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Micro-Foundations of Macro Sustainability: How Green HRM and Employee Behaviors Lead to Corporate Sustainable Performance in Hospitality SMEs

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	Abstract
Naseer Ahmad Visiting Faculty, Department of Commerce and Finance, GCU Lahore Email: naseer.ahmad@gcu.edu.pk Ali Raza GC University Lahore, Pakistan Ali Raza Elahi* In-Charge, Department of Commerce and Finance, GC University Lahore, Pakistan Waqas Khan GC University Lahore, Pakistan Email: waqas.khan@gcu.edu.pk Muhammad Waleed Research Scholar, Department of Commerce and Finance, GC University Lahore, Pakistan	Purpose: This study aims to investigate the internal behaviour mechanisms needed to transform environmental policies to multi-dimensional organizational outcomes. This study seeks to answer the question: How Green Human Resource Management (GHRM) affects Corporate Sustainable Performance (CSP) when mediated by Employee Pro-Environmental Behavior (PEB) and moderated by Green Transformational Leadership (GTL) by combining Ability-Motivation-Opportunity (AMO) theory and the Natural Resource-Based View (NRBV). Design/Methodology/Approach: Quantitative, cross-sectional design was used. The primary survey data was collected from the operational and supervisory employees of the SMEs in the hospitality sector of Pakistan through the process of purpose sampling. The variance-based partial least squares structural equation modeling (PLS-SEM) using Smart PLS 3 software was used for the complex moderated mediation pathways. Findings: The empirical results show that there is a positive impact of GHRM on PEB and PEB also positively and significantly impacts on CSP. Moreover, PEB plays a key role in the relationship between GHRM and CSP and is a key micro-foundational link. What is worth noting is that, the final structural model shows that there is a negative moderation effect between PEB and CSP by the variable GTL, thus suggesting a buffering role of GTL to the relationship between PEB and CSP; it means strong green leadership is a structural buffer which decreases the reliance of the firm's environmental performance on individual and unsystematic actions of each employee. Theoretical implications: It extends the AMO and NRBV frameworks, so it does not only move towards sustainability literature but also towards the bridging of the micro – macro divide. It differs from the GHRM domain through a unique approach of green transformational leadership as a stabilizer of the system instead of just a motivational accelerator. Practical implications: HR & sustainability managers in SMEs in the hospitality sector should implement structured GHRM systems in conjunction with leadership development. A strong green leadership environment helps to maintain corporate sustainability objectives in the face of the every-day ups and downs in employee voluntary actions. These insights can be used by policy makers to develop environmental compliance frameworks for SMEs. Originality/Value: This study proposes a new moderated mediation model by incorporating GHRM, PEB, GTL, and CSP in the context of the hospitality SMEs in Pakistan, which is a field requiring little research and resources. The buffering effect of environmental leadership unveils a quite novel view on how to create sustainable companies in the long run.
Keywords:	Corporate Sustainable Performance, Employee Pro-Environmental Behavior, Green Human Resource Management, Green Transformational Leadership, Hospitality SMEs, PLS-SEM



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Introduction

This modern business environment is grappling with unprecedented challenges related to rapidly changing climate conditions, deteriorating environmental conditions and rising stakeholder demands for Environmental, Social and Governance (ESG) frameworks (Pirzada et al., 2023; Hashim et al., 2026). Thus, under high institutional and market pressure, today's institutions and companies have had to move from classic economic models to powerful, comprehensive corporate sustainability strategies. In this paradigm, corporate sustainability is no longer perceived as a side-line 'compliance' need or a 'public relations' stunt but a central strategic imperative that is critical for creating a sustainable competitive advantage and survival for the organization (Pirzada et al., 2023). By including sustainable principles in the broader business models, companies can make a systematic effort to reduce their ecological impacts and also meet the multi-stakeholder needs in today's turbulent global economy. In order to be able to implement these overarching strategic goals, organisations have to mobilise its internal human resources and HRM can play a pivotal role in changing the environment. Green Human Resource Management (GHRM) has become a crucial strategic tool to connect corporate human resource management with environmental performance goals (Aggarwal & Agarwala, 2023; Huang et al., 2024). The systematic implementation of green practices like green recruitment, green training, green evaluation, green incentives and employee involvement are used to achieve this alignment. These integrated practices, instead of being stand-alone administrative measures, are crucial from a strategic perspective as they integrate the environment into the organizational fabric (Aggarwal & Agarwala, 2023). GHRM is a systematic approach that transforms macro level sustainability goals into operational, micro level organizational capabilities through changes in the capability and motivation of the workforce.

Yet, although the importance of GHRM from a strategic perspective is gaining increasing attention in the literature, the internal behavioral processes underlying the successful linkage of GHRM through to broader sustainable performance remain under-researched. This literature gap speaks into a critical behavioral 'missing link' as institutional green policies are based on the premise of individual execution, while macro-organizational performance measures tend to neglect individual agency (Kakar & Khan, 2022). Employee Pro-Environmental Behavior (PEB) is the basic mechanism that connects this gap, as it incorporates both of the activities, namely, prescribed in-role eco-friendly activities and discretionary (voluntary) workplace green activities (Khalid et al., 2022). Since formal structural policies can never foresee all the different ecological contingencies, employee voluntary 'green acts' are the necessary behavioral force behind the formal policy, which brings them to fruition as realized sustainability activities. In essence, GHRM creates the structural foundations to achieve it, but how effective it can be is largely contingent on leadership issues in context that can either enable or limit the extent to which it can impact organizations. This behavioral framework has important boundary conditions such as Green Transformational Leadership (GTL) (Al-Romeedy & El-Sisi, 2024; Nguyen et al., 2024). Environmentally-focused managers are strategic catalysts who communicate an inspiring green vision, energise those who report to them to get past their self-interest and actively support them to translate formal HR requirements into green action. Furthermore, GTL serves as an essential contextual element, offering the ideological motivation and enabling psychological atmosphere to fully harness the behavioral and performance benefits of green structural arrangements (Al-Romeedy & El-Sisi, 2024).

However, the importance of GHRM from a strategic perspective is gaining increasing attention in the literature, the internal behavioral processes underlying the successful linkage of GHRM through to broader sustainable performance remain under-researched. This literature gap speaks into a critical behavioral 'missing link' as institutional green policies are based on the premise of individual execution, while macro-organizational performance measures tend to neglect individual agency (Kakar & Khan, 2022). Employee Pro-Environmental Behavior (PEB) is the basic mechanism that connects this gap, as it incorporates both of the activities, namely, prescribed in-role eco-friendly activities and discretionary (voluntary) workplace green activities (Khalid et al., 2022). Since formal structural policies can never foresee all the different ecological contingencies, employee voluntary 'green acts' are the necessary behavioral force behind the formal policy, which brings them to fruition as realized sustainability activities. In essence, GHRM creates the structural foundations to achieve it, but how effective it can be is largely contingent on leadership issues in context that can either enable or limit the extent to which it can impact organizations. This behavioral framework has important boundary conditions such as Green Transformational Leadership (GTL) (Al-Romeedy & El-Sisi, 2024; Nguyen et al., 2024). Environmentally-focused managers are strategic catalysts who communicate an inspiring green vision, energise those who report to them to get past their self-interest and actively support them to translate formal HR requirements into green action. Furthermore, GTL serves as an essential contextual element, offering the ideological motivation and enabling psychological atmosphere to fully harness the behavioral and performance benefits of green structural arrangements (Al-Romeedy & El-Sisi, 2024).

