

CORPORATE SUSTAINABILITY IN PAKISTAN: A CROSS-SECTIONAL ANALYSIS OF GREEN PRACTICES AND THEIR ORGANIZATIONAL IMPACT

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Abstract

The rising concern of today's world for conserving the ecosystem and encounter the current environmental crises necessitates the corporate sector to adopt environmentally friendly policies with economic security and competitive edge. As increased productivity, time efficiency and cost reduction are top corporate objectives so this embryonic corporate social responsibility leads to investigate the impact of different environmentally friendly practices on competitiveness.

In response to global sustainability imperatives, this study investigated the impact of Green Human Resource Management (GHRM) on Performance Satisfaction (PS) and Environmentally Sustainable Work Behavior (ESWB), incorporating Environmental Awareness (EA) as a mediator and Green Transformational Leadership (GTL) as a moderator. Using observational research design and regression analysis on data of 300 samples through SPSS Hayes PROCESS v4.2, findings reveal that EA significantly enhances the influence of GHRM on both PS and ESWB. However, GTL unexpectedly weakens this mediated effect, suggesting that excessive top-down leadership may dampen employee-driven sustainability engagement. The study underscores the strategic value of cultivating environmental awareness and balancing leadership intensity to optimize GHRM outcomes.

These findings offer critical insights for organizational sustainability strategies. Organizations seeking to maximize the benefits of GHRM must prioritize sustainability oriented leadership and actively cultivate a culture of environmental consciousness. The study contributes to the growing body of research on sustainable HRM by demonstrating how leadership and awareness jointly shape employee experiences and organizational outcomes. Future research could explore additional contextual variables that refine these relationships further.

INTRODUCTION

The Sustainable Development Goals (SDGs) encompass a wide scope, addressing not only environmental concerns but also the social and economic dimensions of human society, with sustainability placed at the center (Sachs et al., 2019). However, Environmental sustainability and economic security are more emphasized across the diverse array of the Goals.

In pursuit of the 2030 SDGs, countries are incorporating these goals into their national policies, thereby encouraging organizations to adopt environmentally, socially, and ethically responsible practices. This has led many organizations to incorporate innovative strategies that align business operations with sustainability objectives.

As major focus of corporate sector is profitability and customer satisfaction while emerging concern of the stakeholders for sustainability foster the concept of corporate social responsibility to sustain competitive position. Corporate leaders have realized that adopting a triple bottom line strategy which give balanced weightage to social, environmental, and economic factors is vital for gaining a competitive edge (Andriate & Fink, 2008). Consequently, businesses started transforming their business operations by integrating social and environmental dimensions into their business model. For economic security and sustaining competitive position it is also necessary to evaluate the impact and effectiveness of new policies.

The human resource department is expected to play a key role in shaping an organization's sustainability culture. It is established through HRM literature that HR practices influence employee attitudes and behaviors through various social, psychological, and motivational mechanisms. However, as GHRM research is still in its early stages, the specific processes through which employees' perceptions of GHRM impact their current and potential attitudes and behaviors toward the organization and their tasks remain insufficiently explored (Shen et al., 2018; Dumont et al., 2017).

Shen et al. (2018) revealed that outcomes such as task performance, organizational citizenship

behavior, and intention to quit are significantly influenced by employees' perceptions of Green Human Resource Management (GHRM) through the mediating role of organizational identification. Similarly, Dumont et al. (2017) established that GHRM influences employees' in-role and extra-role green behavior through the mediation of psychological green climate. However, information about the role of perceived GHRM in determining employee' performance satisfaction is almost absent. Employees having the capacity to adopt or collectively reject any organizational policies are the extremely important unit of any organization and are able to influence the overall organizational success. To bridge the gap of the literature, building on the theoretical framework of performance satisfaction theory the present study aimed to explore the impact of emerging Green HRM practices on performance satisfaction and sustainable work behavior. Performance satisfaction is directly related to the motivation and literature supports that motivated employees are more helpful for organization's success. Some studies suggest that persons more satisfied with their current task and performance are more resistant to change (Pam Scholder Ellen, 1991).

Performance satisfaction is a very crucial dimension of overall job satisfaction which is directly influenced by the working conditions, organizational culture, policies and leadership. Different researches explores the impact of certain factors on performance satisfaction of employees. Impact of social influence and task experience on performance satisfaction is investigated by Thomas L. Rakestraw, 1981. And revealed that as uncertainty is reduced through personal task experience that's why social influence is not an issue for employees. Therefore, need arises to investigate the effect of modern green HRM practices on the performance satisfaction of the employees.

Michael Asiedu Gyensare (2024) found that Green HRM practices influence employees' subjective well-being through their green behavior. As employees are active participants in all organizational processes, they have the capacity to change their work environment through certain

behaviors like integrating environmental initiatives into their daily routines. therefore, employee behavior toward implementing such initiatives plays a vital role in promoting organizational greening (Kerrie L. Unsworth, 2021). The impact of Green HRM on sustainable work behavior of employee is another research gap and the literature suggested that employee's behavior is very crucial component which can be translated into success or failure of any organizational policy therefore instead of this as mediating the study aimed to explored its impact through environmental awareness and by proposing Green Transformational Leadership as moderator.

