



The Impact of Green Transformational Leadership on Environmental Performance: Mediating Effect of Green Human Resource Management and Green Innovation

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ABSTRACT

Very few recent studies have addressed the aspects of green transformational leadership to impact environmental efficiency, and thus this study develops a theoretical structure that will help to close this gap. This research discusses and investigates the role of green transformational leadership on environmental performance the mediating impact of green creativity and green human resource management. The survey questioner method was used, and data were collected from 235 respondents from manufacturing organizations All constructs used in this study used established and reliable measures of scales of green transformational leadership, green innovation, green human resource management, and environmental performance. However, the findings also suggest that green human resource management and green creativity have a favorable and important effect on the mediation of the relationship between green transformational leadership and environmental efficiency. Our research adds to and advances current literature. Implementations, recommendations, and limitations of this analysis have also been included for further studies.

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1. Introduction

Global change and environmental conservation have been the most important issues witnessed over the past few decades. Nearly every company, industry, and government that attempts to advance natural protection activities (Calantone, 2003). The organization needs to find alternative paths and procedures in the given scenario that cope with declining organic impressions rather than solving financial problems. To achieve victory classified to the mutual society and to increase the spirit of success to the good of customers, companies have now been able to rely on both social and natural elements in addition to cautious economic variables.(Nalini & Bonnie, 2004).

Because of the current situation, firms must also figure out how to deal with ecological footprint reduction in addition to dealing with economic concerns. To achieve success in the corporate community and to foster the shareholders' profitability, companies must now focus on social, environmental and economic, and financial factors. (Daily, Bishop, & Steiner, 2007; Nalini & Bonnie, 2004). Successful implementation of these sustainable corporate objectives takes strong leadership as well as a specific process. (Glavas, Senge, & Cooperrider, 2010). The question of sustainability is rapidly becoming a priority of business leaders, given the awareness about integrating the "green" element into the company strategy, but the subject is still not attractive to most HR professionals. (Wirtenberg, Harmon, Russell, & Fairfield, 2007).

Green transformational leaders can urge their teams to consider natural issues in creative manners and make associations with their teams through utilizing ecological practices (J. L. Robertson & J. Barling, 2013). Existing exploration on the green transformational

leadership (GTFL) uncovered that it improves employees' eco-accommodating conduct. Few empirical types of research have affirmed the relationship between workers and ecological performance aside from the investigation by (Paillé, Chen, Boiral, & Jin, 2014). There is a call to explore green human resource management (GHRM) and Green innovation a construct that mediates the relationship with employees' environmental performance. Employee's behavior is often accountable for the effective execution of operational policies that assist in diminishing adverse effects on the natural habitat. Corporate analysts have addressed the requirement for empirical examinations that research how to urge workers to take part in earth-friendly practices (L. M. Graves, J. Sarkis, & Q. Zhu, 2013). Therefore, this study pursues to explicitly increase a more prominent comprehension of employees' eco-friendly behavior by inspecting the procedures that encourage such behavior.

Furthermore, this study addresses another theoretical gap by examining the mediating role of GHRM and green innovation in the relationship between Green transformational leadership and environmental performance. As per the knowledge of the researcher, there is a prominent deficiency of literature that uses GHRM and green innovation as a mediating variable between GTFL and organizations' environmental performance. The researcher aims to extend the literature by researching the relationship among proposed constructs in the manufacturing industry of Pakistan.

Most manufacturing organizations aim to dispense with discards made during the creation and removal of their goods and, along these lines, to improve their corporate environmental performance. When it comes to manufacturing industries, their green efforts include reducing waste, saving vitality and water in their businesses, and teaching clients and representatives about environmental conservation. Environmental organizations highlight conservational management features for the industry to use to review environmentally friendly practices (Sang-Hyo Kim, Choi, Mha, & Joungh, 2013). Previous studies had a lack of investigation of all dimensions of GTFL, its importance, and significance.

