

Antecedents And Consequences Of Green HRM In The Manufacturing Sector: A Systematic Literature Review

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ABSTRACT

Research on “Green Human Resource Management (GHRM)” has proliferated quickly in tandem with the increase in environmental awareness across the globe. According to research findings, firms that can integrate their HRM strategies with environmental management approaches reap both organizational and individual advantages. This research is the systematic analysis of empirical investigations on GHRM in the manufacturing sector. Using a systematically selected sample of 19 articles, we examined the theoretical underpinnings of the empirical research and the mediator, and moderator linkages between the antecedents and outcomes of GHRM in the manufacturing sector. We have also provided the platform for further research and additionally, this research looked into potential mediators and moderators that could be used in subsequent empirical GHRM investigations in the manufacturing sector.

Keywords: GHRM, antecedents, consequences, green values, green behaviour, environmental performance, green creativity, etc.

JEL Codes: M14, M54, Q56, O15, L60

1. Introduction

Environmental destruction and global warming have caused economic losses as a consequence of temperature and environmental catastrophes including extreme hurricanes, droughts, weather extremes, and wildfires. These challenges have been recognized as the most critical of the twenty-first century. According to projections, human activities have already exacerbated global warming by about 1.0 °C a level above "pre-industrial" (United Nations Environment Programme, 2019). The corporate sector is often at the vanguard of conversations about sustainability and is considered to play a significant role in local, nationwide, and worldwide environmental challenges (Moscardo et al., 2013). As a consequence, it is projected that firms will be critical in handling ecological threats (Schaltegger and Burritt, 2010).

Moreover, stakeholders are placing greater demands on the sectors to conceive about adopting a more proactive stance regarding ecological issues and assuming responsibility for their environmental implications to make sure that the wishes and requirements of coming generations might well be fulfilled. This pressure stretches beyond acquiring a social license to operate. To achieve "environmental sustainability", organizations should move above adherence and implement a rather more proactive approach.

According to the "working model" of business ethics, "corporate social responsibility (CSR)" is among the foundational principles of creating a long-lasting firm (Van Marrewijk, 2003; Moscardo et al., 2013). CSR is described as a firm's independent participation in commercial activities that are believed to promote "economic, social, and environmental" health (Du et al., 2011). Changes have to be made to the company's operations and also how products and solutions are offered to attain "Environmental Sustainability (ES)." Employees are the primary change agents and are vital to every change process; "environmental performance" improvement is not exceptional (Nejati et al., 2017). According to this viewpoint, GHRM can be seen as a means for firms to realize their CSR a reality. According to Renwick et al. (2013), GHRM is essential for the successful deployment of green strategies and environmental activities and may drastically enhance an organization's ecological sustainability. Published studies have demonstrated that GHRM refers to a set of specific HRM strategies that encourage and promote proactive environmental stewardship and the attainment of elevated outcomes in terms of "environmental sustainability" (Becker et al., 1998).

The significance of GHRM in ensuring ES has led to an increase in GHRM research (Torugsa, 2016; Renwick et al., 2016; Dumont et al., 2017; Nejati et al., 2017; O'Donohue and Pham et al., 2019; Yu et al., 2020). However, the existing research on the causes of GHRM and

the way it impacts organizational outcomes remains largely unexplained (Ren et al., 2018). Due to a dearth of such studies, it is unclear what drives GHRM (also known as antecedents) and what intermediate process (also known as a mediator) enables green HRM to provide positive outcomes. Moreover, Ren et al. (2018) highlighted that a better comprehension of the GHRM and its mediating connections is necessary to effectively direct the development of a GHRM system and reap long-term advantages. The majority of the apparent GHRM research was done in the service sector, and therefore the current study was carried out in the manufacturing sector, one of the biggest sectors around the world, to comprehend the moderating and mediating initiatives of the "antecedents and consequences" interactions of GHRM. To add something beyond these "systematic literature reviews (SLR) and meta-analyses," we consider that a review of "mediators and moderators" of GHRM is highly desirable. As a consequence, it will be able to evaluate the current empirical and conceptual position of the GHRM literature and suggest alternatives for impending investigations into substantial mediators and moderators, thereby reinforcing the theoretical basis and widening the scope of GHRM investigation in the manufacturing sector. We provide a review of the "antecedents and outcomes" in GHRM with a strong emphasis on the role of "mediators and moderators" investigated in the antecedents and GHRM, and GHRM and outcomes relationships.