A review of the literature indicates there are a number of key areas for which there is a lack of information. First, there is a clear lack of knowledge since most previous empirical studies have focused on direct linear relationships, and the behavioural mechanisms remain largely unknown. Second, there is a theoretical gap; the Ability-Motivation-Opportunity (AMO) theory and the Natural Resource-Based View (NRBV) are few and far between in being integrated into one single theory to explain the full micro to macro sustainability pathway. Third, an obvious gap in current frameworks is that these frameworks were largely developed in big companies in larger countries, leaving out small- and medium-sized enterprises (SMEs) in developing countries, including Pakistan's highly competitive and eco-sensitive hospitality industry, largely under-researched (Hashim et al., 2026; Umrani et al., 2022). Finally, a methodological gap exists, in that many of the models used rely on a simple linear or single relationship. A variance-based structural equation modeling (PLS-SEM) using the software Smart-PLS overcomes this shortcoming by being able to assess a complex moderated mediation model in a more rigorous way regarding multi-layered structural interactions and non-linear dynamics. This paper presents several ground-breaking findings that contribute to the global sustainability literature. This research combines GHRM, employee PEB, GTL and corporate sustainable performance together with a comprehensive framework, which offers a comprehensive perspective of modern environmental management. It serves to further the domain and to extend AMO theory and NRBV simultaneously, thereby showing micro level capability at the behavioural level translating to macro level strategic resource. Empirically, it provides strong primary survey evidence from the hospitality SMEs in an under studied developing country context (South Asia) (Umrani et al., 2022). Finally, there are implications for theory and management practice that are relevant to organisations around the world that are concerned with sustainability issues. The current study is designed to examine Green Human Resource Management's impact on Corporate Sustainable Performance mediated by Employee Pro-Environmental Behavior and mediated by Green Transformational Leadership with the context of hospitality SMEs, Pakistan. It is hoped that the integrated inquiry will provide important inputs into the existing sustainability theory and managerial practice in developing economies.

Literature Review

In today's world of climate change, sustainability has gone from an optional moral philosophy to an essential model for organizational sustainability that is necessary for gaining a long-term competitive edge. In the current regulatory landscape, firms need to build internal capabilities not reactive compliance frameworks, in order to adapt to the changing regulatory requirements and growing multi-stakeholder green expectations. Therefore, Green Human Resource Management (GHRM) is a very important strategic capacity, which connects eco-oriented goals to institutional processes. The scholarly discussion of recent years emphasizes a structural change, getting strategic alignment instead of individual operational measures such as simple paperless targets. Through such strategies as integrating environmental goals into recruitment, training, appraisals, and incentives, GHRM can proactively build an environmentally aware workforce to implement green organizational strategies (Aggarwal & Agarwala, 2023; Huang et al., 2024; Umrani et al., 2022). Organizational policies are essential institutional frameworks at the macro level, but in order to implement them, one must also rely on the micro level basis of human



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behaviour. As the main behavioral mechanism in the process of formal environmental strategies to actual operational practices, employee Pro-Environmental Behavior (PEB) is used. The literature distinguishes between two types of green behaviours: mandatory and in-role and discretionary and voluntary; and the latter are considered as important because some contingencies cannot be foreseen in everyday environmental situations by the rigid corporate rules. While recent studies have demonstrated that voluntary programs have a significant impact on reducing waste and improving resource efficiency, there are also some inconsistencies in how consistently voluntary individual actions are activated in different cultural contexts through the use of a top-down HR system (Kakar & Khan, 2022; Khalid et al., 2022; Mirahsani et al., 2024).

Without a conducive framework of leadership, which creates psychological safety and purpose, structural HR practices alone are not enough to ensure environmental commitment. Green Transformational Leadership (GTL) will help resolve the need by functioning as an essential contextual catalyst which can shift employee motivation and attitudes. Green leaders who are aware of the environment and want to do their part to protect it engage their staff by communicating a clear green vision, role-modeling environmentally responsible actions, and empowering employees to challenge the standard, resource-heavy practices. The literature on the relationship between GTL and performance outcomes is inconclusive, with some studies suggesting that it is directly related to performance outcomes while others consider it more as a boundary condition that triggers or reinforces already established green HR mechanisms (Al-Romeedy & El-Sisi, 2024; He et al., 2024; Nguyen et al., 2024). Corporate Sustainable Performance is based on the classical Triple Bottom Line approach which requires optimization of environmental, social and economic outcomes simultaneously and in a balanced manner. But for sustainable performance, organisations need to take steps to minimise ecological harm, enhance social equity and maintain economic viability. In the past, these three dimensions have been often considered as paradoxes by traditional management models, but recent research shows that the internal environmental capabilities can in synergy support economic resilience and social legitimacy. However, there is a significant lack of research into understanding the interplay between internal human and behavioural capabilities that produce balanced performance across all three dimensions (Hashim et al., 2026; Pirzada et al., 2023; Umrani et al., 2022). While there is a growing body of research that focuses on either GHRM, employee PEB or GTL or sustainable performance, there is a lack of a holistic framework that combines these variables. The existing literature is plagued with knowledge, theoretical, contextual and methodological gaps. Existing researches have hardly ever integrated Ability-Motivation-Opportunity (AMO) theory and Natural Resource-Based View (NRBV) at the theoretical level, which combines individual-level mechanisms with firm-level strategic views. Empirically, the research is largely skewed toward large businesses in Western countries, and a highly competitive and resource-constrained hospitality small and medium enterprises (SMEs) in developing countries, such as Pakistan, has been under researched. Methodologically, the use of simple direct effects is an over-simplification of the dynamics of the workplace. This study aims to overcome these drawbacks by creating an integrated and moderated mediation model that traces the entire micro-to-macro sustainability pathway (Hashim et al., 2026; Kakar & Khan, 2022; Umrani et al., 2022).

Theoretical Foundation and Hypotheses Development

This study combines Ability-Motivation-Opportunity (AMO) theory as the micro-foundational theory, and Natural Resource-Based View (NRBV) theory as the macro-strategic theory to systematically assess the structural pathways between organizational practices and sustainability outcomes. The AMO theory is a model that proposes that employee performance directly depends on three main factors: employee abilities, employee attitudes, and opportunities provided by the work environment (Appelbaum et al., 2000; Boxall & Purcell, 2011). AMO theory offers an ideal lens through which to view the formal institutional policies to individual action relationship in environmental management literature. In particular, Green Human Resource Management (GHRM) is the foundation internal mechanism that can be used to develop green skills through green recruitment and training, green motivation through green performance evaluation and reward system, and green opportunities through green empowerment and participation of employees (Aggarwal & Agarwala, 2023; Huang et al., 2024).