In addition, an attempt was made to unfold the underlying psychological mechanism of environmental awareness by proposing it as mediator and explore the conditions of the aforementioned relationships by proposing Green Transformational Leadership as moderator. In simple the core objectives of the study are:

1. To investigate the impact of green HRM on employees' environmental awareness.
2. To examine the effect of environmental awareness on employee performance satisfaction.
3. To determine the effect of environmental awareness on employees' environmentally sustainable work behavior.
4. To explore the mediating role of environmental awareness between green HRM and performance satisfaction.
5. To assess the mediating role of environmental awareness between green HRM and environmentally sustainable work behavior.
6. To examine the moderating effect of green transformational leadership on the relationship between environmental awareness and environmentally sustainable work behavior.
7. To analyze the moderating role of green transformational leadership in the relationship between environmental awareness and performance satisfaction.
8. To explore the moderated mediation effect of green transformational leadership on the relationship between green HRM, environmental awareness, and performance satisfaction.

9. To examine the moderated mediation effect of green transformational leadership on the relationship between green HRM, environmental awareness, and environmentally sustainable work behavior.

The objectives were addressed through specific research questions.

1. How does green human resource management influence environmental awareness among employees?
2. What is the relationship between environmental awareness and performance satisfaction?
3. Does environmental awareness influence environmentally sustainable work behavior?
4. Does environmental awareness mediate the relationship between green HRM and performance satisfaction?
5. Does environmental awareness mediate the relationship between green HRM and environmentally sustainable work behavior?
6. Does green transformational leadership moderate the relationship between environmental awareness and environmentally sustainable work behavior?
7. Does green transformational leadership moderate the relationship between environmental awareness and performance satisfaction?
8. Does green transformational leadership moderate the mediating effect of environmental awareness between green HRM and performance satisfaction?
9. Does green transformational leadership moderate the mediating effect of environmental awareness between green HRM and environmentally sustainable work behavior?

Theoretical background and hypothesis development

Green HRM Practices

(Renwick & Maguire, 2013) elaborate on Green HRM as the term used to describe the incorporation of corporate environmental management with human resource management. They go on to say that this aspect includes environmental management's human resource components. According to the article, specific

rules in areas like hiring, performance reviews and management, training and development, employment relations, and compensation and benefits are useful instruments for bringing staff members into line with a company's environmental policy. (Jabbour & Nagano, 2010) describe green HRM as the process of incorporating environmental considerations into various human resource functions, including job description and analysis, recruitment, selection, training, performance appraisal, and rewards. In a subsequent study in 2011, Jabbour further defined green HRM practices as the extent to which human resource management practices are adapted to support environmental sustainability, emphasizing both functional and competitive aspects (Jabbour C. , 2011). Green HRM practices encompass all activities related to designing, implementing, and maintaining a system that encourages employees to adopt environmentally conscious practices. It focuses on transforming regular employees into environmentally aware individuals to help the organization achieve its environmental objectives and contribute meaningfully to sustainability. This concept involves policies, practices, and systems that promote eco-friendly behaviour among employees, benefitting not only individuals and the organization but also society and the natural environment (Opatha & Anton Arulrajah, 2014). Anjana Nath Regional Head HR, Fortis healthcare ltd defines Green HR as environment- friendly HR initiatives leading to better efficiencies, lesser cost and heightened employee engagement levels. It involves undertaking environment friendly initiatives resulting in greater efficiency, lower costs, and better employee engagement and retention which in turn help organization to reduce carbon footprints by the means of "Electronic filing, Car sharing, Job sharing, Teleconferencing, Online training, Flexible working hours and Telecommuting"

Environmental awareness:

The term "environment" refers to external conditions or surroundings in which individual live or the natural surroundings that influence the growth and behaviour of plants and animals.

Meanwhile awareness denotes a state of being conscious, informed and knowledgeable. Therefore, environmental awareness can be described as a state of understanding, being informed about and recognizing the external surroundings that impact people's lives, work and overall development (Kokkinen, 2013). Environmental awareness is understood as a concept composed of three essential elements. Similarly, Sanchez and Lafuente (2010) present a multidimensional framework for environmental awareness that incorporates theories from both sociology and environmental psychology. Their model outlines four distinct dimensions that collectively define environmental awareness. The affective dimension refers to emotional and perceptual aspects, including the endorsement of pro-environmental world views, support for eco-friendly solutions, and awareness of environmental threats. The cognitive dimension focuses on an individual's knowledge and understanding of environmental problems. The dispositional dimension addresses internal factors such as personal norms, feeling of self-efficacy and sense of responsibility. Lastly, the active dimension emphasizes behaviour, ranging from participation in activism such as protest and volunteer work to adopting low cost practices like recycling and high cost, behaviours such as investing in green consumerism or reducing car usage (Sanchez & Lafuente, 2010).