The structure of this article is as follows. The study begins with a review of GHRM in the manufacturing sector. The methodology is then thoroughly explained. The role of mediators and moderators in the relationships between the antecedents, GHRM, and outcomes are then summarized and tabulated. A few potential variables that might perform the role of "mediators and moderators" in the GHRM's future work are listed in the study's conclusion.

2. GHRM: A General review of literature

GHRM, according to Ren et al. (2018), refers to phenomena that are crucial for understanding the links between company operations that have an impact on the environment and the conception, formulation, execution, and effects of HRM systems. The authors furthermore contextualize and elucidate that notion by emphasizing that GHRM must be regarded as a system that will promote environmental management initiatives. This system must represent "Green Values (GV)", inspire employees to act in ways that are consistent with these values through HRM practices, and guarantee that policies are adhered to and maintained regularly by employing green technological methods. This definition utilizes the term GHRM to describe the component of the broader sustainable HRM paradigm that concerns the environment.

According to Jabbour et al. (2010), GHRM refers to the greening of HRM's core processes, such as "job analysis and description, employee hiring, training, and rewarding". GHRM was described again by Jabbour (2011) as the degree of the greening of HRM activities in terms of the operational and competitiveness of HRM. The term GHRM is used to describe all the actions associated with the conception, execution, and continuing maintenance of a system that aims to make personnel of an organization "green". It alludes to the part of HRM that is concerned with transforming existing staff into an environmentally friendly workforce to fulfill corporate environmental targets and ultimately substantially enhance ES. It also refers to the "policies, methods, and procedures" that enable employees of the company to go "green" to serve the individuals, community, ecosystem, and enterprise (Opatha and Anton Arulrajah, 2014). GHRM is explained as the HRM of environmental management (Renwick et al., 2013) or the HR policies and procedures of "recruitment, selection, training, performance appraisal, reward systems", and involvement for protection of the environment, according to several definitions of the term cited in the literature (Tang et al., 2018). A similar approach is adopted by Kim et al. (2019) to describe "training, empowerment, and rewards" which are intended to promote "environmental commitment (EC)" and dissemination of "environmental policy (EP)".

Owing to GHRM's youthfulness, it has been extremely challenging to investigate its theoretical components. However, this limitation offers multiple opportunities for ground-breaking and substantial GHRM research. The White Paper by Renwick et al. (2008) was the very first systematic review of GHRM which investigated nearly 60 academic materials stretching two decades, from 1988 to 2008, and concentrated on a group of GHRM initiatives (Jackson & Seo, 2010; Jackson et al., 2011). By recognizing and advocating the decision to invest in an integrated strategic HRM and EM, Jackson & Seo, 2010 and Jackson et al. (2011) made a significant contribution to the research on GHRM. Renwick et al. (2013, 2016) provided a credible argument for blending HRM and environmental management initiatives to improve employee engagement, motivation, and expertise in environmental sustainability (ES) approaches.

In a comprehensive examination of 104 studies on "employee empowerment and motivation" to perform green tasks conducted in the service and manufacturing industries between 1990 and 2014, Tariq et al. (2016) concluded that "employee empowerment" was a substantial influencing factor that facilitated them to adopt GHRM practices effectively and to motivate employees to engage toward the performance of the firms. A more comprehensive examination of 174 articles published between 1995 and 2019 indicated research on the contribution of GHRM to fostering organizational "social

sustainability (SS)" (Amrutha & Geetha, 2020). The results revealed that GHRM activities were promoted by CSR efforts across many firms, and that "Employee Green Behaviour (EGH) " mediates the link between "GHRM practices and firms' social sustainability."