However, the NRBV moves beyond the traditional resource-based view and suggests that a firm's competitive advantage over the long-term is greatly influenced by its ability to develop capabilities to address the natural environment (Hart, 1995; Hart & Dowell, 2011). The NRBV paradigm sees the company's sustainable performance in economic, environmental and social spheres as the result of the company's internal resources being valuable, rare, inimitable and non-substitutable. In this study, systematic implementation of GHRM, and the accumulation of employee pro-environmental behaviour are intangible assets, and socially complex, and cannot be easily replicated by rivals (Umrani et al., 2022). This study combines both theories to effectively overcome the micro-macro divide: AMO theory provides the explanation for the individual behavioral changes that occur as a result of HR practice, and NRBV presents the pathway through which these micro-level changes in behavior accumulate into strategic organizational capabilities that lead to multi-dimensional sustainable performance (Hashim, et al., 2026; He, et al., 2024).

Green Human Resource Management and Employee Pro-Environmental Behavior

The strategic application of GHRM practices directly leads to the behavior repertoire of employees by shaping the operational environment in a way that is ecologically friendly. The process of green recruitment and selection involves inviting and hiring staff who embody a firm commitment to environmental protection, thus establishing a basic level of green expertise (Aggarwal & Agarwala, 2023). Moreover, green training programs can provide extensive training for employees on the technical knowledge needed to reduce resource waste, and green performance evaluation and incentives can provide strong motivational stimuli to support green compliance (Anwar et al., 2020; Huang et al., 2024). Lastly, employee participation in the process ensures the workplace has the autonomy they need, and that they are given the chance to come up with local eco-solutions. From the AMO point of view, such integrated practices gradually nurture the capacity, desire, and opportunity of individuals to participate in both role prescribed and voluntary eco-initiatives (Kakar & Khan, 2022; Khalid et al., 2022; Mirahsani et al., 2024). In Small and medium sized enterprises in Pakistan (SMEs) in the hospitality sector, where formal environmental regulations are sometimes limited due to resource constraints, GHRM is a very important structural infrastructure that facilitates the employees to freely demonstrate eco-centric actions. Therefore, we propose:

H1: Green Human Resource Management positively influences Employee Pro-Environmental Behavior.

Green Human Resource Management and Corporate Sustainable Performance

An interest in the direct relationship between institutional GHRM frameworks and macro-level corporate sustainable performance has been growing, however, with very fragmented and inconsistent empirical findings. Others record a positive correlation directly, as green hiring, training and incentive programs, when formally set up, provide an immediate structural pathway to better compliance and less resource use (Aggarwal & Agarwala, 2023; Nguyen et al., 2024). Other scholars argue that employees must buy into the HR policies and that they should create a cultural shift to make them superior to the sustainability outcomes, if they do not do so, they are simply administrative constructs (He et al., 2024; Kakar & Khan, 2022). GHRM is a strategic signal from an NRBV and AMO perspective and constitutes the basis for setting up goals, creating green



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infrastructure and has a direct influence on operational efficiency. This structure provides the basis for developing environmental, economic and social performance indicators for the firm, especially in competitive developing markets. We thus formulate the following hypothesis:

H2: Green Human Resource Management positively influences on Corporate Sustainable Performance.

Employee Pro-Environmental Behavior and Corporate Sustainable Performance

Passive environmental guidelines of the company, if effective, become concrete results within the organization, and the main behavioral force that facilitates that is the employee Pro-Environmental Behavior (PEB). Discretionary green behaviors, like using less or no paper, saving energy, water conservation, and recycling operational materials, have a direct impact on reducing the firm's operational costs and ecological footprint (Fawehinmi et al., 2024; Khalid et al., 2022). The NRBV sees these collective discretionary activities become a tacit, implicit organizational skill which is path dependent and hard to imitate by rivals (Hart & Dowell, 2011). In addition to environmental advantages, these behavioural resources also have a positive impact on the social aspect of performance by improving the corporate image among green consumers and the local community, and providing economic benefits by reducing material and utility costs (Hashim et al., 2026; Umrani et al., 2022). In the service sector with many customer-employee contacts, such as in the hotel and tourism industry, the voluntary commitment of employees to environmental protection plays a crucial role in improving triple bottom line performance. Thus, we hypothesize:

H3: Employee Pro-Environmental Behavior positively influences Corporate Sustainable Performance.

Mediating Role of Employee Pro-Environmental Behavior

Recent studies have pointed to the importance of studying underlying behavioral mediators to explain the inconsistencies in the direct link between GHRM and performance. This study on the importance of GHRM is based on the integrated AMO-NRBV framework, which suggests that GHRM is not a vacuum phenomenon, but should be viewed within the context of its effects on employee behavior. Although, the ability motivation opportunity structures are created through GHRM, these formal structures serve as antecedents that encourage the human capital resources accumulation (Kakar & Khan, 2022; Khalid et al., 2022). The critical intermediate link that makes administration policies work in the strategic action of the workplace is employee PEB. Formal HR practices are merely inactive administrative requirements that do not enable the achievement of sustainable competitive advantages without engaging individual and collective green behaviors (Anwar et al., 2020; Umrani et al., 2022). In this context, PEB is the micro-foundational link that makes macro-HR investments to balanced environmental, social and economic outcomes especially under the flexible and organic patterns of operational models that are prevalent in hospitality SMEs. Hence, we hypothesize:

H4: Employee Pro-Environmental Behavior mediates the relationship between Green Human Resource Management and Corporate Sustainable Performance.

Green Transformational Leadership: Moderating Role

While GHRM frameworks provide the structural parameters of environmental action, the capacity in turn to trigger pro-environmental behaviours is very much dependent on the surrounding leadership context. Green Transformational Leadership (GTL) plays an important role as a contextual moderator which interacts with and reinforces formal HR practices. Environmentally oriented leaders who are transformational are able to inspire their subordinates by articulating an evocative green vision, through the use of personal environmental engagement, and offering individualized support (Al-Romeedy & El-Sisi, 2024; Nguyen et al., 2024). Employees' psychological attachment to firm's green commitments is significantly enhanced when there is a strong alignment between the official GHRM practices and the authentic practices of leaders (He et al., 2024; Mirahsani et al., 2024). GTL enhances the motivational and opportunity aspects of GHRM by fostering a supportive climate in the workplace that encourages employees to go beyond mere compliance and adopt voluntary green practices. Because the style of leadership has a direct impact on the day-to-day culture of the organisation in the hospitality SMEs, the introduction of a 'green transformational leader' can be said to maximize the behavioral returns on the GHRM investments. Thus, we propose:

H5: Green Transformational Leadership positively moderates the relationship between Green Human Resource Management and Employee Pro-Environmental Behavior.