Green Transformational Leadership:

Transformational leadership is inspiring people to think bigger, believe in themselves and work towards a shared vision. It is not about giving directions, it's about creating a sense of purpose that makes people want to grow and contribute. The leaders connect on an emotional level, uplifting and motivating others to achieve something greater than they possibly thought. They ignite passion, encourage innovation and bring the best out of them (Baker, 2023). Green transformational leadership is all about inspiring employees to adopt eco-friendly practices and embrace sustainability. Instead of enforcing rules, they set examples and motivate employees to care about the environment. They create a shared

vision for a green future making sustainability a natural part of the work place culture rather than just other policy to follow. (Y.-S. Chen, 2013) Green transformational leadership driving eco-conscious initiatives within organization, these leaders inspire their green teams to embrace goals, integrate them and motivate them to care about the environment. As valuable organizational assets, leadership drives more than strategic decision which values mindset of employees shaping environment which lines up organizational sustainability. Green transformational leaders paint a clear vision of a more sustainable future and inspire their teams to bring it to life. They don't just set goals, they engage employees encouraging them to take an active role in creating and implementing eco-friendly practices. Through their passion and guidance, they make sustainability a shared mission rather than just a responsibility (Saif & Khan, 2022).

Environmentally Sustainable Work Behavior:

Sustainable work place behaviours focus on creating a work environment that is good for both people and planet. This means being mindful of how businesses impact the environment supporting social responsibility and making smart financial choices that ensure long term success. By embracing sustainability organizations can reduce waste, promote well being and build better future for every one (Colclough, 2024). Environmental psychology seeks to understand why people choose to engage in environmentally friendly behaviors and how different strategies can encourage them to make sustainable choices. It explores what motivates individuals to care for the planet and evaluates various ways to inspire positive change, especially in every day household settings. Such behavior may concern many domains, e.g., energy, water, waste, recycling, transport, purchasing, and product design (Abrahamse & Rothengatter, 2005). Employees' sustainable work behavior (SWB) plays a crucial role in driving organizational sustainable development. While some studies highlight the significance of extrinsic motivations in shaping SWB, others emphasize the impact of

intrinsic factors on employees' sustainable actions (Davis & Challenger, 2013).

Performance Satisfaction

Performance satisfaction refers to an individual's level of contentment with their current methods or behaviours based on past experiences and perceived success. Satisfaction with existing behaviour influences motivation for change, as individuals are more likely to favour familiar methods due to their expected probability of success and the role of prior learning. Positive outcomes reinforce satisfaction, leading to behaviour repetition and resistance to alternatives. Although, dissatisfaction arises when performance does not meet your set standards, motivating corrective action. The ease or effort required to fulfil a task also affects satisfaction with higher levels of satisfaction relating to lower motivation to adopt new methods (Ellen & Sharma, 1991).

The Porter and Lawler performance-satisfaction model, also known as the performance-satisfaction theory, focuses that motivation occurs through the psychological processes the individuals go through to achieve and be satisfied with their work. This model suggests that motivation is influenced by:

1. Effort: The amount of effort an individual puts into their work,
2. Performance: The actual output or results achieved.
3. Rewards: The perceived outcomes or consequences of performance.
4. Satisfaction: The level of contentment or happiness with the work and its outcomes.

The Job Descriptive Index (JDI), established by Smith et al. (1969), has been a widely used tool for assessing job satisfaction. According to it there are five key dimensions of job satisfaction: (1) satisfaction with work; (2) satisfaction with pay; (3) satisfaction with promotions; (4) satisfaction with supervision; and (5) satisfaction with co-workers (Jose' R. Goris 2007). Satisfaction with work which is the individual's performance satisfaction is therefore very crucial for overall organizational success. Performance satisfaction is directly related to the motivation and literature supports that motivated employees are more helpful for organization's success. The present study uses the

aspect of performance satisfaction, which refers to how personnel feel about their work and performance in general to identify the impact of organizational policies and role of green transformative leadership

Green HRM, Performance Satisfaction and Environmentally Sustainable Work Behavior:

Green HRM practices, such as eco-friendly training programs and sustainability-focused hiring, create a work place culture that encourages employees to adopt environmentally responsible behaviors. When employees receive proper guidance and motivation, they develop deep understanding of their role in sustainability. This awareness translates into proactive efforts to minimize environmental harm and integrate green practices into daily tasks. By embedding sustainability into HR policies, organizations foster a long term commitment to environment responsibility, ensuring that sustainable work behavior becomes an integral part of operations (Darvishmotevali & Altinay, 2022) .

Environmental awareness, Green HRM and Performance satisfaction.

It is becoming more widely acknowledged that environmental consciousness acts as a mediator in the relationship between performance satisfaction and Green Human Resource Management (GHRM) practices. Environmental responsibility is given top priority in the workplace because to GHRM initiatives including eco-friendly training, green hiring, and performance reviews that are focused on sustainability. Exposure to these techniques frequently results in increased environmental consciousness among employees, which raises their level of satisfaction with the performance of the company. Renwick et al. (2013) claim that GHRM programs enhance job satisfaction and perceived performance outcomes by bringing individual values into line with company sustainability objectives. In a similar vein, Dumont et al. (2017) discovered that environmental consciousness serves as a crucial mediator, establishing a feeling of purpose and dedication to sustainable practices in order to close the gap between GHRM practices and

employee performance satisfaction. Employee performance satisfaction is therefore more likely to be higher in companies that successfully use GHRM practices while fostering environmental consciousness.

Green HRM and environmental awareness are closely related through the mechanisms by which Green HRM practices influence employees' attitudes and behaviors toward environmental sustainability. Green HRM practices foster environmentally-aware attitudes and behavior among employees through organizational pride, identification, and a constructive psychological climate. This results in stronger environmental commitment, spontaneous green behavior, and better environmental performance at the organizational level. Social identity theory underpins the process, in which employees' identification with the green values of their organization encourages them to be environmentally engaged. (Darvishmotevali & Altinay, 2022)

H1: Green HRM significantly affects performance satisfaction.