A systematic literature review on the determinants and consequences of GHRM practices employing 48 articles, carried out in compliance with the "PRISMA guidelines", found that studies focusing on more elements are more probable to have included "training and development, performance management and appraisal, rewards, pay, compensation, and also hiring". The majority of studies adhere to the "AMO approach" and concentrates on organizational outcomes as opposed to the impact of GHRM on particular individuals or groups of personnel (Paula Benevene and Ilaria Buonomo, 2020). Susanto et al. (2022) used the PRISMA guidelines to perform a systematic review of the literature in the hospitality sector between 2016 and 2021. They discovered that the implementation of GHRM was strongly linked to the "AMO Theory," "Environmental Management System (EMS)," and several impact factors including financial aspects, brand image, and EP.

Cem Tanova and Steven W. Bayighomo, (2022) carried out a detailed study of empirical research that focused on GHRM in service firms. Using a systematically selected sample of 48 publications, they evaluated by comparing the scales used to measure GHRM, the theoretical frameworks on which the empirical studies were predicated, and also the "nomological network" characterizing how GHRM is associated concerning its "antecedent factors, consequences, and mediators or moderators."

The majority of this research has been performed in the service sector, based on the literature, while relatively little has been done in the manufacturing sector. There have been no comprehensive investigations of the consequences and causes of green HRM, particularly in the manufacturing sector. The current review distinguishes itself from its forerunners by providing a unique perspective into what has to this point built up the GHRM literature in the manufacturing sector.

3. Methodology

The review included predominant empirical studies on "mediators and moderators" in antecedents and outcomes relationships of GHRM in the manufacturing sector published in peer-reviewed journals over the 15 years from 2013 to 2022 since the majority of the research on GHRM was only performed after 2013. The databases including "Mendeley, Google Scholar, Research Gate, Scopus, Emerald Insight, and Science Direct" were utilized to search for the literature on organisational and management research. The search

was performed using the keywords "GHRM, antecedents, consequences, mediators, moderators, and firm's performance" alone or in combination.

Inclusion criteria

To meet the inclusion criteria, empirical studies with a peer review process as well as at least one of the main subjects as their primary focus were required.

- (1) Mediators in the links between antecedents and GHRM
- (2) Moderators in the links between antecedents and GHRM
- (3) Mediating Effects in GHRM and Outcomes Links
- (4) Moderating Effects in GHR and-Outcomes Links, or
- (5) A combination of mediators and moderators in links between antecedent and GHRM, and GHRM and outcomes

4. Findings

According to the technique, we found a total of 207 potentially pertinent full-text items in databases. 150 studies that have been duplicated were eliminated. Out of this, 57 articles were chosen for further consideration based on their titles and abstracts, and 26 of them were retained due to their substance and relevance to the context of the manufacturing industry. Following a full-text reading of the 26 articles that were published, 10 others were also eliminated. While there were many areas in the article where green HRM was mentioned, they were not given sufficient consideration due to their relative focus on other forms such as "leadership, green organizational climate, and sustainability", or as the sector was not apparent. The reference lists of notable articles on the subject were manually searched supplementary to the computerized search. To find extra articles that matched the requirements for inclusion in the reference lists of the papers found through the well-known repositories, a "snowballing" method was chosen after discovering this initially constrained sample. This approach resulted in the discovery of an extra three papers that satisfied the inclusion conditions, bringing the overall number of articles available for the study to 19.

According to the results of the systematic research, there is insufficient evidence to decisively support the use of mediators and moderators in the manufacturing sector-specific GHRM literature for the analysis of antecedent and GHRM relationships. To analyze the links between green HRM outcomes, however, the mediators and moderators used in the manufacturing-related GHRM research include "Psychological green climate (PGC), Green Absorptive Capacity (GAC), Green Knowledge Sharing and Transfer (GKS&T), Psychological green climate, Pro-environmental psychological capital, Organization Citizenship Behaviour for Environment (OCBE), Organizational Identification (OI), Economic performance, Green Innovation (GI), EP, Employee's performance, Work Life, Private life, GHRM, Individual green values, Employee's environmental knowledge, Perceived Organizational Support (POS), and Employees Awareness (EA)"