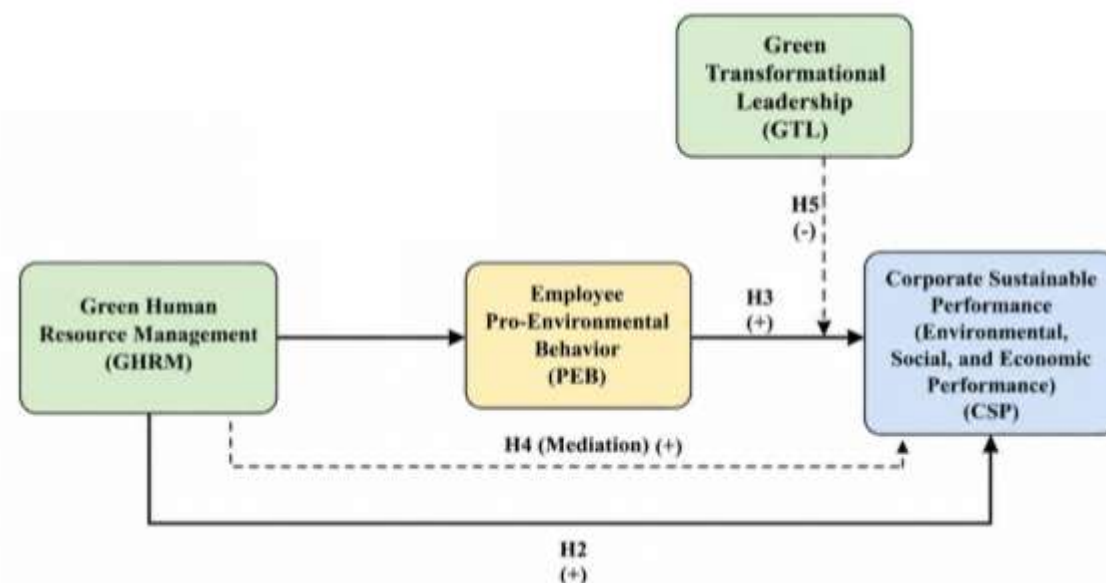


Figure 1: Conceptual Framework

Research Methodology

The study used a quantitative and explanatory research approach with a cross-sectional survey method of primary data collection. This design seems to fit very well the research question of investigating causal-predictive relationships among multiple latent constructs simultaneously by the PLS-SEM. Considering that this study examines the effect of formal organizational architectures on changing behaviors and the subsequent firm performance, a cross-sectional explanatory type of research is an appropriate setting to test the



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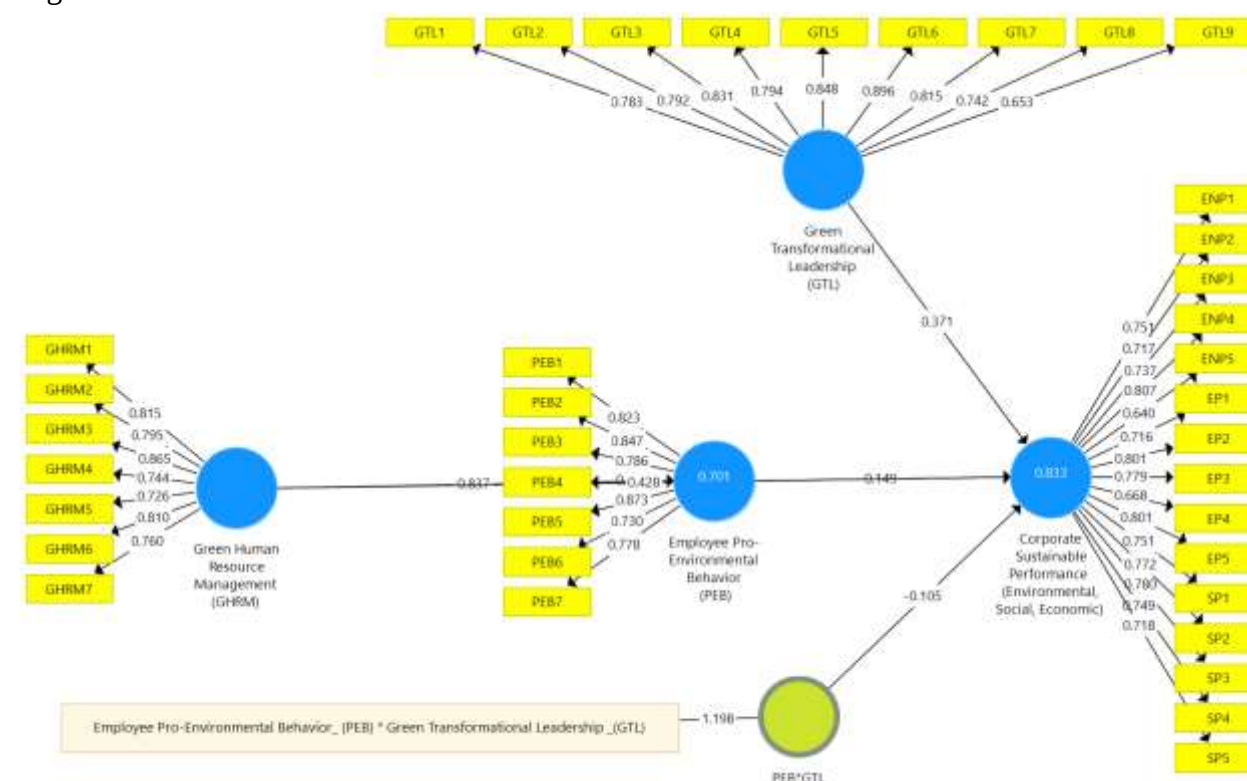
proposed moderated mediation mechanisms in the field of corporate sustainability research. The empirical scope of this study was small and medium sized enterprises (SMEs) in the field of Hospitality in Pakistan. The target population were full time operational and supervisory staffs assigned in these hospitality SMEs. In Pakistan, no comprehensive and centralized sampling frame of the population (hospitality SME workers) exists; a non-probability purposive sampling technique was therefore used. This approach enabled the identification of respondents with firsthand experience of the day-to-day activities and also have a reasonable period of time in the job (at least 3 year) to measure their organization's human resource practices and leadership styles. The minimum sample size requirements were confirmed according to the structural complexity criteria proposed by Hair et al. (2022), which were statistically adequate to measure the moderated mediation paths leading to the endogenous performance constructs. The seven items (GHRM1–GHRM7) were used to trace the Green Human Resource Management (GHRM). Employee Pro-Environmental Behavior (PEB) was assessed through a 7-item scale which included role-prescribed and discretionary eco-initiatives at the workplace (PEB1 – PEB7). Green Transformational Leadership (GTL) was measured using a nine-item scale which mapped out leader-driven environmental inspirational (GTL1-GTL9). Finally, Corporate Sustainable Performance was modeled as an overall construct with 15 items representing environmental performance (ENP1-ENP5), economic performance (EP1-EP5), and social performance (SP1-SP5).

Result Analysis

Measurement Model Assessment

The general model shown in Figure 1 represents the structure configuration and shows the direct loadings to the outer variables, along with the variance explained (R^2). GHRM acts as the main exogenous factor and has a high structural correlation (0.837) with the first endogenous mediator PEB. However, PEB explains a large part of the variance ($R^2=0.701$). Finally, the first multi-dimensional target construct, Corporate Sustainable Performance, is predicted exceptionally well with an R^2 of 0.833, directly by GTL (0.371), and PEB (0.149), and indirectly by the interaction path PEB*GTL (-0.105). This configuration highlights the solid predictive capacity of the comprehensive framework.