H2: Green HRM has a significant positive effect on environmental awareness.

H3: Environmental awareness has a significant positive impact on performance satisfaction.

H4: Environmental awareness mediates the relationship between green HRM and performance satisfaction.

Green HRM, Environmental Awareness and Sustainable work behavior:

Environmental awareness plays a crucial role in shaping employees sustainable work behaviors, particularly in organizations that implement GHRM practices. GHRM initiatives, such as eco - friendly recruitment, training and performance management, aim to foster environmentally responsible behavior within work force. However, the success of these practices often hinges on employee's awareness and understanding of environmental issues. By enhancing environmental awareness, organizations can effectively translate GHRM efforts into tangible sustainable work behaviors, as informed

employees are more likely to align their actions with ecological goals. Thus environmental awareness acts as a mediating factor, strengthening the connection between GHRM practices and sustainable workplace behavior (Hassan & Sulaiman, 2010). Green HRM enhances environmental awareness, which in turn fosters sustainable work behavior among employees (Gyensare & Amankwah-Amoah, 2024).

H5: Green HRM significantly influence environmentally sustainable work behavior.

H6: Environmental awareness significantly enhances environmentally sustainable work behavior.

H7: Environmental awareness mediates the relationship between green HRM and environmentally sustainable work behavior.

Green Transformational leadership ,Green HRM Practices and Performance satisfaction

A key moderating factor in enhancing the association between performance satisfaction and Green Human Resource Management (GHRM) practices is Green Transformational Leadership (GTL). The goal of GHRM practices, which include eco-friendly policies, sustainability-focused performance management, and green training, is to improve corporate results and employees' environmental habits. However, leadership that actively supports and upholds green principles is crucial to the efficacy of these activities. By encouraging a shared commitment to sustainability, inspiring staff, and coordinating individual efforts with organizational green goals, GTL, which is distinguished by visionary, charismatic, and environmentally concerned leadership, enhances the impact of GHRM.

According to Chen and Chang's (2013) research, transformative leaders increase GH's efficacy.

by fostering a robust green corporate culture, which raises worker happiness and performance. According to a study by Mittal and Dhar (2016), GTL makes sustainability activities more meaningful by offering individualized support and a clear environmental goal, strengthening the relationship between GHRM and employee outcomes. Additionally, according to Robertson

and Barling (2013), leaders who demonstrate green transformational behaviors—like intellectual stimulation and idealized influence—assist staff members in appreciating the benefits of GHRM practices, which raises their level of satisfaction with performance results.

In summary, GTL acts as a catalyst that enhances the positive effects of GHRM on performance satisfaction by fostering motivation, role clarity, and a shared sustainability vision. Organizations that combine structured GHRM practices with strong green leadership are more likely to achieve higher employee engagement and performance satisfaction in their environment.

H8: Green transformational leadership positively moderates the relationship between environmental awareness and performance satisfaction.

H9: Green transformational leadership moderates the indirect effect of green HRM on performance satisfaction through environmental awareness.

Green Transformational Leadership, Green HRM and Environmentally Sustainable Work Behavior

In today's rapidly evolving corporate landscape, organizations are increasingly recognizing the need to adopt environmentally sustainable practices. Green Human Resource Management has emerged a vital strategy to promote eco-friendly behaviors among employees. However, the effectiveness of such initiatives often hinges on leadership. Green Transformational Leadership characterized by inspiring ,motivating and guiding employees towards environmental goals plays a crucial role in reinforcing these practices. By fostering a shared vision for sustainable work behavior, encouraging deeper commitment and meaning full action (Chen & Chang, 2013). Green Transformational Leadership fosters Green HRM practices, which in turn promote Environmental Sustainable Work Behavior among employees (Chen & Wu, 2022).

H10: Green transformational leadership positively moderates the relationship between environmental awareness and environmentally sustainable work behavior.

H11: Green transformational leadership moderates the indirect effect of green HRM on environmentally sustainable work behavior through environmental awareness.

Green Transformational Leadership, Environmental Awareness & Performance Satisfaction

An increasing body of research indicates that environmental management practices are only sustainable when actively supported by employee participation. Situational factors and evolving environmental paradigms significantly influence organizational and individual behaviors, shaping how environmental concerns are perceived and ultimately impacting performance satisfaction (Liu & Yu, 2023).