Table: 4.1 Summary of Literature

S. No.	Author(s)	Country & Industry	Antecedents	Consequences	Mediators (ME)/ Moderators (MO)	Result
1	Moktadir, et al., (2019).	Tannery industry	Green selection facility, Green recruiting facility, Green organizational culture, Green purchasing, Green strategy towards ES, Regulatory forces towards ES, Top management commitment towards greening the workforce	NA	NA	The primary drivers of GHRM practices include "green selection facilities," "green recruitment facilities," "green organizational cultures," "green buying," "green strategies toward ES," "regulatory forces toward ES," and top management commitment towards greening the workforce.
2	Khan, et al., (2021).	Oil and gas corporations Pakistan	Top-level management support, Environmental orientation (EO)	Employee happiness, Organizational commitment (OC), Environmental performance (EPF).	NA	The prerequisites for implementing GHRM include EO and "top-level management support." Adopting GHRM improves OC, employee happiness, and EPF.
3	Khan et al., (2022).	Pakistan Hotels	Environmental-Specific Ethical Leadership (ESEL)	Employees' green behaviour (ECB)	ME: Psychological green climate (PGC)	PGC, EGB, and ESEL all have positive links with one another. PGC mediates the link between ESEL and EGB, which is favourably associated with EGB.
4	Darvazeh, S.S., Mooseloo, F.M., Aeini, S. et al. (2022).	Construction industry Iran	Green recruitment and selection, Green performance management (GPM), Green-reward (GR), Green-based employee empowerment,	NA	NA	GHRM is substantially and favourably linked with "green hiring and selection, GPM, GR, green-based employee empowerment, and GT".