Figure 2: Measurement Model Assessment



Variables	Cronbach's Alpha	rho_A	Composite Reliability	AVE
Corporate Sustainable Performance (Environmental, Social, Economic)	0.943	0.945	0.950	0.558
Employee Pro-Environmental Behavior_ (PEB)	0.901	0.906	0.922	0.630
Green Human Resource Management_(GHRM)	0.898	0.900	0.920	0.622
Green Transformational Leadership _(GTL)	0.927	0.929	0.940	0.636
PEB*GTL	1.000	1.000	1.000	1.000

Table 1: Construct Reliability and Validity

Before examining the structural pathways and the proposed direct and indirect pathways, a careful evaluation of the measurement model was carried out to ensure construct reliability and convergence. To determine internal consistency of the latent constructs, indicator configurations such as Cronbach's alpha, Dijkstra-Henseler's rho_A and Composite Reliability (CR) were assessed following the classical psychometric criteria outlined in Hair et al. (2022). These verification procedures are used to reduce the influence of random errors and provide sufficient stability of the measurement scales across the sample matrix when the scales are operationalized.

Empirical results for the items shown in Table 1 indicate that all internal consistency values are easily greater than the widely accepted academic threshold of 0.70. Indeed, the Cronbach's alpha ranges from 0.898 for Green Human Resource Management (GHRM) to 0.943 for Corporate Sustainable Performance (CSP) and Composite Reliability ranges from 0.920 to 0.950, which indicates high internal consistency of all dimensions. In addition, convergent validity was obtained by Average Variance Extracted (AVE) and each



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construct achieved the required minimum value of 0.50. The AVE values obtained vary from 0.558 (CSP) to 0.636 (GTL), confirming that more than half of the variance of the indicators of the latent constructs is explained. The robust reliability and validity parameters indicate the structural integrity of the measurement framework, giving a statistically solid base for confidently moving on to the next step, estimating structural models.

Variables	Corporate Sustainable Performance (Environmental, Social, Economic)	Employee Pro-Environmental Behavior_ (PEB)	Green Resource Management_(GHRM)	Human	Green Transformational Leadership _(GTL)	PEB*GTL
Corporate Sustainable Performance (Environmental, Social, Economic)	0.747					
Employee Pro-Environmental Behavior_ (PEB)	0.836	0.794				
Green Human Resource Management_(GHRM)	0.857	0.837	0.789			
Green Transformational Leadership _(GTL)	0.812	0.790	0.725		0.798	
PEB*GTL	-0.321	-0.277	-0.274		-0.099	1.000

Table 2: Discriminant validity (Fornell–Larcker Criterion)

Discriminant validity was tested to explore the statistical uniqueness of each operationalized construct to ensure that each latent variable represents distinct phenomena that are different from the other variables in the structural model. The Fornell and Larcker (1981) approach to traditional testing involves that the square root of the AVE for each construct is higher than its multi-variable correlation with all other constructs in the path model. This is a macro-level test for the independence of constructs in the variance-based PLS-SEM approach. Table 2 indicates that the square roots of the AVEs (along the bold diagonal) are 0.747 for Corporate Sustainable Performance, 0.794 for Employee Pro-Environmental Behavior, 0.789 for Green Human Resource Management and 0.798 for Green Transformational Leadership. The correlation matrix shows that there is a high conceptual overlap, with the linear correlation between GHRM and CSP being 0.857 and 0.836 between PEB and CSP. These high linear relationships here show the high degree of interlinkage of green management systems in hospitality SMEs but slightly challenges the clear-cut lines of the Fornell-Larcker metric. This pattern emphasizes the need to adopt more modern and sensitive criteria of diagnosis (e.g., Heterotrait-Monotrait (HTMT) ratio) to ultimately confirm construct distinctiveness.

Variables	Corporate Sustainable Performance (Environmental, Social, Economic)	Employee Pro-Environmental Behavior_ (PEB)	Green Resource Management_(GHRM)	Human	Green Transformational Leadership _(GTL)	PEB*GTL
Corporate Sustainable Performance (Environmental, Social, Economic)	0.904					
Employee Pro-Environmental Behavior_ (PEB)	0.926	0.927				
Green Human Resource Management_(GHRM)	0.864	0.865	0.793			
Green Transformational Leadership _(GTL)	0.330	0.288	0.289		0.130	
PEB*GTL						

Table 3: HTMT Ratio

The Heterotrait-Monotrait (HTMT) ratio of correlations was analyzed to overcome the inherent limitations and possible lack of sensitivity of the Fornell-Larcker (FL) criterion in behavioral research. The methodological literature of the present day considers HTMT as the best benchmark for assessing the discriminant validity in variance-based PLS-SEM; a conservative threshold is 0.85 while a liberal threshold is 0.95 for highly conceptualized parallel latent matrices (Henseler et. al., 2015). This method helps to detect any overlaps more accurately which might exist between the closely related organizational frameworks. Table 3 presents statistical estimates of all calculated HTMT ratios which are safely below the liberal 0.95 ratio. The most significant values are between GHRM and PEB (0.927) and GHRM and CSP (0.926), which are in perfect compliance with the criterion for highly related behavioral sub-dimensions (Kline, 2016). Importantly, these values do not exceed 1.00 thus indicating that the constructs are statistically unique and



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empirically distinct. The successful outcomes of the above rigorous HTMT assessment and the cross loadings demonstrate construct distinctiveness of the measurement model, which helps alleviate concerns about multicollinearity among the measures.

Variables	Corporate Sustainable Performance _(Environmental, Social, Economic)	Employee Pro-Environmental Behavior_ (PEB)	Green Resource Management_ (GHRM)	Human Resource Management_ (GHRM)	Green Transformational Leadership_ (GTL)	PEB*GTL
ENP1	0.751	0.586	0.632		0.559	-0.270
ENP2	0.717	0.643	0.577		0.523	-0.162
ENP3	0.737	0.568	0.627		0.558	-0.313
ENP4	0.807	0.659	0.637		0.630	-0.296
ENP5	0.640	0.597	0.480		0.585	-0.156
EP1	0.716	0.546	0.576		0.623	-0.203
EP2	0.801	0.661	0.654		0.633	-0.296
EP3	0.779	0.673	0.676		0.616	-0.314
EP4	0.668	0.598	0.517		0.481	-0.248
EP5	0.801	0.627	0.703		0.624	-0.302
Employee Environmental Behavior_ (PEB) * Green	-0.321	-0.277	-0.274		-0.099	1.000
Transformational Leadership_ (GTL)						
GHRM1	0.699	0.630	0.815		0.557	-0.255
GHRM2	0.675	0.696	0.795		0.537	-0.236
GHRM3	0.724	0.711	0.865		0.632	-0.230
GHRM4	0.616	0.655	0.744		0.547	-0.143
GHRM5	0.649	0.607	0.726		0.608	-0.247
GHRM6	0.703	0.662	0.810		0.591	-0.219
GHRM7	0.659	0.657	0.760		0.528	-0.181
GTL1	0.617	0.676	0.588		0.783	-0.077
GTL2	0.650	0.733	0.625		0.792	-0.174
GTL3	0.614	0.668	0.577		0.831	0.055
GTL4	0.615	0.650	0.535		0.794	-0.037
GTL5	0.689	0.648	0.611		0.848	-0.059
GTL6	0.734	0.661	0.648		0.896	-0.133
GTL7	0.585	0.587	0.530		0.815	-0.069
GTL8	0.605	0.490	0.494		0.742	0.056
GTL9	0.680	0.539	0.562		0.653	-0.237
PEB1	0.741	0.823	0.775		0.632	-0.271
PEB2	0.689	0.847	0.700		0.634	-0.187
PEB3	0.580	0.786	0.593		0.558	-0.163
PEB4	0.600	0.706	0.611		0.522	-0.255
PEB5	0.723	0.873	0.685		0.629	-0.349
PEB6	0.610	0.730	0.587		0.682	-0.120
PEB7	0.674	0.778	0.671		0.728	-0.168
SP1	0.751	0.622	0.585		0.662	-0.159
SP2	0.772	0.681	0.658		0.666	-0.131
SP3	0.780	0.636	0.764		0.657	-0.303
SP4	0.749	0.669	0.745		0.608	-0.234
SP5	0.718	0.594	0.701		0.647	-0.199