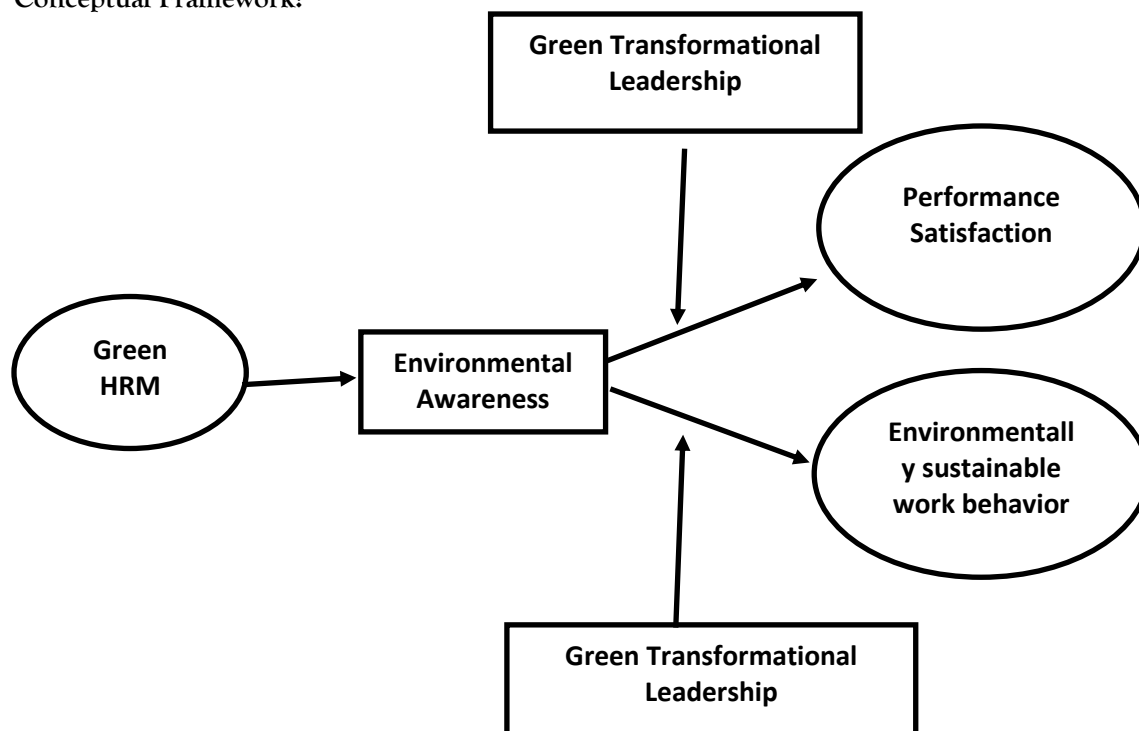
Scholars generally agree that small business adopting eco-friendly practices and addressing environmental concerns not only achieve notable cost saving and reduce CO2 emissions but also enhance overall performance satisfaction by aligning employee values with sustainable goals and fostering a sense of purpose within the organization. (Ismail, 2025)

Environmental awareness among employees understanding ecological issues and impact of organization activities is a foundation step towards improved environmental performance. However, awareness alone does not automatically translate into high levels of performance satisfaction, which reflects employees' contentment with their own or their team achievements in meeting environmental goals. Employees may feel motivated by their awareness but encounter significant barriers such as unclear expectation, lack of resources, insufficient skills or an unsupportive organizational culture that prevents them from effectively translating their concern into impactful actions and deriving satisfaction from their results. This gap between recognizing environmental imperatives and successfully executing related tasks can lead to frustration and

diminished satisfaction, highlighting that awareness is a necessary but insufficient condition for achieving fulfilling environmental performance outcomes (Kura, 2016).

Green Transformational leadership acts as a critical catalyst that positively moderates the relationship between environmental awareness and performance satisfaction leaders exhibiting GTL characterized by articulating a compelling green vision, stimulating eco innovation providing individualized support for environmental initiatives and acting as ethical role models create the enabling environment necessary for aware employees to thrive. They translate environmental awareness into actionable goals, provide the necessary goals and training (enhancing self-efficacy as per Bandura 1986) foster supportive climate where pro environmental efforts are valued and recognized and intrinsically motivate employees by connecting their work to larger environmental purpose. By empowering employees and removing obstacles GTL ensures that heightened environmental awareness is effectively challenged into tangible performance improvements. Consequently, employees are not only more likely to achieve meaningful environmental results but also experience significantly greater satisfaction from their accomplishments, as their initial awareness is fulfilled through successful action guided and inspired by their leader (Kura, 2016).

Green HRM → Environmental Consciousness → Contentment with Performance
The mediation pathway is this. According to the idea, green HRM works via raising environmental consciousness rather than immediately increasing performance satisfaction. In other words: Green HRM increases consciousness of the environment; Performance satisfaction is then improved by environmental knowledge.

Conceptual Framework:**Research Methodology:**

The study was observational: cross sectional based on quantitative data gathered through a well-structured questionnaire. A 5- point Likert scale questionnaire was used to collect data. Target population was Textile Sector of Pakistan considering well representative unit of corporate sector. 04 different Textile firms from two big cities Lahore and Faisalabad were selected to collect data. Convenient sampling technique was used to collect 300 sampling units from the selected firms.

Scale:

All the Scales used to measure the constructs of the study were adopted from already valid and reliable researches. A 5-point Likert scale questionnaire ranging from strongly disagree to strongly agree was developed by choosing items carefully from already validated studies that can fulfill the requirement of conceptual framework of the current study. The questionnaire was consisted of total 05 constructs and 30 items.

Results:**Reliability Analysis**

The reliability analysis was performed in SPSS 23 using Cronbach's α . The range of Cronbach's α coefficients was from 0.875 to 0.951 therefore, concluded that the reliability of each scale in the study was good, and all items had high internal consistency. Table-1 shows scale wise values of Chronbach's Alpha.

