organizational culture where green innovation can thrive, benefiting the organization and society. Furthermore, managers need to recognize that the significance of GI is crucial in shaping a hotel's corporate image. These initiatives can enhance the organization's perception by demonstrating environmental responsibility and adhering to sustainability principles. This commitment improves environmental performance and fosters a strong, positive reputation that resonates with customers, investors, and employees alike. Establishing a robust green image in the current market landscape is essential for achieving long-term success and maintaining competitiveness. Embracing green innovation is crucial for driving EP and CGI within the hospitality sector. By adopting sustainable practices, the industry can enhance its overall operational efficiency, reduce its carbon footprint, and meet consumers' growing demand for eco-friendly services. Investing in green technologies and practices contributes to environmental sustainability and positions businesses to thrive in a competitive market focused on social responsibility. These findings enhance our comprehension of sustainable organizational behavior and broaden our understanding of organizational learning theories about environmental sustainability.

Finally, the findings of this study hold significant implications for the educational sector, particularly concerning sustainability education, leadership development, and organizational behavior. By incorporating principles of sustainability-oriented strategies through GTL, GLO, and GC to achieve GI into academic curricula and training programs, educational institutions can more effectively prepare students to fulfill the demands of the growing green-conscious hospitality industry. This approach will not only enhance the employability and leadership skills of students. However, it will also ensure that the upcoming generation of professionals is well-equipped to advance the sustainability agenda within the tourism and hospitality sectors.

6.3. Research Limitations and Future Direction

The current study delineates several limitations and the future directions for subsequent investigations. First, using a time-lagged research methodology, a comprehensive mediation model was applied to investigate the association between GTL and GI. The experimental design may potentially yield divergent findings in subsequent investigations.

Second, the research was executed at luxurious resort hotels in renowned tourist places across Italy. As a result, exercising caution is crucial when extrapolating our research outcomes. Subsequent investigations should encompass many geographical variables and distinct hotel classifications, considering their magnitude and unique attributes. By participating in such undertakings, the applicability of the results will be increased.

Third, our model was assessed in Italy, a society known for its emphasis on individualism, where the tourism industry is highly vulnerable to the imminent danger presented by climate change (Fermani *et al.*, 2016). Conducting studies in civilizations that prioritize collective values may provide diverse outcomes.

Lastly, the data in this study was gathered from managerial-level employees in the hospitality industry. This choice was made because managers are typically well-informed and trained in implementing sustainable practices within hotels. Future research could consider analyzing dyadic or multilevel data to enhance the understanding of these practices further.

6.4.Conclusions

Adopting GI practices is considered a highly desirable outcome within the hospitality industry. By utilizing the SCT, Bandura (Bandura, 1999), and NRBV (Hart, 1995), implementing GTL within a hotel can foster the development of GLO and GC of employees. This is significantly correlated with the manifestation of organizational GI. The research also identified that EP and CGI are resultant factors of GI. Two studies were conducted in Italy to evaluate theoretical models concerning employees in the hospitality industry. The first study featured a three-wave data collection over two weeks, while the second study utilized a two-wave design with data collected four weeks apart. The research utilized a time-lagged approach and employed structural equation modeling to conduct the analysis. The research findings indicate that enhancing employees' GLO and GC can be effectively facilitated by providing GTL. This enhancement will likely increase GI, subsequently boosting EP and CGI at a hotel.

References

Abdulredha, M., Al Khaddar, R., Jordan, D., Kot, P., Abdulridha, A. & Hashim, K. 2018. Estimating solid waste generation by hospitality industry during major festivals: A quantification model based on multiple regression. *Waste Management,* Vol. 77**,** No. pp. 388-400

Aftab, J., Abid, N., Cucari, N. & Savastano, M. 2023. Green human resource management and environmental performance: The role of green innovation and environmental strategy in a developing country. *Business Strategy and the Environment,* Vol. 32**,** No. 4, pp. 1782-1798

Ahmad, B., Shafique, I., Qammar, A., Ercek, M. & Kalyar, M. N. 2022. Prompting green product and process innovation: Examining the effects of green transformational leadership and dynamic capabilities. *Technology Analysis & Strategic Management,* Vol.**,** No. pp. 1-13.https://doi.org/10.1080/09537325.2022.2071692