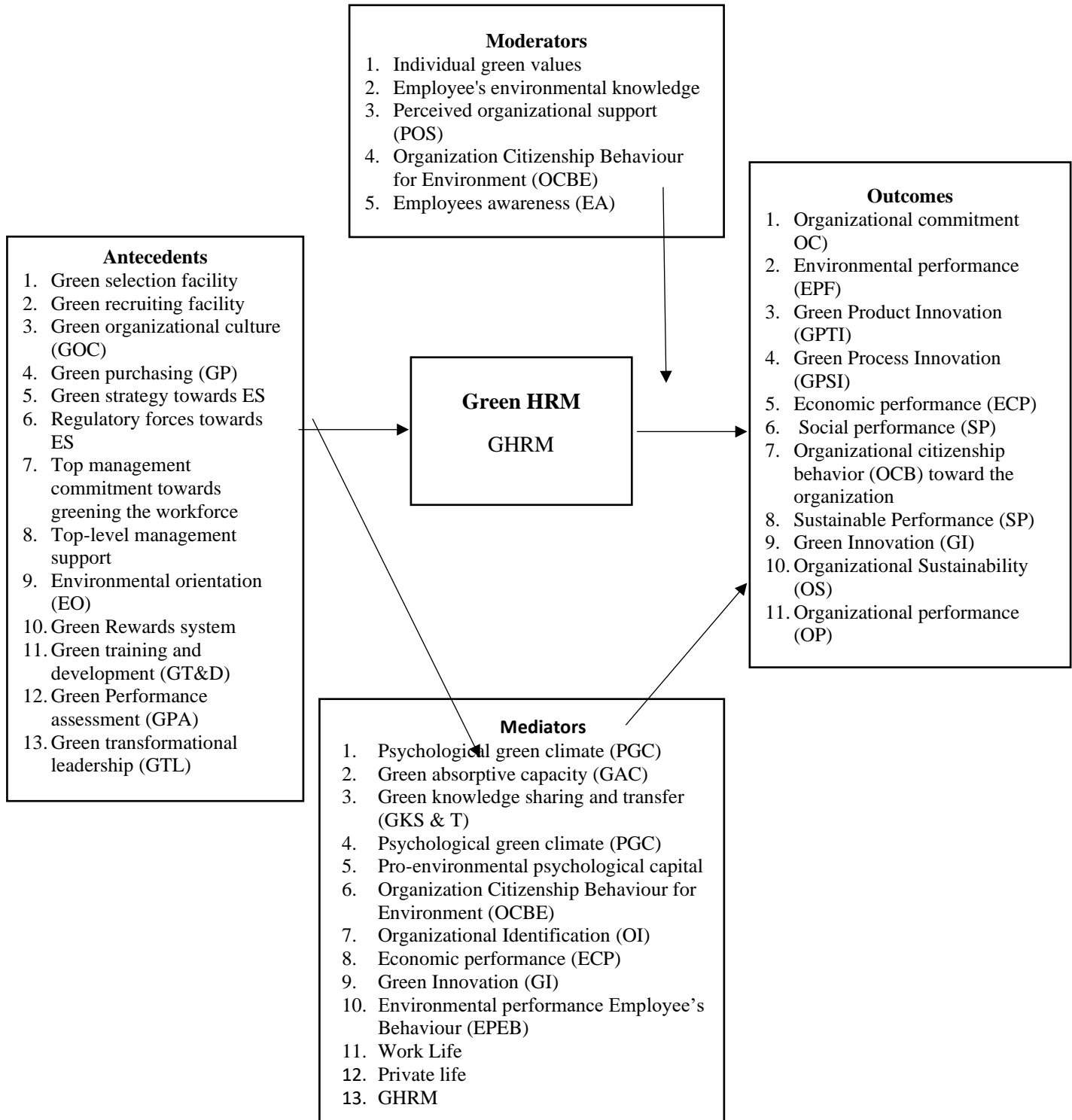
			Green training (GT)			
5	Areej Ali, et al., (2019).	Pharma Industry Pakistan	Green Rewards system (GRS), Green training and development (GT&D), Green Performance assessment (GPA).	Green Product Innovation (GPTI), Green Process Innovation (GPSI)	ME: Green Absorptive Capacity (GAC), Green Knowledge Sharing and Transfer (GKS&T).	There is a direct link between GPA and GPSI, GPA and GPTI, GRS and GPTI, and GT&D and GPSI. All three green HRM practices (GPA, GRS, and GT&D), as well as GPTI and GPSI, were mediated by two mediators (GAC and GKS & T), with GAC mediating all three practices and GPSI partially. It was found that GKS&T was mediating between GT&D and GPTI.
6	Khan, Ali & Ansari, et al., (2022).	SMEs Pakistan	NA	Employee Performance (EP)	NA	Positive association between EP and GHRM.
7	Igura Metu Lengsi and Yasri. (2020).	Padang MSMEs	NA	Economic Performance (ECP), Environmental performance (EPF), Social performance (SP)	ME: ECP	ECP, EPF and SP are significantly and favourably influenced by GHRM. Both ECP and SP are positively and significantly influenced by EPF.
8	Dumont, Shen, & Deng, (2017)	Food-grade paper-packaging manufacturer	NA	Workplace Green Behaviour (WGB)	ME: Psychological green climate (PGC) MO: Individual green values	GHRM has an influence on both employee "in-role and out-of-role" WGB. Individual green values reduced the effect of PGC on "extra-role green behaviour," but they had no effect on