Table 1

Variables	No of items	Cronbach's Alpha
Green HRM	6	0.911

Performance Satisfaction	5	0.875
Environmentally sustainable work behavior	8	0.951
Environmental awareness	6	0.904
Green Transformational Leadership	4	0.906

Correlation Analysis

Table 2 shows the descriptive statistics and correlations between the variables involved in this study. It can be seen from the Table 2 that correlation coefficient among GHRM and PS is less significant. Similar is the case with ESWB,

However the correlation among EA and ESWB is significant. ESWB and PS are also significantly correlated. GHRM and GTL are also significantly correlated.

Table 2

Variable	Mean	SD	GHRM	PS	ESWB	EA	GTL
GHRM	3.5332	1.07449	1.000				
PS	4.0111	0.88411	0.143	1.000			
ESWB	3.9444	0.91278	0.312	0.466	1.000		
EA	3.7424	0.97097	0.378	0.305	0.588	1.000	
GTL	3.7092	1.06450	0.571	0.178	0.345	0.425	1.000

* $p < 0.01$

Regression Analysis

To test the hypotheses of the study and verify the mediating and moderating effects between the variables, regression analysis was performed on the collected data using Andrew F. Hayes Process version 4.2 in spss-25. Five sets of regression analysis were performed separately to verify H1, H2, H3, H5 and H6. Results shown in Table 3. As seen in Table -3, model-1 shows that **GHRM has a positive but relatively modest effect on Performance Satisfaction ($\beta = .3048$, $p < .001$). $R = .3048$ Indicates a weak-to-moderate correlation between GHRM and PS. In model- 2 Standardized beta ($\beta = .4600$, $p < .001$, $R = 0.4600$) reinforces that higher environmental awareness strongly associated with GHRM. In model -3 The R value (0.4522) indicates a moderate positive relationship between GHRM**

and the ESWB. The unstandardized coefficient for GHRM (0.3842 , $p < 0.001$) suggests a meaningful but not overwhelming effect. Hence support H1, H2 and H5 are supported but with limitation i.e. positive impact of GHRM on PS and ESWB exists but likely with additional mediating or moderating factors. Model 4 and 5 showed that Environmental Awareness strongly predicts Performance Satisfaction ($\beta = .4342$, $p < .001$), suggesting that environmental awareness enhances performance satisfaction. Similarly, EA is also the strongest predictor of ESWB ($\beta = .6727$, $p < .001$). Hence the hypothesis H3 and H6 are supported. These results support the assumption of presence of some mediating and moderating factors in the relationship between PS and ESWB with GHRM.

Table 3

Regression Analysis Results

Predictor	Outcome variable	B	SE	t	P	LLCI	ULCI	β (Standardized)	R	R ²
GHRM	PS	.2508	.0449	5.5804	.0000	.1624	.3393	.3048	.3048	.0929
	EA	.4157	.0460	9.0322	.0000	.3251	.5062	.4600	.4600	.2116
	ESWB	.3842	0.0435	8.844	.00000	.2986	.4697	.3211	.4522	.2045
EA	PS	0.3954	0.0513	7.7060	0.0000	0.2944	0.4963	0.4342	0.4915	0.2416
	ESWB	0.6324	0.0403	15.6978	0.0000	0.5531	0.7117	0.6727	0.7492	0.5613

Mediation Analysis

To check hypothesis 4 and 7 mediation analysis was performed. Results shown in Table 4. It can be seen in the results that the direct effect of GHRM on PS drops to 0.0865. The p-value (.0631) suggests this effect is not statistically significant. Hence proved that GHRM alone does not have a strong direct impact on PS. Indirect effect 0.1643 showed strong mediating role of EA between GHRM and PS. Similarly model-2 in

Table 4 showed that the indirect effect through EA on ESWB is 0.2629, suggesting that a substantial portion of GHRM's impact on ESWB is transmitted through the mediator. The bootstrap confidence interval (LLCI: 0.1733, ULCI: 0.3613) confirms that mediating role of EA is also statistically significant between GHRM and ESWB. Hence the hypothesis 4 and 7 are supported.

Table 4

Outcome variable	Effect Type	Effect	SE	t	p	LLCI	ULCI	Std. Effect
PS	Total EA Effect	0.2508	0.0449	5.5804	0.0000	0.1624	0.3393	0.3048
	Direct EA Effect	0.0865	0.0464	1.8653	0.0631	-	0.1777	0.1051
	Indirect EA Effect	0.1643	0.0394	-	-	0.0936	0.2488	0.1997
ESWB	Total EA Effect	0.3842	0.0435	8.8400	0.0000	0.2986	0.4697	0.4522
	Direct EA Effect	0.1213	0.0364	303317	0.0000	0.0497	0.1929	0.1428
	Indirect EA Effect	0.2629	0.0469	-	-	0.1756	0.3559	0.3094

Moderation Analysis

The moderating effect of GTL in the relationship between PS and EA was tested to evaluate hypothesis 8. Results have shown in table 5 and 6. The results indicate that both EA and GTL significantly enhance PS, but their interaction reveals a substitution effect. EA positively

influences PS ($B = 1.0036$, $p < .001$) and GTL independently contributes to it ($B = 0.8592$, $p < .001$), the negative interaction term ($B = -0.2137$, $p < .001$) suggests that the impact of EA on PS diminishes as GTL increases. At a low level of GTL (2.00), the effect of EA on PS is 0.4385. while, at

higher level of GTL the effect is negative (-0.0164) indicating negative moderation.