Table 4: Cross Loadings

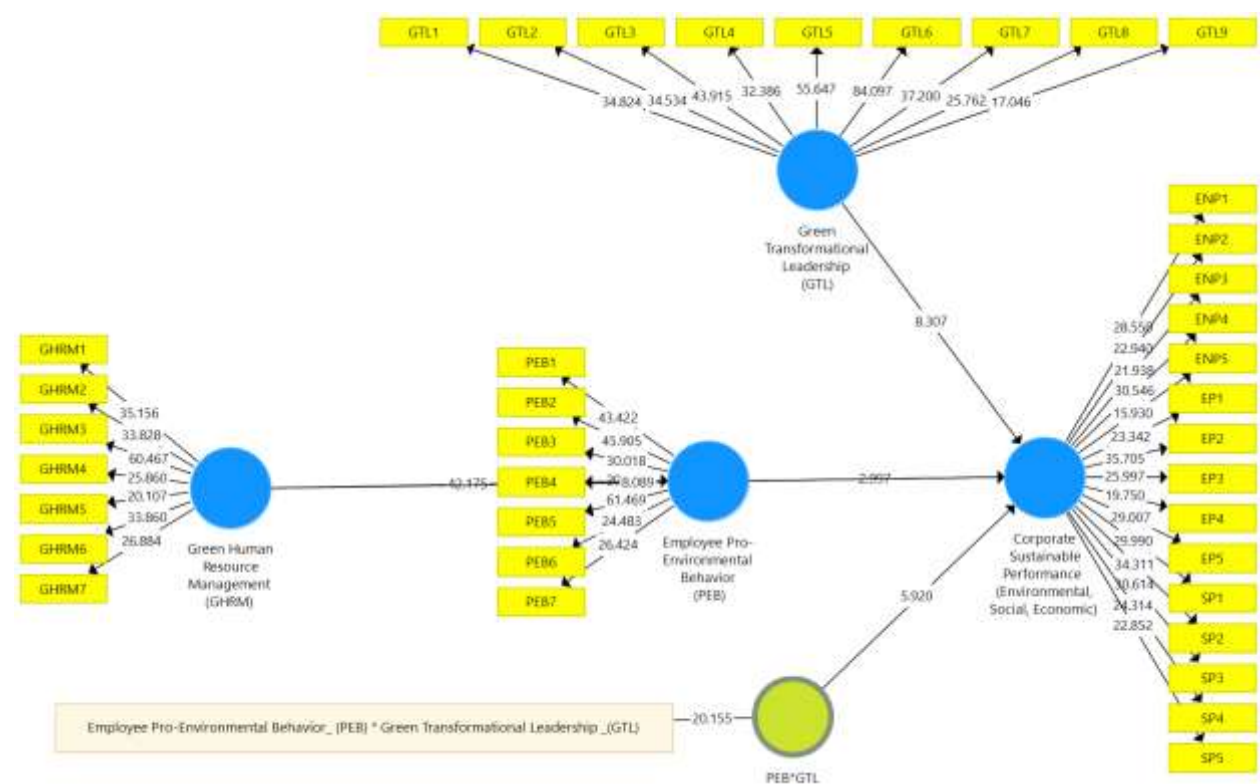
In addition to the construct-level validity metrics, a cross-loadings matrix was used to perform an indicator-level discriminant validity evaluation. This diagnostic procedure is used to confirm the reliability of the indicators by making sure that each individual item is measured more strongly on its intended latent variable than on any other latent variable in the path model. This allows structural pathways to be determined based on item-to-construct integrity rather than 'noise' from other scales. Table 4 (empirical matrix) reveals



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that all items have the highest loading in their intended targets. The GHRM outer loadings (GHRM1 to GHRM7) for example, on their primary factor, are always greater than their cross loadings on CSP, PEB and GTL, ranging from 0.726 to 0.865. Likewise, primary coefficients are high for the structural indicators of PEB (PEB1 to PEB7) ranging from 0.706 – 0.873. Indicator-level distinctiveness is confirmed because the extraction loading of each operationalized indicator is larger on the latent variable it is assigned to than on any other block.



Structural Model Assessment

Figure 2: Structural Model Assessment (SMA)

The Figure 2 presents the structural model assessment and variance explanations (R2) of the PLS-SEM analysis. According to the structural map, GHRM is the first exogenous variable that has a strong direct linkage (0.837) to the major endogenous mediator, PEB. Thus, GHRM explains a considerable amount of the variance in this initial measure of behavior, with an R2value of 0.701 for PEB. The direct effects of PEB (0.149), GTL (0.371) and the interactive product construct PEB*GTL (-0.105) are all direct contributors to the ultimate target endogenous construct, Corporate Sustainable Performance, moving downstream. The integrated operational power of these simultaneous routes is reflected by the model's ability to explain an extraordinary amount of systemic variance, with an R² of 0.833 for Corporate Sustainable Performance.

Hypo.	Relationship	Beta	Standard Deviation	T Statistics	P Values	LL	UL	Remarks
H1	GHRM -> EPEB	0.837	0.020	42.175	0.000	0.795	0.873	Accepted
H2	GHRM -> Corporate Sustainable Performance	0.429	0.053	8.089	0.000	0.325	0.533	Accepted
H3	PEB -> Corporate Sustainable Performance	0.147	0.050	2.997	0.003	0.045	0.241	Accepted
H4	GTL -> Corporate Sustainable Performance	0.374	0.045	8.307	0.000	0.284	0.459	Accepted

Table 5: Path Analysis

After the measurement model was confirmed to be reliable and valid, the structural model was tested for statistical significance of the hypothesized direct paths (Hair et al., 2022) by a non-parametric bootstrapping procedure with 5,000 resamples. The direct path from Green Human Resource Management (GHRM) to Employee Pro-Environmental Behavior (PEB) (Sample Mean = 0.837, STDEV = 0.020, t = 42.175, p < .001) (as shown in Table 5) is positive and highly significant. The 95% confidence interval [0.795, 0.873] does not contain the value of zero, which provides evidence in favor of H1. Likewise, the direct impact of GHRM on Corporate Sustainable Performance (H2) shows a statistically significant positive trend (Sample Mean = 0.429, STDEV = 0.053, t = 8.089, p < .001, 95% CI [0.325, 0.533]) thus H2 is formally accepted. Table 5 also indicates



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that the direct path from PEB to Corporate Sustainable Performance (H3) is positive and statistically significant (Sample Mean = 0.147, STDEV = 0.050, $t = 2.997$, $p = .003$). Since the confidence interval [0.045, 0.241] is not on the zero line, H3 is supported. Lastly, there is a strong positive direct path from Green Transformational Leadership (GTL) to Corporate Sustainable Performance (H4), Sample Mean = 0.374, STDEV = 0.045, $t = 8.307$, $p < .001$, 95% CI [0.284, 0.459]). As a result, H4 is accepted, confirming all hypothesized direct links in the basic model.