						the influence of PGC or GHRM on "in-role green behaviour."
9	Saeed et al., (2019)	Coal generating, power industry, food, chemical, and pharmaceutical industries	NA	Employee's pro-environmental behaviour (EPEB)	ME: Pro-environmental psychological capital (PEPC) MO: Employee's environmental knowledge (EEK)	EPEB was positively impacted by GHRM practises. This link was mediated by PEPC. The impact of GHRM practises on EPEB was moderated by the EEK
10	Shen, Dumont, & Deng, (2018)	Food-grade paper-packaging manufacturer	NA	Employee task performance (ETP), Organizational Citizenship Behaviour (OCB) toward the organization, Intention to quit (IQ)	MO: Perceived organizational support (POS) ME: Organizational Identification (OI)	The outcomes of non-green workplace employees, such as ETP, OCB toward the organisation, and IQ are positively influenced by GHRM. POS minimises the direct effects of perceived GHRM on OI and the indirect effects of perceived GHRM on the three workplace outcomes for employees by using OI as a mediator.
11	Cheema, Durrani, Pasha, & Javed, (2015)	SMEs	NA	EP	NA	GHRM practises and EP have a positive relationship.
12	Kumarasinghe K & Pallewaththa P, (2018)	Apparel manufacturers	NA	EP	NA	Firms that adopt GT and development methods negatively impact on EP.
13	Sinaga & Nawangsari, (2019)	Manufacturing	NA	EP	ME: Organization Citizenship Behaviour for Environment (OCBE)	EP is positively and significantly impacted by GT and GPA.

						The performance of employees is significantly and negatively impacted by GR and GCR. "Green hiring, training, remuneration, and reward practises" significantly affect employee performance through OCBE.
14	Awwad et al., (2022).	Saudi Arabia SMEs	NA	Sustainable Performance (SP), Environmental Performance (EPF) Green Innovation (GI)	ME: Green Innovation (GI)	SP is significantly enhanced by GHRMP. GI and GHRMP are closely linked. The link between GHRM and EPF is mediated by GI.
15	Fiza Amjad, et al., (2021)	Textile Manufacturing Pakistan	NA	Organizational Sustainability (OS)	ME: Environmental performance (EPF), Employee's performance	Processes used in GHRM, including as "training and development, performance evaluation, and reward and pay," have a substantial impact on an organization's ability to sustain itself. GHRM practices and OS are mediated by EPF and employee performance.
16	Riyanto, Setyo. (2020).	Manufacturing Indonesia	NA	EPF	MO: OCBE	EPF is positively impacted by "green employee involvement and green motivation". OCBE did not moderate the link between "Green Competency (GC), Green Motivation (GM), and employee involvement" with EPF.

17	Singh, et al., (2020).	Manufacturing sector small and medium-sized enterprises (SMEs) UK	Green transformational leadership (GTL)	Green innovation (GI), EPF	ME: GHRM	Through GHRM practices, GTL's impact on GI is mediated. GHRM indirectly affects a company's EP through GI.
18	Chamola, et al., (2017).	Energy and environmental design (LEED)-certified companies	NA	EPF	ME: Work Life ME: Private Life	The findings showed a strong mediating role for "work life" in the link between GHRM and EPF, whereas there was no evidence for a mediating role for "private life".
19	N. Fathy El Dessouky and H. O. Alquaiti. (2020).	Private drilling company, Bahrain	NA	Organizational performance (OP)	MO: Employee awareness (EA)	OP is positively correlated with GHRM practises. Additionally, the association between GHRM practises and OP is moderated by EA.

Fig: 4.1 Synthesis of the main antecedents and consequences of GHRM, and its main mediators and moderators



5. Discussion

Overall, the results indicate that mediators and moderators are so much extensively investigated in green HRM and outcomes relationships rather than in antecedents and GHRM relationships. The relationships between antecedents, green HRM, and outcomes are also suggested as potential factors that could help to elucidate the fundamental mechanisms underlying the phenomena.

5.1 Role of mediators and moderators in antecedents and GHRM relationships

The literature reviewed states that "Green selection facilities, Green recruiting facilities, GOC, GP, Green strategy towards ES, Regulatory forces towards ES, Top management commitment towards greening the workforce, Top-level management support, EO, GRS, GT&D, GPA, and GTL" are among the antecedents of GHRM.

Environmental considerations are emphasized during the recruitment and selection processes in "green recruitment and selection" (Longoni et al., 2018). GT&D policies address the following including raising workers' environmental consciousness, offering them environmental competencies, and boosting their proficiency and greenability (Renwick et al., 2013). Policies for evaluating how well employees are accomplishing environmental goals are part of a GPA (Govindarajulu and Daily, 2004). "Green Pay and Rewards" is a system of both financial and non-financial privileges for individuals who promote environmental management initiatives (Jabbour et al., 2010). GPSI and GT&D are directly related (Areej Ali et al., 2019). However, there was no evidence of a moderator or mediator relationship in the GHRM literature that was relevant to the manufacturing sector.