Akhtar, M. W., Garavan, T., Javed, M., Huo, C., Junaid, M. & Hussain, K. 2023. Responsible leadership, organizational ethical culture, strategic posture, and green innovation. *The Service Industries Journal,* Vol. 43**,** No. 7-8, pp. 454-474

Akhtar, S., Li, C., Sohu, J. M., Rasool, Y., Hassan, M. I. U. & Bilal, M. 2024. Unlocking green innovation and environmental performance: the mediated moderation of green absorptive capacity and green innovation climate. *Environmental Science and Pollution Research,* Vol. 31**,** No. 3, pp. 4547-4562

Alam, S. & Islam, K. 2021. Examining the role of environmental corporate social responsibility in building green corporate image and green competitive advantage. *International Journal of Corporate Social Responsibility,* Vol. 6**,** No. 1, pp. 1-16

Ali, M. A., Khan, A. Z., Azeem, M. U. & Inam, U. H. 2023. How does environmental corporate social responsibility contribute to the development of a green corporate image? The sequential mediating roles of employees' environmental passion and pro-environmental behavior. *Business Ethics, the Environment & Responsibility,* Vol.**,** No. pp.https://doi.org/10.1111/beer.12539

Amores-Salvadó, J., Martín-De Castro, G. & Navas-López, J. E. 2014. Green corporate image: Moderating the connection between environmental product innovation and firm performance. *Journal of Cleaner Production,* Vol. 83**,** No. pp. 356-365

Anderson, N., Potočnik, K. & Zhou, J. 2014. Innovation and creativity in organizations: A state-of-the-science review, prospective commentary, and guiding framework. *Journal of Management,* Vol. 40**,** No. 5, pp. 1297-1333

Appiah, M., Li, M., Naeem, M. A. & Karim, S. 2023. Greening the globe: Uncovering the impact of environmental policy, renewable energy, and innovation on ecological footprint. *Technological Forecasting and Social Change,* Vol.**,** No. pp.https://doi.org/10.1016/j.techfore.2023.122561

Arici, H. E., Cakmakoglu Arıcı, N. & Altinay, L. 2023. The use of big data analytics to discover customers' perceptions of and satisfaction with green hotel service quality. *Current Issues in Tourism,* Vol. 26**,** No. 2, pp. 270-288

Arici, H. E. & Uysal, M. 2022. Leadership, green innovation, and green creativity: A systematic review. *The Service Industries Journal,* Vol. 42**,** No. 5-6, pp. 280-320

Asadi, S., Pourhashemi, S. O., Nilashi, M., Abdullah, R., Samad, S., Yadegaridehkordi, E., Aljojo, N. & Razali, N. S. 2020. Investigating influence of green innovation on sustainability performance: A case on Malaysian hotel industry. *Journal of cleaner production,* Vol.**,** No. pp.https://doi.org/10.1016/j.jclepro.2020.120860

Ashraf, S. F., Li, C., Wattoo, M. U., Murad, M. & Mahmood, B. 2024. Green horizons: Unleashing green innovation through green business strategies and competencies. *Business Strategy and the Environment,* Vol.**,** No. pp.https://doi.org/10.1002/bse.3696

Aslam, N. & Sahibzada, U. F. 2024. Catalyzing transformational leadership in Chinese hospitality industry – complexity theory perspective: mix method approach. *Leadership & Organization Development Journal,* Vol. 45**,** No. 2, pp. 304-328.10.1108/LODJ-05-2023-0205

Aslam, N., Shi, D. & Sahibzada, U. F. 2024. Combating green innovation in Italian luxury hotels: combination of social cognitive theory and natural resource-based view. *Business Process Management Journal,* Vol.**,** No. pp.https://doi.org/10.1108/BPMJ-07-2023-0518

Awan, F. H., Dunnan, L., Jamil, K. & Gul, R. F. 2023. Stimulating environmental performance via green human resource management, green transformational leadership, and green innovation: a mediation-moderation model. *Environmental Science and Pollution Research,* Vol. 30**,** No. 2, pp. 2958-2976

Awan, U., Nauman, S. & Sroufe, R. 2021. Exploring the effect of buyer engagement on green product innovation: Empirical evidence from manufacturers. *Business Strategy and the Environment,* Vol. 30**,** No. 1, pp. 463-477

Baah, C., Agyabeng-Mensah, Y., Afum, E. & Lascano Armas, J. A. 2024. Exploring corporate environmental ethics and green creativity as antecedents of green competitive advantage, sustainable production and financial performance: empirical evidence from manufacturing firms. *Benchmarking: An International Journal,* Vol. 31**,** No. 3, pp. 990-1008