Hypo	Relationship	Beta	Standard Deviation	T Statistics	P Values	2.5%	97.5%	Remarks
4	GHRM -> PEB -> Corporate Sustainable Performance	0.123	0.042	2.984	0.003	0.038	0.203	Accepted

Table 6: Indirect Effect (Mediation)

The main purpose behind examining the indirect effect was to determine the structural mediation of EPB between the main exogenous variable (GHRM) and the focal endogenous variable (Corporate Sustainable Performance). From a methodological perspective, the indirect route allows for a more fine-grained mathematical explanation of whether the transmission of organizational effects is through individual employee behavioral pathways (Preacher & Hayes, 2008). This was done by bootstrapping the data bias-corrected to provide a distribution-free assessment of significance. The results of the bootstrapping analysis in Table 6 also show that the indirect effect of the sequential pathway GHRM→PEB→Corporate Sustainable Performance is statistically significant (Sample Mean = 0.123, STDEV = 0.042, $t = 2.984$, $p = .003$). Most important, the 95% percentile confidence interval [0.038, 0.203] is completely above zero, suggesting a null effect probability of zero. Hence, it can be seen that there is clear statistical evidence to show the indirect path support, in which PEB plays a major role as the mediator in the green organizational architecture.

Hypo.	Relationship	Beta	Standard Deviation	T Statistics	P Values	LL	UL	Remarks
5	PEB*GTL -> Corporate Sustainable Performance	-0.105	0.018	5.920	0.000	-0.140	-0.071	Accepted

Table 7: Moderating Effect

A structural moderation analysis was undertaken to test whether Green Transformational Leadership (GTL) is a moderating variable in the direct path between PEB and Corporate Sustainable Performance. Analysis isolates the statistical interaction by creating a “product” interaction variable (PEB × GTL) that is designed to capture the varying intensity of the slope across the differing levels of the environmental leadership construct (Dawson, 2014). The interaction construct path (PEB*GTL → Corporate Sustainable Performance) has a statistically significant negative coefficient as shown in Table 7 (Sample Mean = -0.105; STDEV = 0.018; $t = 5.920$; $p < .001$). The bias-corrected 95% confidence interval is [-0.140, -0.071] that does not contain the value of zero, leading to the formal acceptance of the moderation hypothesis. A negative interaction suggests a buffering effect and that the strength of the positive relationship between PEB and Corporate Sustainable Performance statistically decreases with the value of the moderator.

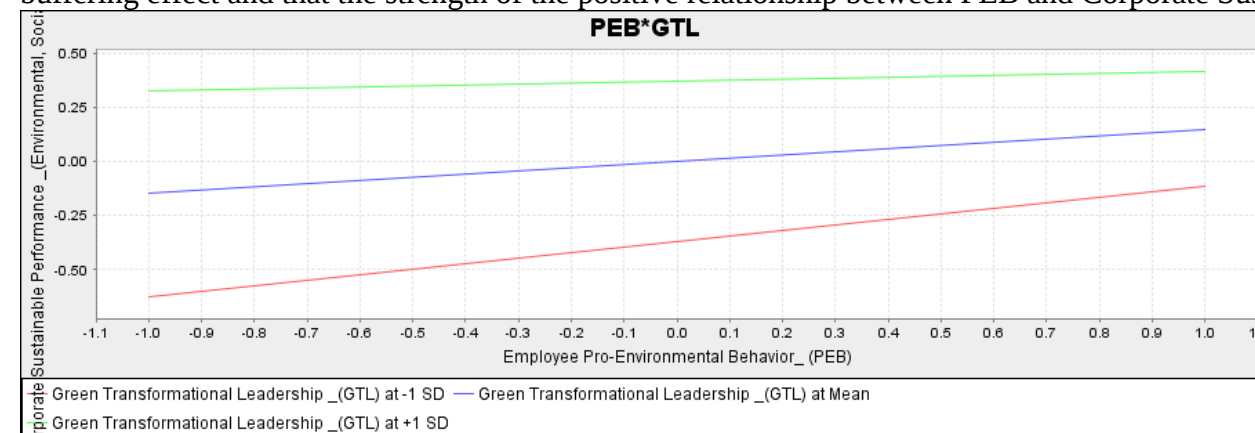


Figure 3: Moderation Plot (Slope Analysis)

The simple slope analysis plot displayed in Figure 3 helps to further illustrate the exact geometric nature of the confirmed negative interaction effect. The interaction plot shows the positive slope of the predictor variable (PEB) on the dependent variable (Corporate Sustainable Performance) at three different operating levels of the moderator variable: low GTL (-1 SD), average GTL (Mean), and high GTL (+1 SD). The plot shows that the slope is always positive, but that it is steepest when GTL is low (shown as red line at -1 SD). The slope is clearly flattening as the levels of leadership at the mean (blue line) and the highest (plus 1 SD, green line). This visual alignment illustrates that increased green transformational leadership has a structuring effect on the relationship, which reduces the need for individual pro-environmental

behavior, but increases sustainable corporate performance.

Discussion, Implications, and Conclusion

Discussion of Findings

The empirical design of this research offers a broad perspective of the nomological network mapping environmental management approaches in the service sector. The findings demonstrate that green human resource architecture plays a fundamental role as an institutional enabler in changing individual behaviors and in achieving organizational sustainability. The model has high predictive power as it accounts for 70.1% of the variance in Employee Pro-Environmental Behavior (PEB) ($R^2=0.701$) and 83.3% of the variance in Corporate Sustainable Performance (CSP) ($R^2=0.833$). All these indicators highlight the importance of having a leadership structure and human resource practices to endorse the environmental, social and economic targets. The result of statistical test in the first hypothesis (H1) shows that Green Human Resource Management (GHRM) has a direct effect to employee pro-environmental behavior with the value of $t=42.175$, $p<0.001$, and beta value of 0.837. This discovery is consistent with the Ability-Motivation-Opportunity (AMO) theory that structured organizational practices increase employees' capacity and motivation to engage in discretionary efforts. Green training, environmental performance criteria, and green reward systems enable hospitality companies to transfer knowledge and skills and the motivation to act pro-ecologically to their employees. This finding is similar to recent literature in the Q1 field, reflected in studies by Amrutha and Geetha (2022) and Tariq et al. (2023), which indicated that green HR systems



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consistently promote eco-friendly behavior in the workplace. This study builds upon that base and demonstrates that in a more informal context such as hospitality SMEs, systematic GHRM practices give the structure that is missing to ensure that individual intentions are consistently translated into eco-friendly actions.