2. Theoretical Background and Hypotheses

2.1. Green Transformational Leadership & Green HRM

Transformational leaders are those who have a wide vision about organizations' current course of actions and future course of actions and amid developing marketplaces. Leaders can create a vision innovatively, they strongly confident in it, and they could explain and communicate it to employees more conveniently, so employees could believe in the leader and be more thrilled around vision (Zhu, Chew, & Spangler, 2005). The author suggested in away, transformational leaders directed advanced levels of inspiration, belief, unity, loyalty, and performance. the literature explains that transformational leadership had not negatively affected performance controlling, talent controlling, and competence of employees that inspired intellectually (Carton, Murphy, & Clark, 2014; Jia, Liu, Chin, & Hu, 2018). On the other side, the organization's green HRM that states that green practices of HRM aid organizations to develop, motivate, acquire, and sustain employees' green behavior at the workplace (Renwick, Redman, & Maguire, 2013). Green transformational leadership (GTFL) reflects the values and beliefs of higher management and has a significant influence on the administration's green human resource management. Hence, the author figures out such as a green transformational leader play an imperative part in the organization on the formulation of supportive GHRM police and practices of accomplish organization's green innovation or green performance (Jia et al., 2018) for the achievement of green performance and to help organization's delivers according to its policies and ideas (Carton et al., 2014).

H1: Green transformational leadership is positively and significantly impacts green HRM.

2.2. Green transformational leadership & Green innovation

Chen and Chang (2013) Well-defined green innovation such as "for Green products, green facilities & green functions arbitrate about innovate and different by developing innovative concepts".

Green innovation states toward playing role in developing environmentally friendly products and processes by acceptance of administrative functions specifically, green resources,

and usage of some resources while designing products using those ideologies which are eco-design and to sink discharges, lessen the waste of electricity, water, and resources. Many of the existing research recommend that firms with green innovation are extremely effective and giving an overall improved performance as compared to competitors had, by way of they influence the green capitals and abilities to yield fast and properly to clients' requirements and add nontangible beliefs & property in the association. Some previous research endorses that human resource management effect and significantly stimulus technical and product inventions. HRM performs with emphasis on stimulating principles of obligation than acquiescence has absolutely inspiration on a firm's inventive positioning. Moreover, Wei, Liu, and Herndon (2011) propose that considered HRM positively impacts product novelty in the firm, which had progressive values and smooth administrative construction.

H2: Green transformational leadership is positively and significantly impacts green innovation.

2.3. Green HRM & Environmental Performance

An important objective of an organization is the execution of green practices to improve cost-effective performance and environmental performance. Therefore, part of leadership requires to meet the accomplishment of the organization's economic and environmental aims and visions. That outlooks the development concept of leadership. Encouraging and logical inspiration and motivation can be used by leaders, which is dangerous for a firm's innovation (Elkins & Keller, 2003). Earlier studies evidenced the Firm's innovation could be affected by transformation leadership, however, it could help to stimulate new creativity and inspire employees (Jung, Chow, & Wu, 2003). Studies determine how leadership performs a challenging role in the stimulation of fruitful innovation ideas inside firms. Transformational management useful for the expansion of novel ideas in the innovative process, because transformational managers perform as an accelerator that motivates employees to look issues in different ways (Keller, 1992; Waldman & Bass, 1991). Besides, behaviors are part of the leadership that allows employees to think of innovative ideas.

H3: Green HRM is positively associated with environmental performance.

2.4. Green Innovation & Environmental Performance

Environmental performance relies on administrative creativities encounter, beat social prospects vis-à-vis to the expected situation (Chan, 2005) now a mode towards drive out their simple amenities through principles or procedures (Chen, Chang, Yeh, & Cheng, 2015). Organizational process, product, and consumption of resources affect the environment in a way that acceptable in allowed situation supplies (Dubey, Gunasekaran, & Ali, 2015). Existing literature explored such dependency of environmental performance is upon that excellence about environmental kindly goods, green innovation, green development as well as assimilation between ecological stability and occupational tasks as well as invention growth (Chen et al., 2015; Darnall, Jolley, & Handfield, 2008; Dubey et al., 2015; Oliva et al., 2019). An organization's environmental management agenda is associated with green invention as well as environmental performance is stimulated by green innovation (Kammerer, 2009).

H4: Green innovation as positively connected to environmental performance.