Bandura, A. 1999. Social cognitive theory: An agentic perspective. *Asian journal of Social Psychology,* Vol. 2**,** No. 1, pp. 21-41

Begum, S., Ashfaq, M., Xia, E. & Awan, U. 2022a. Does green transformational leadership lead to green innovation? The role of green thinking and creative process engagement. *Business Strategy and the Environment,* Vol. 31**,** No. 1, pp. 580-597

Begum, S., Xia, E., Ali, F., Awan, U. & Ashfaq, M. 2022b. Achieving green product and process innovation through green leadership and creative engagement in manufacturing. *Journal of Manufacturing Technology Management,* Vol. 33**,** No. 4, pp. 656-674

Bhutto, T. A., Farooq, R., Talwar, S., Awan, U. & Dhir, A. 2021. Green inclusive leadership and green creativity in the tourism and hospitality sector: Serial mediation of green psychological climate and work engagement. *Journal of Sustainable Tourism,* Vol. 29**,** No. 10, pp. 1716-1737

Chen, X., Chen, Y., Zhang, X. & He, Q. 2023. Green transformational leadership and green innovation in megaprojects: is green knowledge sharing a missing link? *Engineering, Construction and Architectural Management,* Vol.**,** No. pp.https://doi.org/10.1108/ECAM-02-2023-0117

Chen, Y.-S. & Chang, C.-H. 2013. The determinants of green product development performance: Green dynamic capabilities, green transformational leadership, and green creativity. *Journal of Business Ethics,* Vol. 116**,** No. pp. 107-119

Chen, Y.-S., Lai, S.-B. & Wen, C.-T. 2006. The influence of green innovation performance on corporate advantage in Taiwan. *Journal of business ethics,* Vol. 67**,** No. pp. 331-339

Cui, R., Wang, J. & Zhou, C. 2023. Exploring the linkages of green transformational leadership, organizational green learning, and radical green innovation. *Business Strategy and the Environment,* Vol. 32**,** No. 1, pp. 185-199

D'angelo, A. & Presutti, M. 2019. SMEs international growth: The moderating role of experience on entrepreneurial and learning orientations. *International Business Review,* Vol. 28**,** No. 3, pp. 613-624

Dubey, R., Gunasekaran, A. & Ali, S. S. 2015. Exploring the relationship between leadership, operational practices, institutional pressures and environmental performance: A framework for green supply chain. *International Journal of Production Economics,* Vol. 160**,** No. pp. 120-132

Farooq, R., Zhang, Z., Talwar, S. & Dhir, A. 2022. Do green human resource management and self-efficacy facilitate green creativity? A study of luxury hotels and resorts. *Journal of Sustainable Tourism,* Vol. 30**,** No. 4, pp. 824-845

Fermani, A., Crespi, I. & Stara, F. 2016. Sustainable hospitality and tourism at different ages: Women's and men's attitudes in Italy. *Research in Hospitality Management,* Vol. 6**,** No. 1, pp. 83-92

Fong, C.-M. & Chang, N.-J. 2012. The impact of green learning orientation on proactive environmental innovation capability and firm performance. *African Journal of Business Management,* Vol. 6**,** No. 3, pp. 727

Fornell, C. & Larcker, D. F. 1981. *Structural equation models with unobservable variables and measurement error: Algebra and statistics,* Sage CA: Los Angeles, CA, Sage Publications

Fosu, E., Yi, K. & Asiedu, D. 2023. The effect of CSR on corporate social performance: Mediating role of corporate image, green innovation and moderating role of corporate identity. *Corporate Social Responsibility and Environmental Management,* Vol.**,** No. pp. https://doi.org/10.1002/csr.2553

Fosu, E., Yi, K. & Asiedu, D. 2024. The effect of CSR on corporate social performance: Mediating role of corporate image, green innovation and moderating role of corporate identity. *Corporate Social Responsibility and Environmental Management,* Vol. 31**,** No. 1, pp. 69-88

Gu, S. 2022. Green innovation; a way to enhance economic performance of Chinese hotels. *International Journal of Innovation Science,* Vol. 15**,** No. 3, pp. 406-426

Gürlek, M. & Koseoglu, M. A. 2021. Green innovation research in the field of hospitality and tourism: The construct, antecedents, consequences, and future outlook. *The Service Industries Journal,* Vol. 41**,** No. 11-12, pp. 734-766