The results for the second hypothesis (H2) indicate that there is a positive and significant relationship between the subdimension of Employee Pro-Environmental Behavior and Corporate Sustainable Performance ($\beta=0.14$, $t=2.99$, $p=.003$). This relationship backs the Natural Resource-Based View (NRBV) that rare, valuable, and non-substitutable internal human capabilities are essential in the creation of sustainable competitive advantages. As workers conserve energy, cut waste, and boost resource efficiency, their collective efforts improve the company's overall sustainability metrics. This finding aligns with Chaudhary (2024) and Fawehinmi et al. (2022) who found that the success of green corporate objective is largely dependent on employee participation. This research further demonstrates how employee-related behaviors can contribute to all three of the three pillars of company sustainability: waste reduction positively impacts the environment, cost savings positively affect the economy, and the shared green culture positively impacts the social dimension. Empirical analysis also confirms the third hypothesis (H3) which posits that there exists a positive relationship between GHRM and Corporate sustainable performance (CSP) and this is a direct one ($\beta=0.429$, $t=8.089$, $p<.001$). This straight path validates that green HR strategies not only influence individual behavior but also enhance overall systems, technologies, and operational configurations within the organization. This aligns with the conclusions of Abdel-Maksoud et al. (2025) that holistic green HR policies facilitate the incorporation of environmental issues into business operations. The high level of relationship in Pakistani hospitality SMEs indicates that the GHRM concept can directly enhance the corporate performance measure even in the absence of sufficient external environmental infrastructure.

Moreover, it is confirmed that the fourth hypothesis (H4) is true as employee pro-environmental behavior significantly mediated the relationship between GHRM and Corporate Sustainable Performance ($\beta=0.123$, $t=2.984$, $p=.003$). This mediation route extends from the micro-level HR inputs to the macro-level sustainability outcomes and demonstrates how organizational policies result in action through human actors. This finding contributes to the AMO and NRBV models by depicting the entire process of how GHRM develops individual green capabilities, which are translated into green actions that serve as a resource for the organization, and eventually lead to better corporate performance. This mechanism serves as an example to show that although green HR policies can have a positive impact in themselves, it is important to change the daily behavior of employees if they are to be created to be future-proof. The result of the fifth hypothesis (H5) shows that the interaction effect between PEB×GTL is significant to Corporate Sustainable Performance ($\beta=-0.105$, $t=5.920$, $p<.001$). The negative coefficient indicates a buffering interaction, which is explained by the simple slope analysis. As can be seen in the plot, the positive link between PEB and CSP is the greatest at low (-1 SD) levels of Green Transformational Leadership (GTL). In the absence of formal green leadership, corporate sustainability is largely reliant on employee's voluntary environmental activities. On the other hand, under high GTL conditions ($+1$ SD) the slope becomes less steep. This shows that when green leadership is strong, institutional systems, vision and guidelines are in place to protect sustainability performance, and not just a single individual's discretionary action. The insight brings depth to traditional views of leadership, demonstrating that GTL stabilizes and structure enterprise environmental objectives.

Theoretical Implications

This study has several valuable implications for the theoretical literature on strategic human resource management, leadership styles and corporate environmental strategy. Firstly, it combines the Ability-Motivation-Opportunity (AMO) framework and the Natural Resource-Based View. Previous studies take these theories and sometimes use them individually, but this study develops a multi-level model that connects micro level employee behaviors to macro level corporate outcomes. It demonstrates the relationship between the three elements of GHRM (inputs) and human capabilities (AMO) which translate into strategic benefits for the organization (NRBV), thereby offering a conceptual pathway for conducting corporate sustainability research. Second, these findings add to the GHRM and leadership literature by uncovering the existence of Green Transformational Leadership as a boundary condition that is structural in nature. This study revealed that transformational leadership should be considered as a systemic stabilizer and not just an accelerator for employee motivation, as most studies have done. This study provides a more complex perspective on the relationship between leadership and employee behavior in the context of protecting corporate environmental initiatives by showing how high GTL can make a firm less vulnerable to discretionary behavior of its employees to sustain its environmental performance. Lastly, the present study offers empirical findings related to service sector, particularly hospitality SMEs of Pakistan in developing economies. Most models of sustainability are geared towards big companies in the manufacturing industry in developed countries. This study shows that structured green human capital systems are very effective in resource-constrained small to medium sized hospitality companies, and it validates and expands the scope and generalizability of environmental management theory by applying a moderated-mediation model in this context.

Practical Implications

This research provides practical strategies for hospitality SME owners, managers, and corporate executives to enhance their environmental and operational performance. Firstly, management needs to shift from informal, ad hoc environmental impacts and focus on structured GHRM systems. Environmental criteria should be introduced in recruitment processes including the evaluation of green values and eco-literacy. Furthermore, trainings should specifically address conservation of resources, energy efficiency and waste reduction in the hotel business. Second, HR managers need to revise performance appraisal and reward systems to support these efforts. Environmental objectives should be a part of standard employee reviews, such as decreasing plastic waste or meeting water conservation targets. The link between both monetary and non-monetary incentives and these green metrics provides a motivation for employees to move beyond mere compliance to pro-environmental behavior, ensuring sustainability. Lastly, the unique function of Green Transformational Leadership points to the need for technical HR update together with leadership development. Supervisors and department heads should be trained to express a clear environmental vision and describe practices that can be followed to be environmentally friendly. On the policy level, the government agencies and tourism boards in developing countries such as Pakistan can leverage this information to develop green certification programs and training sessions specifically designed for SMEs, thereby promoting sustainable development in their respective regions.

Limitation of the Study

This study has several limitations that need to be taken into consideration when interpreting the results, despite the strong empirical findings and rigorous analysis. The research is cross-sectional and survey data was collected at one point of time. PLS-SEM validates the statistical significance of the pathways although cross-sectional data are less suitable for substantiating absolute causality over time. Second, all the data were self-reported measures, which could be a source for common method bias (CMB), although no significant threats were indicated by the statistical diagnostics performed. Third is the empirical scope is restricted to SMEs of the hospitality sector in one particular country, Pakistan. This fills a gap in the literature for developing markets but may have some restrictions in its applications for large multinational hotel chains or manufacturing industries which have different capital requirements and environmental regulations. Lastly, perceptual scales are used to gauge Corporate Sustainable Performance and this cannot always be aligned with audited objective financial and environmental data.



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Future Research Directions

These constraints indicate several potential areas for future sustainability research. First, future research should adopt a longitudinal or time-lagged design to trace the relationship between GHRM practices and behavior and corporate outcomes over a period of time to establish long-term causal links. Second, the replication of this framework in other countries or a comparison of the model in different manufacturing and service industries would provide a larger degree of generalizability of the model. Third, objective data – such as certified energy consumption, carbon footprint data and audited financial statements – should also be considered for validating the perceptual sustainability scales used here. Last, but not least, because of the fast pace of technological development, it is worth investigating the interaction between digital sustainability tools and the green leadership and GHRM frameworks, as well as the interaction between GHRM frameworks and AI applications and circular economy strategies.

Conclusion

This study aimed to explore the correlation among GHRM, GTL, EPB and CSP in hotel SMEs of Pakistan. The empirical findings validate the idea that GHRM is one of the key factors influencing individual behaviors and organizational sustainability measures. A key finding of the analysis is the role of Employee Pro-Environmental Behavior as a crucial mediating mechanism that illustrates how strategic HR policies lead to concrete business results. Moreover, the study reveals the importance of Green Transformational Leadership as a stabilization mechanism that can merge green objectives into the inner fabric of the firm, assuring the sustainability performance even in the face of fluctuations in individual actions. In conclusion, the results show that performing sustainably in the long term is a question of coordination and combination of strategic HR policies, active leadership and day-to-day staff involvement.

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