2.5. Green Innovation as Mediator

Green human resource rises workers' environmental attentiveness, green vision, as well as green compact achievement. According to preceding literature, green social source managing effect green innovation (Zhou, Zhang, Lyu, & Zhang, 2018) and green organizational performance meanwhile those regions to study are rare and have questions and required more empirical investigation exclusively when vital stakeholders continue pressurizing firm to practice environmental friendly management. However, researchers state that firms should focus on employees knowledge, values, and beliefs about the environment at the time of recruitment (Renwick et al., 2013), and make sure recruits (who recruited by green recruitment and selection system) also understand and appreciates organizations own opinions also ethics about the environment (Jackson & Seo, 2010) by approaching workers ecological opinions, ethics as well as awareness. Likely wise, performance management and evaluation green training &

development (Singh & El-Kassar, 2019), green rewards & compensation are central HRM performs the care higher environmental performance.

H5: Green innovation significantly facilitates the relation between green transformational and environmental performance.

2.6. Green HRM as a Mediator

Within each institute, governance counts a lot, and organizations' biggest resources are human capital (Del Giudice & Della Peruta, 2016). The main concentration of leadership is predicting, controlling, and understanding how people impact each other to achieve a common goal personally and interpersonally (Bradley & McDonald, 2011), whereas the HRM lookout of administration's structures and approaches to impact personnel in arranged means, typically on a greater (Lin et al., 2013). Therefore, we agree that management and HRM collectively are worried about managing human beings at their place of business however from exceptional perspectives. The primary aspect of the present literature endorses that leaders perform the fundamental position of mediating variables in approving the practices advocated with the aid of HRM to attain worker motivation and performance.

H6: Green HRM significantly mediates the relationship between green transformational leadership as well as environmental performance.

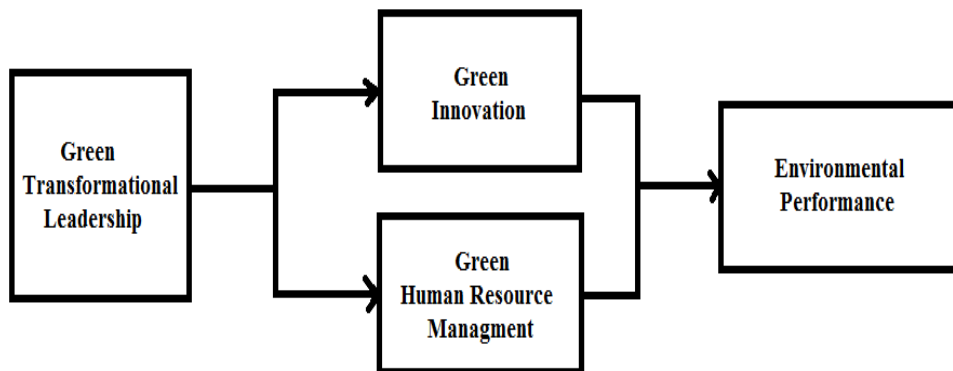


Figure 1: Conceptual Framework

3. Methodology

3.1. Sampling and Data collection

This study is descriptive and quantitative. A questionnaire survey method was adopted to collect data. Data have been collected from 100 selected manufacturing organizations from Lahore by applying a simple random sampling technique. The manufacturing sector has been selected for data collection; therefore, the target population includes employees of all manufacturing organizations working in Lahore. 100 manufacturing organizations have been shortlisted according to their financial performance, track record, and experience. For the data, the collection purpose questioner was floated online and sent the link to the respondent to complete this survey. About 235 respondents participated in this survey and filled this questioner, all the respondents belong to the city Lahore and employees of different manufacturing companies of Lahore. List of all employees obtained from concerned authorities of selected manufacturing organizations and have been collected.

3.2. Green Transformational Leadership

Green Transformational leadership was measured by using the scale from (Singh, Del Giudice, Chierici, & Graziano, 2020). The scale measured 5 items related to green transformational leadership. Here 5-point Likert scale sequence was as followed (1- strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree).

3.3. Green Human Resource Management

Green human resource management was measured by using the scale developed by (Singh et al., 2020). Here 5-point Likert scale sequence was as followed (1- strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree).

3.4. Green Innovation

We adapted 7 item scale to measure green innovation, consisting of 4 items of green product innovation and 3 items of green process innovation (Singh et al., 2020). Here 5-point Likert scale sequence was as followed (1- strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree).

3.5. Environmental Performance

For the questioner survey, we adopted a 7 items scale of environmental performance (Seman et al., 2019). Here 5-point Likert scale sequence was as followed (1- strongly disagree, 2-disagree, 3-neutral, 4-agree, 5-strongly agree).