Similarly, hypothesis 10 evaluated through moderation analysis and results mentioned in table 6 and 7 indicate that both Environmental Awareness (EA) and Green Transformational Leadership (GTL) significantly and positively predict Employee Sustainable Work Behaviour (ESWB). EA showing a stronger direct effect ($B = 1.4537, p < .001$) than GTL ($B = 1.1778, p < .001$). However, the negative interaction term ($B =$

$-0.2901, p < .001$) suggests a negative moderation effect, indicating that the impact of EA on ESWB diminishes as GTL increases. At a **low level of GTL (2.00)**, the effect of EA on ESWB is **0.6866**. At a **moderate GTL level (3.71)**, the effect reduces (**0.3778**), highlighting that as GTL becomes more prominent, the impact of EA on ESWB decreases considerably and reduces further significantly at high level of GTL (**0.0690**).

Table 5

Predictor	Outcome	B	SE	t	p	LLCI	ULCI
EA	PS	1.0036	0.1243	8.0728	.0000	0.7590	1.2483
GTL	PS	0.8592	0.1398	6.1454	.0000	0.5841	1.1344
EA × GTL	PS	-0.2137	0.0366	-5.8316	.0000	-0.2858	-0.1416

Table 6

GTL Level

Low (-1 SD) = 2.6446

Mean = 3.7092

High (+1 SD) = 4.7737



Effect of EA on PS

0.4385

0.2111

-0.0164

Table 7

Predictor	Outcome	B	SE	t	p	LLCI	ULCI
EA (M)	ESWB	1.4537	0.0841	17.2861	.000	1.2882	1.6192
GTL (W)	ESWB	1.1778	0.0946	12.4538	.000	0.9917	1.3639
EA × GTL (Int_1)	ESWB	-0.2901	0.0248	-11.7027	.000	-0.3388	-0.2413

Table 8

GTL Level	Effect of EA on ESWB
Low (2.64)	0.6866
Moderate (3.71)	0.3778
High (4.77)	0.0690

Moderated mediation analysis:

Hypothesis 9 and 11 were evaluated through moderated mediation analysis. Results shown in table 9 indicate that the moderated mediation analysis reveals that GHRM is mediated by EA significantly which in turn positively influences Performance Satisfaction (PS). However, the strength of this indirect effect is contingent upon the level of Green Transformational Leadership (GTL). Specifically, the indirect effect of GHRM on PS through EA is strongest when GTL is low, diminishes at average levels, and becomes non-significant when GTL is high. This suggests a potential substitution effect, where high GTL may independently foster performance satisfaction, thereby reducing the mediating role of environmental awareness. The significant index of moderated mediation confirms that GTL attenuates the influence of EA in translating GHRM practices into performance outcomes. These findings underscore the importance of

aligning HRM strategies with leadership dynamics, indicating that in contexts with less transformational leadership, fostering environmental awareness through GHRM may be a more critical pathway to enhancing employee satisfaction with performance outcomes.

Similarly, the moderated mediation analysis to examine the indirect effect of GHRM on ESWB through EA with GTL as a moderator reveal that (table 9) the index of moderated mediation was negatively significant (-0.1206 , 95% CI $[-0.1549, -0.0874]$), confirming that the indirect effect of GHRM on ESWB via EA decreases as GTL increases. These findings suggest a substitution effect, where high levels of transformational leadership may independently foster sustainable behaviours, thereby diminishing the mediating role of environmental awareness.

Table 9

Indirect Effect of GHRM on PS through EA (Moderated by GTL)			
GTL Level	Indirect Effect	BootLLCI	BootULCI
Low (-1 SD)	0.1823	0.1119	0.2561
Mean	0.0877	0.0435	0.1432
High (+1 SD)	-0.0068	-0.0648	0.0634
Indirect Effect of GHRM on ESWB through EA (Moderated by GTL)			
Low (-1 SD)	0.2854	0.2099	0.3613
Mean	0.1570	0.1080	0.2192
High (+1 SD)	0.0287	-0.0185	0.0938

Discussion:

The findings of this study provide compelling evidence regarding the relationships among Green Human Resource Management (GHRM), Performance Satisfaction (PS), and environmentally sustainable work behaviour (ESWB), highlighting the crucial roles of Environmental Awareness (EA) as a mediator and Green Transformational Leadership (GTL) as a moderator.

The results indicated that while GHRM has a positive influence on both PS and ESWB, the magnitude of this effect is relatively modest, suggesting the presence of additional factors that shape these relationships. This aligns with the broader understanding that sustainable HRM practices, while beneficial, require complementary mechanisms to maximize their impact. The mediation analysis underscores the pivotal role of EA in this dynamic, revealing that employees' awareness of environmental sustainability significantly enhances the effectiveness of GHRM initiatives. When EA is introduced into the model, the direct impact of GHRM on PS nearly diminishes, demonstrating that environmental consciousness is a key factor in translating sustainability efforts into meaningful employee satisfaction. Similarly, EA strengthens the link between GHRM and ESWB, affirming that fostering environmental awareness within organizations contributes to employees' overall well-being.