Ha, N. M., Nguyen, P. A., Luan, N. V. & Tam, N. M. 2024. Impact of green innovation on environmental performance and financial performance. *Environment, Development and Sustainability,* Vol. 26**,** No. 7, pp. 17083-17104

Hair, J. F., Hult, G. T. M., Ringle, C. M., Sarstedt, M. & Thiele, K. O. 2017. Mirror, mirror on the wall: a comparative evaluation of composite-based structural equation modeling methods. *Journal of the Academy of Marketing Science,* Vol. 45**,** No. pp. 616-632

Hair, J. F., Risher, J. J., Sarstedt, M. & Ringle, C. M. 2019. When to use and how to report the results of PLS-SEM. *European business review,* Vol. 31**,** No. 1, pp. 2-24

Hart, S. L. 1995. A natural-resource-based view of the firm. *Academy of Management Review,* Vol. 20**,** No. 4, pp. 986-1014

Hart, S. L. & Dowell, G. 2011. Invited editorial: A natural-resource-based view of the firm: Fifteen years after. *Journal of Management,* Vol. 37**,** No. 5, pp. 1464-1479

He, S., Zhao, W., Li, J., Liu, J. & Wei, Y. 2023. How environmental leadership shapes green innovation performance: A resource-based view. *Heliyon,* Vol. 9**,** No. 7, pp.https://doi.org/10.1016/j.heliyon.2023.e17993

Huang, L., Guo, Z., Deng, B. & Wang, B. 2023. Unlocking the relationship between environmentally specific transformational leadership and employees' green behaviour: A cultural self-representation perspective. *Journal of Cleaner Production,* Vol.**,** No. pp.https://doi.org/10.1016/j.jclepro.2022.134857

Hui, Z., Khan, N. A. & Akhtar, M. 2024. AI-based virtual assistant and transformational leadership in social cognitive theory perspective: a study of team innovation in construction industry. *International Journal of Managing Projects in Business,* Vol.**,** No. pp. https://doi.org/10.1108/IJMPB-10-2023-0241

Idrees, H., Xu, J., Andrianarivo Andriandafiarisoa Ralison, N. A. & Kadyrova, M. 2023. Does leadership and management support facilitate green knowledge acquisition and green innovation: a moderated mediation approach. *Business Process Management Journal,* Vol. 29**,** No. 4, pp. 1249-1276

Janjua, N. A., Shi, D. & Sahibzada, U. F. 2024. Harnessing green innovation via green transformational leadership in Italian luxury hotels: Key strategic takeaways. *International Journal of Hospitality Management,* Vol. 120**,** No. pp.https://doi.org/10.1016/j.ijhm.2024.103739

Khalil, N., Che Abdullah, S. N., Haron, S. N. & Hamid, M. Y. 2024. A review of green practices and initiatives from stakeholder's perspectives towards sustainable hotel operations and performance impact. *Journal of Facilities Management,* Vol. 22**,** No. 4, pp. 653-682

Khan, M. M., Mubarik, M. S. & Islam, T. 2021. Leading the innovation: role of trust and job crafting as sequential mediators relating servant leadership and innovative work behavior. *European Journal of Innovation Management,* Vol. 24**,** No. 5, pp. 1547-1568

Khanra, S., Kaur, P., Joseph, R. P., Malik, A. & Dhir, A. 2022. A resource-based view of green innovation as a strategic firm resource: Present status and future directions. *Business Strategy and the Environment,* Vol. 31**,** No. 4, pp. 1395-1413

Kim, Y. J., Kim, W. G., Choi, H.-M. & Phetvaroon, K. 2019. The effect of green human resource management on hotel employees' eco-friendly behavior and environmental performance. *International Journal of Hospitality Management,* Vol. 76**,** No. pp. 83-93.https://doi.org/10.1016/j.ijhm.2018.04.007

Kock, N. 2015. Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration (ijec),* Vol. 11**,** No. 4, pp. 1-10

Kock, N. & Hadaya, P. 2018. Minimum sample size estimation in PLS-SEM: The inverse square root and gamma-exponential methods. *Information systems journal,* Vol. 28**,** No. 1, pp. 227-261

Kratzer, J., Meissner, D. & Roud, V. 2017. Open innovation and company culture: Internal openness makes the difference. *Technological Forecasting and Social Change,* Vol. 119**,** No. pp. 128-138