4. Analysis and Results

4.1. Demographic

Out of 235 respondents approximately 89.1% are male and 10.9% are female. The highest percentage of respondents belongs to age group 30-35 is 51.2% and the lowest percentage belongs to the age group above 35 is 2.7%, 10%, 35.5% respondents belong to age group 20-25, and 25-30 respectively. Most of the respondents of this study are masters with 59.8%. This is followed by intermediates followers representing 2.7% respondents with bachelor's degrees ranked second with 36.5%, and a minority of respondents are Ph.D. 0.8%. Most of the participants of this study are managers and assistant managers with a percentage of 24.6% or 63 both. And rest followed by general manager 11.7%, marketing manager 9.8%, HR manager 6.6%, site engineer 6.6%, own business 5.9%, regional manager 3.9%, Operational manager 3.5%, and administrative job 2.7%.

4.2. Reliability and Validity

The construct validity table shows that all the loading values of variables excided from a range of 0.7 and lower than 0.95 (Hair, Risher, Sarstedt, & Ringle, 2019). Composite reliability value excided from 0.7 that portrait the degree of construct indicates that indicates the latent construct. Composite reliability values of variables are green transformational leadership 0.74%, green innovation 0.847, green human resource management 0.943, and environmental performance 0.732, so all the values for variables are acceptable (Hair et al., 2019). Meanwhile, the average variance extracted is also exceeded 0.7. Ave shows the number of variables in the latent constructs. The values of Ave for research variables are green transformational leadership 0.753, green innovation 0.72, green human resource management 0.854, and environmental performance 0.753. Cronbach's alpha coefficient differs with green transformational leadership 0.936, green innovation 0.935, green human resource management 0.927, and environmental performance 0.945. All the results show that the internal consistency of scale is at a satisfactory level (Henseler, Ringle, & Sarstedt, 2015).

4.3. Discriminant Validity

Secondly, we observe the discriminant validity of variables through two methods computing the roots square value of AVEs with the correlation coefficient and observe the Hetrotrait-monotrait Ration of correlation. When the square root value of Aves beat their corresponding correlation coefficient between construct, and HTMT is less than its standard rang discriminate validity transparently (Henseler et al., 2015).

Forell and Lacker presented the traditional method and said each construct's Ave must be compared to squared inter-construct correlation (Hair et al., 2019). Values of the construct from the ForellLacker criterion for variables were green transformational leadership 0.892, green innovation 0.849, green human resource management 0.924, and environmental performance 0.868. Another method HTMT defined as the mean value of an item correlation across constructs relative to the mean of the average correlations for the item measuring the same

constructs. HTMT ratio exceeds a range of 0.90 would show that discriminant validity does not exist (Hair et al., 2019). HTMT ratios of green innovation to green human resource management was 0.805, green transformational leadership to green innovation 0.877, and environmental performance to green transformational leadership, which are greater than their correspondent.

Table 1
Construct Reliability and Validity

Constructs	Items	loadings	AVE	CR	Cronbach's Alpha
Green transformational leadership	GTFL1	0.883	0.795	0.741	0.936
	GTFL2	0.865			
	GTFL3	0.914			
	GTFL4	0.909			
	GTFL5	0.888			
Green Innovation	GI1	0.861	0.72	0.847	0.935
	GI2	0.891			
	GI3	0.816			
	GI4	0.882			
	GI5	0.862			
	GI6	0.828			
	GI7	0.797			
Green Human resource Management	GHRM1	0.912	0.854	0.943	0.937
	GHRM2	0.91			
	GHRM3	0.933			
	GHRM4	0.94			
	GHRM5	0.924			
Environmental performance	EP1	0.874	0.753	0.732	0.945
	EP2	0.862			
	EP3	0.912			
	EP4	0.747			
	EP5	0.89			
	EP6	0.902			
	EP7	0.877			

Table 2
Discriminant Validity

	Green HRM	Green innovation	Green transformational leadership	Environmental Performance
Green HRM	0.924			
Green innovation	0.766	0.849		
Green transformational leadership	0.781	0.87	0.892	
environmental performance	0.876	0.812	0.828	0.868

Table 3
Hetrotrait-monotrait Ration

	Green HRM	Green innovation	Green transformational leadership	Environmental Performance
Green HRM				
Green innovation	0.805			
Green transformational leadership	0.801	0.877		
environmental performance	0.917	0.864	0.878	