The Study revealed that intricate and convoluted relationship between Green Human Resource Management GHRM, employee cognition and transformational leadership. While GHRM practices were linked up the foundational effect on both Performance Satisfaction (PS) and Environmentally Sustainable Work Behavior (ESWB), that relatively modest effects highlight that their power is not inherent but is channeled and formulized through critical psychological and leadership mechanism. The rigorous mediating role of Environmental Awareness (EA) is the cornerstone of the process, it acts as the essential cognitive bridge that translates and indulge organization green policies into tangible employee's outcomes. GHRM is perceived

perilous as superficial rather than purposeful organization values thereby restricting the impact on Environmental Awareness (EA).

However, the most distinctive and paradoxical findings revealed the role of Green Transformational Leadership (GTL). Contrary to the initial hypothesis, GTL did not strengthen or positively impact the gap but functioned as negative moderator. This suggests Overly strong leadership on sustainability goals can overwhelm employees, stifling their intrinsic motivation and personal initiative. This saturation effect from external directives prevents employees from developing their own commitment and awareness. The analysis demonstrated that positive impact of EA on both PS and ESWB significantly diminished as level of GTL increased. In return the mediated pathway from GHRM to outcomes via EA is strongest in context with lower transformational leadership, indicating that investing in building employee awareness is most critical when top-down green inspiration is less pronounced.

These results have important implications for organizational sustainability strategies. They suggest that merely implementing GHRM practices is not sufficient; fostering a strong culture of environmental awareness and ensuring transformational leadership are equally essential. Organizations seeking to maximize the benefits of sustainable HRM should actively engage employees in environmental initiatives, embedding awareness programs into their HR policies and leadership development efforts. Furthermore, strengthening transformational leadership capabilities may be a key driver in creating psychologically safe environments where employees feel motivated and empowered to contribute to sustainability efforts.

This study advances the understanding of how Green Human Resource Management (GHRM) practices influence employee outcomes by uncovering the critical mediating role of Environmental Awareness (EA) and the paradoxical moderating effect of Green Transformational Leadership (GTL). While GHRM positively contributes to Performance Satisfaction (PS) and Environmentally Sustainable

Work Behavior (ESWB), its impact is significantly amplified when employees possess heightened environmental consciousness. However, the unexpected finding that GTL weakens the EA outcome relationship challenges conventional assumptions about leadership's uniformly positive role in sustainability initiatives. The saturation effect observed suggests that overly directive leadership may suppress intrinsic motivation, thereby diminishing the effectiveness of bottom-up awareness strategies. These insights underscore the importance of balancing structural HRM interventions with employee-driven engagement and calibrated leadership approaches.

For organizations aiming to embed sustainability into their core practices, the findings highlight that GHRM alone is insufficient. Strategic emphasis must be placed on cultivating environmental awareness and fostering leadership styles that empower rather than overwhelm. By aligning HRM, cognition, and leadership in a synergistic manner, institutions can create psychologically safe and environmentally responsive workplaces that drive both satisfaction and sustainable behaviour.

Research Significance:

The study will contribute to the growing body of knowledge on sustainable HR practices, providing empirical evidence on how these HRM practices influence employee behavior and organizational outcomes. It will be an advancement in the field which will uncover the mediation and moderation roles of environmental awareness and green transformative leadership and will describe the mechanisms through which Green HRM drives sustainable work behavior and enhances performance. The study may help the scholars refine theories on sustainability in workplace settings.

1-Theoretical significance:

The study makes several substantial contributions to the theoretical landscape of sustainable HRM and organization behavior. Firstly, it robustly validates and extends the ability motivation opportunity theory in to green domain by demonstrating that GHRM enhance employee

ability and motivations leading to desired ESWB and PS. Secondly it challenges and refines existing assumptions about transformational leadership by revealing its potential negative moderating role, introducing crucial nuance to leadership theory. These findings suggest that the effects of leadership are not universally positive and can depend on their interaction with employee level cognitive states like awareness. Finally, the study provides strong empirical support for mediating mechanism of environmental awareness, solidifying its place as critical psychological variable that explain how GHRM practices influence individual level outcomes, thereby addressing a significant gap in literature.

Practical Significance:

The practical implications of this research are direct and actionable for corporate sector of Pakistan particularly the textile industry. Managers and HR professionals should recognize that implementing green policies is only the first step, a concerted effort must be made to concurrently develop comprehensive environmental awareness programs to ensure these policies are understood and internalized by employees. Furthermore, the findings offer a critical lesson for leadership development, while cultivating green transformational leaders is important, organizations must be cautious not to create an over reliance on them. The goal should be to strike a balance where leadership inspires but also empowers employees own sense of environmental responsibility. Organizations should prioritize training that equips leaders to delegate green initiative and foster autonomy, ensuring that environment consciousness is embedded within the culture and not solely dependent on a charismatic figurehead.

3. Limitations

Organizations can use findings from this research to develop policies that align HRM with green initiatives, ensuring a workforce that is not only productive but also environmentally responsible which will lead organization to foster culture of sustainability and help in strengthening corporate social responsibility efforts.

Future research could explore additional contextual variables, such as organizational culture or employee perceptions of corporate social responsibility, to further refine and expand these insights. Furthermore, the scope of the current study was limited to workers in textile sector only. Hence extrapolating the findings to other areas of corporate sector would be more valuable in future.

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