According to Yusliza et al. (2019), "top management support" is essential for implementing green HRM methods that enhance EPF. Top management support positively influences GHRM and further EPF (Obeidat et al., 2018). According to Merlin, Matumona, and Chen Yinfei (2022), EO considerably affected the relationship between GHRM and organizational attractiveness. According to this study, to carry out GHRM, the prerequisites such as "top-level management support and environmental" are required (Khan et al., 2021), however, in the GHRM literature relating to the manufacturing sector, there is no evidence regarding the moderator or mediator relationship.

The GRS emphasizes rewarding employees for their successful accomplishment of tasks and obligations associated with the environment (Ren et al., 2018; Tang et al., 2018). According to Ahmad (2015), the approach known as GT&D focuses on enhancing personnel's "skills, knowledge, and attitude" in terms of

environmental management. Employees are evaluated using GPA a green HR strategy, based on the EPF benchmarks specified by the firm (Arulrajah et al., 2015). GRS, GT&D, and GPA are recognized as predictors of GHRM practices in the study by Areej Ali, et al., (2019).

By focusing on the team's total performance, GTL promotes and encourages each follower to consider integrating green practices into organizational processes. To inspire his or her followers to contribute their suggestions for enhancing "green business performance" and achieving long-term success, the leader establishes an open line of communication with them. Green HRM practices serve as a mediator for GTL's influence on GI (Singh et al., 2020).

5.2 Potential mediators and moderators in antecedents and GHRM relationships

A company's GHRM can be enhanced by organizational leadership elements such as "top management green orientation" (Mehrajunnisa et al., 2021), GTL (Moin et al., 2021), and "green employee empowerment" (Yusliza et al., 2017). A company's fundamental characteristics, such as "green strategic planning" (Mehrajunnisa et al., 2021), e-HRM, and "HR business partner role" (Yusliza et al., 2017), GOC (Shafaei et al., 2020; Mehrajunnisa et al., 2021), "innovativeness" (Vidal-Salazar et al., 2012 and IC (Ali et al., 2021) can facilitate GHRM. Using a potential mediator or moderator identified in the GHRM literature regarding a different sector, the relationship indicated above might be investigated. A person's "positive affect, proactive personality, conscientiousness, individual green values, and environmental concerns, leadership (ethical, transformational, and servant), green attitude involving environmental commitment, and organizational characteristics including information sharing, firms' reputations, work environments, organizational support, and organizational culture" are all examples of individual characteristics (Cem Tanova & Steven W. Bayighomog, 2022).

5.3 Mediators and moderators in green HRM and outcomes relationships.

We specifically consider GHRM and its consequences in the study, at both the organizational and individual levels. The GHRM literature on the manufacturing sector's results at the organizational level includes OC, EP, GPTI, GPSI, ECP, EPF, SP, OCB, GI, OP, and OS.

The outcomes at the individual level discovered include "Employee happiness, ECB, EP, employee's pro-environmental behavior, IQ, Employee task performance. GHRM improves OC, employee satisfaction, and EPF " (Khan et al., 2021) and no moderator or mediator relationship was found related to this relationship. Positive connections were discovered between PGC, EGB, and

Environmentally Specific Ethical Leadership (ESEL). PGC and ECB have a positive correlation, which mediates the link between ESEL and EGB (Khan et al., 2022).

The GRS and GPTI are interconnected. While "Green absorptive capacity (GAC)" was partially mediating the connections between GHRM practices such as GPA, GRS, and GT&D with GPSI, GKS&T is mediating the relationship between GT&D and GPTI (Areej Ali, et al., 2019).