4.4. Hypothesis Testing
4.4.1. Direct relationship

Hypothesis1 (H1) focused on the relationship between green transformational leadership and green innovation. According to the H1, PLs SEM results from the exhibit that green transformation leadership has positive as well as significant (Beta=0.021, t=42.14, P>0.00) impact green innovation. The study formulates the positive relationship between green transformational leadership and green human resource management as hypothesis 2 (H2). The results (Beta=0.26, t=30.169, P>0.00) showed that green transformational leadership has a positive and significant influence on green human resource management. The study constructs

hypothesis 3(H3) related to green innovation has a positive influence on environmental performance. As shown in results (Beta=0.56, t=6.058, P>0.00) green innovation also has a positive and significant impact on environmental performance. The effect of green human resource management on environmental performance was also observed in hypothesis 4 (H4). The outcome manifests that green human resource management has a positive and significant impact on environmental performance. Therefore, hypotheses H1, H2, H3, and H4 fully supported the direct effect of variables.

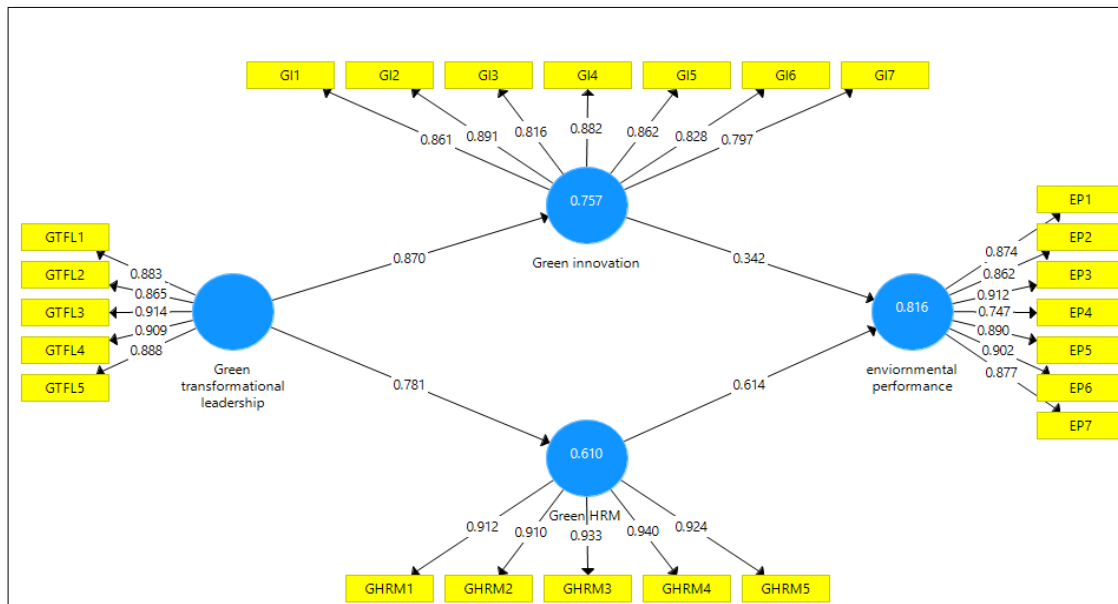


Figure 2: Measurement Model

Table 4
Testing for Direct Effect

Direct effect	beta	t value	Sig level	Hypothesis testing
Green transformational leadership -> Green innovation	0.021	42.141	P>0.00	H1 accepted
Green transformational leadership -> Green HRM	0.026	30.219	P>0.00	H2 accepted
Green innovation -> environmental performance	0.056	6.058	P>0.00	H3 accepted
Green HRM -> environmental performance	0.055	11.219	P>0.00	H4 accepted

4.4.2. Indirect Effect

The relationship between green transformational leadership and environmental performance had also observed through indirect effect. The specifically indirect effect between green transformational leadership and environmental performance had studied through 2 mediators' green innovation and green human resource management. The table illustrates the hypothesis 5 (H5) (Beta=0.051, t=5.859, P>0.00) and H6 (Beta=0.049, t=9.811, P.0.00) result demonstrates such green innovation has positive as well as significant effect on green transformational leadership and environmental performance. The finding revealed that green human resource management positively and significantly played the mediating role between green human resource management and environmental performance. Results recommended that both indirect hypotheses H5 and H6 supported the study.