Lagioia, G., Amicarelli, V., Strippoli, R., Bux, C. & Gallucci, T. 2024. Sustainable and circular practices in the hotel industry in Southern Italy: Opportunities, barriers and trends in food waste management. *British Food Journal,* Vol. 126**,** No. 1, pp. 428-452

Lee, C., Pung, J. M. & Del Chiappa, G. 2022. Exploring the nexus of tradition, modernity, and innovation in restaurant SMEs. *International Journal of Hospitality Management,* Vol. 100**,** No. pp.https://doi.org/10.1016/j.ijhm.2021.103091

Lee, K.-W. & Tseng, Y.-F. 2024. Driving the dual learning process of management knowledge: A social cognitive theory perspective. *The International Journal of Management Education,* Vol. 22**,** No. 1, pp.https://doi.org/10.1016/j.ijme.2024.100940

Li, W., Bhutto, T. A., Xuhui, W., Maitlo, Q., Zafar, A. U. & Bhutto, N. A. 2020. Unlocking employees' green creativity: The effects of green transformational leadership, green intrinsic, and extrinsic motivation. *Journal of Cleaner Production,* Vol.**,** No. pp.https://doi.org/10.1016/j.jclepro.2020.120229

Lowry, P. B. & Gaskin, J. 2014. Partial least squares (PLS) structural equation modeling (SEM) for building and testing behavioral causal theory: When to choose it and how to use it. *IEEE transactions on professional communication,* Vol. 57**,** No. 2, pp. 123-146

Martinez, P. 2015. Customer loyalty: Exploring its antecedents from a green marketing perspective. *International Journal of Contemporary Hospitality Management,* Vol. 27**,** No. 5, pp. 896-917

Mehmood, K., Jabeen, F., Rashid, M., Alshibani, S. M., Lanteri, A. & Santoro, G. 2024. Unraveling the transformation: the three-wave time-lagged study on big data analytics, green innovation and their impact on economic and environmental performance in manufacturing SMEs. *European Journal of Innovation Management,* Vol.**,** No. pp.

Nunnally, J. C. 1967. Assessment of reliability. *Psychometric Theory,* Vol.**,** No. pp. 206-235

Pacheco, L. M., Alves, M. F. R. & Liboni, L. B. 2018. Green absorptive capacity: A mediation-moderation model of knowledge for innovation. *Business Strategy the Environment*

Vol. 27**,** No. 8, pp. 1502-1513

Pham, H. T., Pham, T., Truong Quang, H. & Dang, C. N. 2023. Impact of transformational leadership on green learning and green innovation in construction supply chains. *Engineering, Construction and Architectural Management,* Vol. 30**,** No. 5, pp. 1883-1901

Podsakoff, P. M., Mackenzie, S. B., Lee, J.-Y. & Podsakoff, N. P. 2003. Common method biases in behavioral research: a critical review of the literature and recommended remedies. *Journal of Applied Psychology,* Vol. 88**,** No. 5, pp. 879

Prakash, S., Sharma, V. P., Singh, R. & Vijayvargy, L. 2023. Adopting green and sustainable practices in the hotel industry operations-an analysis of critical performance indicators for improved environmental quality. *Management of Environmental Quality: An International Journal,* Vol. 34**,** No. 4, pp. 1057-1076

Rafique, M. A., Hou, Y., Chudhery, M. a. Z., Waheed, M., Zia, T. & Chan, F. 2022. Investigating the impact of pandemic job stress and transformational leadership on innovative work behavior: The mediating and moderating role of knowledge sharing. *Journal of Innovation & Knowledge,* Vol.**,** No. pp.https://doi.org/10.1016/j.jik.2022.100214

Rasheed, M. I., Hameed, Z., Kaur, P. & Dhir, A. 2023. Too sleepy to be innovative? Ethical leadership and employee service innovation behavior: A dual-path model moderated by sleep quality. *Human Relations,* Vol.**,** No. pp.https://doi.org/10.1177/00187267231163040

Ringle, C. M. 2005. SmartPLS 2.0 (M3). *http://www. smartpls. de,* Vol.**,** No. pp.