Table 5
Testing for Indirect Effect

Indirect effect	beta	t value	Sig level	Hypothesis testing
Green transformational leadership -> Green innovation -> environmental performance	0.051	5.859	P>0.00	H5 accepted
Green transformational leadership -> Green HRM -> environmental performance	0.049	9.811	P>0.00	H6 accepted

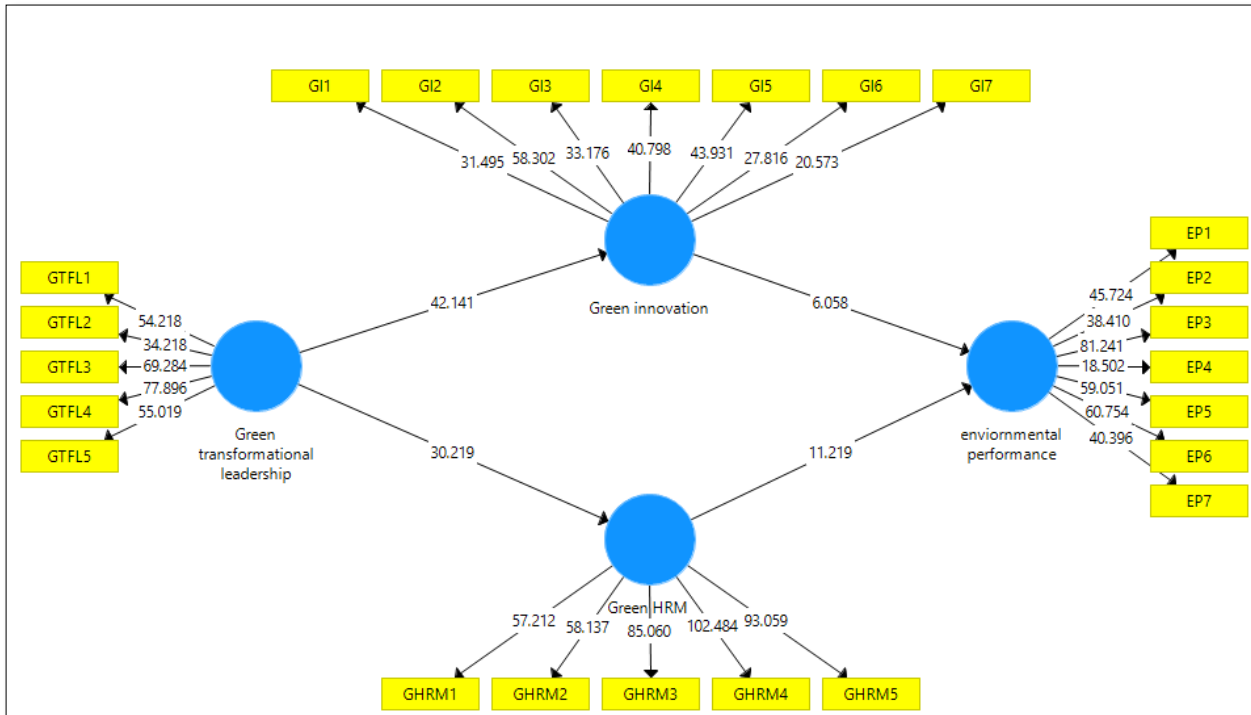


Figure 3: Structural Model

5. Discussion

This literature investigates the association between green transformational leadership and environmental performance through green human resource management and green innovation. The core aim of the recent research is to investigate or explored the association of Environmental Performance and Green Transformational Leadership within the mediating relationship of Green HRM and Green innovation. The results were derived through the Smart PLS technique by the researcher. This literature helps to support the existing studies about green transformational leadership to inspire the green HRM and green innovation and environmental performance of an organization (Jia et al., 2018; Renwick et al., 2013). The findings of recent research also add in the literature on green innovation, and green transformational leadership to improve organizations environmental performance (Kim, Song, Jeon, Lee, & Crystals, 2013) . The findings concerns the positive effect of green transformational leadership on green innovation and green human resource management and environmental performance that was relatable to existent researcher’s findings (Martínez-Jurado, Moyano-Fuentes, & Gómez, 2013). The current study focuses on green transformational leadership, a constituent of environmental performance generally, human resource management is an important means to achieving organizational goals through motivating employee (Domínguez-Falcón, Martín-Santana, & De Saá-Pérez, 2016).