Şengüllendi, M. F., Bilgetürk, M. & Afacan Fındıklı, M. 2023. Ethical leadership and green innovation: the mediating role of green organizational culture. *Journal of Environmental Planning and Management,* Vol.**,** No. pp. 1-22.https://doi.org/10.1080/09640568.2023.2180347

Shah, N. & Soomro, B. A. 2023. Effects of green human resource management practices on green innovation and behavior. *Management Decision,* Vol. 61**,** No. 1, pp. 290-312

Sharma, D. & Sharma, M. 2024. Exploring the mediating effect of intellectual capital on the relationship between ethical leadership and innovative performance. *Business Process Management Journal,* Vol.**,** No. pp.https://doi.org/10.1108/BPMJ-02-2024-0093

Sharma, R. 2023. Hospitality sustainable practices, a global perspective. *Worldwide Hospitality and Tourism Themes,* Vol. 15**,** No. 3, pp. 212-219

Shehzad, M. U., Zhang, J., Dost, M., Ahmad, M. S. & Alam, S. 2024. Knowledge management enablers and knowledge management processes: a direct and configurational approach to stimulate green innovation. *European Journal of Innovation Management,* Vol. 27**,** No. 1, pp. 123-152

Shmueli, G., Ray, S., Estrada, J. M. V. & Chatla, S. B. 2016. The elephant in the room: Predictive performance of PLS models. *Journal of business Research,* Vol. 69**,** No. 10, pp. 4552-4564

Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J.-H., Ting, H., Vaithilingam, S. & Ringle, C. M. 2019. Predictive model assessment in PLS-SEM: guidelines for using PLSpredict. *European journal of marketing,* Vol. 53**,** No. 11, pp. 2322-2347

Singh, S., Fl, O., Db, P. & Bi, S. 2019. Innovation in the main Brazilian business sectors: characteristics, types and comparison of innovation. *Journal of Knowledge Management,* Vol. 23**,** No. 1, pp. 135-175.https://doi.org/10.1108/JKM-03-2018-0159

Singh, S. K., Del Giudice, M., Chierici, R. & Graziano, D. 2020. Green innovation and environmental performance: The role of green transformational leadership and green human resource management. *Technological Forecasting and Social Change,* Vol.**,** No. pp.https://doi.org/10.1016/j.techfore.2019.119762

Sun, Y., Gao, P., Tian, W. & Guan, W. 2023. Green innovation for resource efficiency and sustainability: Empirical analysis and policy. *Resources Policy,* Vol.**,** No. pp.https://doi.org/10.1016/j.resourpol.2023.103369

Tanveer, M. I., Yusliza, M. Y., Ngah, A. H. & Khan, M. a. K. 2023. Mapping the link between CSR and sustainability performance through GHRM practices in hotel industry. *Journal of Cleaner Production,* Vol. 429**,** No. pp.https://doi.org/10.1016/j.jclepro.2023.139258

Tian, H., Han, J., Sun, M. & Lv, X. 2023. Keeping pace with the times: research on the impact of digital leadership on radical green innovation of manufacturing enterprises. *European Journal of Innovation Management,* Vol.**,** No. pp.https://doi.org/10.1108/EJIM-11-2022-0647

Volberda, H. W., Van Der Weerdt, N., Verwaal, E., Stienstra, M. & Verdu, A. J. 2012. Contingency fit, institutional fit, and firm performance: A metafit approach to organization–environment relationships. *Organization Science,* Vol. 23**,** No. 4, pp. 1040-1054

Wang, J., Xue, Y., Sun, X. & Yang, J. 2020. Green learning orientation, green knowledge acquisition and ambidextrous green innovation. *Journal of Cleaner Production,* Vol. 250**,** No. pp.https://doi.org/10.1016/j.jclepro.2019.119475

Zameer, H., Wang, Y., Yasmeen, H. & Mubarak, S. 2022. Green innovation as a mediator in the impact of business analytics and environmental orientation on green competitive advantage. *Management Decision,* Vol. 60**,** No. 2, pp. 488-507

Zhang, H., Gao, S. & Zhou, P. 2023. Role of digitalization in energy storage technological innovation: Evidence from China. *Renewable and Sustainable Energy Reviews,* Vol. 171**,** No. pp.https://doi.org/10.1016/j.rser.2022.113014

Zhang, Y., Sun, J., Yang, Z. & Wang, Y. 2020. Critical success factors of green innovation: Technology, organization and environment readiness. *Journal of Cleaner Production,* Vol.**,** No. pp.https://doi.org/10.1016/j.jclepro.2020.121701