This study spreads the environmental performance works by inspecting the effects of green transformational leadership on green innovation and green human resource management of organizational. The findings reveal the effectiveness of the implementation of green innovation and green human resource management. In specifically, based on social identity theory, this research spread out the works by exploring the part of employees’ organizational vow among green human resource management and green innovative behavior. Partial studies in environmental literature have discovered the character of green human resource management and green innovation as an intermediary between green transformational leadership and environmental performance. These discoveries emphasize the declarations of earlier studies (Carmeli, 2005; Liden et al., 2003) about the hypothesis that green transformational leaders have an important role in the environmental performance of an organization. Interceding Significance of green innovation and green human resource management are also disclosed by the findings of these studies.

5.1. Theoretical implications

The outcomes of this research give 3 main suggestions for the future concept. The findings of the study have great contributions to the works. Based on social identity theory, results disclosed an interlink between green human resource management, green innovation, green leadership, and environmental performance. Green human resource management practices implementation may be perceived as a gesture of positive organization performance that reflects the honest concern of the organization about the environment. If the organization's employees are awarded green human resource management, they defiantly express an advanced level of organization assurance towards the firm. The conclusions of the study are constant with Yuriev, Boiral, Francoeur, and Paillé (2018) assuring that principles of social identity theory could be implemented by researchers to enlighten the psychosomatic linking between the firm and its employees in the context of environmental performance. This research appeals and offers experiential proof for social identity theory on the association amongst green transformational leadership, environmental performance, and green human resource management in manufacturing organizations.

Secondly, HRM and leadership perform an important role in releasing human potential but in different ways. From previous studies either leadership plays a role as the ancestor, (Jia et al., 2018), mediator, and moderator on the human resource relationships. From the findings, we recommended that green transformational leadership performs a vital role of human resource management antecedent to improve organizations' environmental performance by green innovation (Chen & Chang, 2013). Thirdly we found that green innovation influences an organization's environmental performance. As such, we advocate that green leadership over green motivation, appraisal, and recognition help managers appeal, hold, and endure green staffs towards environmental performance (Zhu et al., 2005).

5.2. Practical implications

This research proposed a few key proposals to influential and administrators is the best way to cause green innovation to occur and use it for better environmental performance than had its opponents in the business market. To begin with, we propose that putting resources into environmental management is favorable for an organization to win great picture according to partners, as later has gotten all the new requesting and pressurizing firms to practice environmental safety in the entirety of its cycle, items and additionally benefits. The consequences of our investigation recommend that firm ought to underline and strengthen green initiative practices fundamental for actualizing green human resource practices.

Numerous researchers and professionals in the manufacturing field have started to perceive that having economical management, including natural preservation, is getting one of the significant duties of manufacturing associations (Rahman, Reynolds, & Svaren, 2012; Yen, Chen, & Teng, 2013) To manage this duty, manufacturing associations ought to give green human resource management before other utilitarian efforts in environmental management. Green human resource practices are basic forgetting, creating, and continuing staffs who carry to work green convictions & qualities to comfort uphold the company's procedure to contend with contenders over the green cycle and green items. Subsequently, we recommend it like, company's transformational leadership cause workers with green capacity and inspiration to feel comfortable through the strong condition or give chances to understand the green possibilities to support company make green development in its cycles and item to remain applicable and rear in the market.

5.3. Limitations of the Study and Future Directions

This investigation makes some boundaries, and they represent alongside course for upcoming research. To start with, we directed this investigation in the manufacturing division of Pakistan, and it restricts the generalizability of our examination for the non-manufacturing area. Along these lines, we propose that future exploration ought to stretch out our research framework system to the nonmanufacturing area in Pakistan.

Second, this examination did not utilize worker-level development to be specific environmental convictions and qualities to dig its mediating function on the human resource management concert results. Accordingly, we suggest that research in the future should propel

our research framework to remember employee's environmental convictions and qualities as a mediator for the influence of green innovation and green human resource management.

Third, we recommend that future research in Pakistan ought to explore both inside and outside components opposite in the selection of the environmental strategies in organizations for more profound comprehension of defining, actualizing, and supporting proactive environmental systems. At long last, our investigation inspected authoritative individuals' discernment to quantify environmental performance and green innovation. We recommend that later research would test the view of equally inner and outer partners to even more likely comprehend and clarify the firm's green innovation and environmental performance.

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