The association between GHRM and employee performance is positive (Cheema, Durrani, Pasha, & Javed, 2015; Kumarasinghe K & Pallewaththa P, 2018; Khan, Ali & Ansari, Muhammad Akbar & Ahmed, Tanveer & Malik, Areeba, 2022). Specifically, a study by Sinaga and Nawangsari (2019) discovered that while GT and GPA have a substantial and positive impact on employee performance, GR, and GCR have a significantly negative effect on employee performance. Additionally, OCBE, which includes "green hiring, green training, green compensation, and green awards", has a significant impact on staff performance.

The "social, environmental, and economic" performance of GHRM is positively and substantially impacted. Moreover, "social performance" is considerably and favorably impacted by EPF through ECP (Igura Metu Lengsi and Yasri, 2020). "Green motivation and employee involvement" are GHRM practices that have a positive impact on EPF, however, OCBE did not moderate the relationship between "green competency, green motivation, and employee involvement" with EPF (Riyanto, Setyo, 2020). Green HRM indirectly improves a company's EPF through GI (Singh, S. K., Giudice, M. D., Chierici, R., & Graziano, D., 2020). The "work-life" had a substantial mediating influence on the link between "GHRM and environmental performance (EPF)", according to a study by Chamola, Pankaj, Bangwal, Deepak, and Tiwari (2017); however, the "private life" mediation could not be substantiated. These findings demonstrate the significance of green HRM to improve "EPF". "Green HRM practices and organizational performance" are positively linked. Also, the association between "Green HRM practices and Organizational Performance" is moderated by "employee awareness" (N. Fathy El Dessouky and H. O. Alquaiti., 2020).

GHRM both directly and indirectly influenced "in-role green behavior" through the mediation of a PGE but only indirectly influenced "extra-role green behavior." Individual green values did not have an impact on "in-role green behavior," but they did reduce the influence of the PGE on "extra-role green behavior" (Dumont, Shen, & Deng, 2004).

GHRM techniques have a favorable impact on EPEB. The effect of GHRM practices on "pro-environmental behavior" was tempered by employees' EA and this link was mediated by "pro-environmental psychological capital" (Saeed et al., 2019). The consequences of employees' "non-green workplace," such as "job performance, OCBE, and IQ are positively impacted by GHRM. POS mediates the indirect link between "perceived GHRM" and the three employee workplace outcomes as well as the relationship between "perceived green HRM" and OI (Shen et al., 2010).

SP is significantly enhanced by "green HRM practices (HRMP)". Additionally, there is a strong connection between GI and green HRMP. A mediating factor between GHRM and EPF is performed by GI (Awwad et al., 2022). A study by Fiza et al., (2021) revealed the substantial impact of GHRM practices, such as "reward and compensation, training and development, and performance appraisal", on "organizational sustainability". "GHRM practices and organizational sustainability" are mediated by EPF and EP.

5.4 Potential mediator and moderator in green HRM–outcomes relationships

The literature support provided by the research conducted in other sectors, as well as the potential mediators and moderators that could be used in investigating the links between GHRM outcomes, have been reviewed in this section. By involving employees, green HRM helps organizations achieve their goals and enhances their "environmental performance" (Deniz et al., 2003; Domnguez-Falcon et al., 2016). As per Shafaei et al., (2020), GHRM increases "job satisfaction (JS)" through "meaningfulness through work (MTW)," and as a result, MTW can be used as a mediator to examine the relationship between green HRM and its outcomes. The moderating impact of the "conscientiousness" and "positive affect" personality attributes enhances the link between GHRM practices and "employee engagement" with environmental initiatives in Jordan hospitals (Ababneh, 2021). The positive relationship between GT&D, GRS, GPA, green involvement, and "employee engagement" is moderated by GTL (Ababneh et al., 2021). The link between GHRMP and employee EPF in hotels is discovered to be partially mediated by "green motivation," which includes "intrinsic and extrinsic" factors (Ahmed et al., 2021). The direct relationship between GHRM and hotels' environmental performance is sequentially mediated by "green culture and environmental responsibility" (Ahmed, Umrani, Yousaf, Siddiqui, & Pahi., 2021). Farooq et al. (2021) discovered that the relation between GHRM and "green creativity (GC)" was mediated by "green self-efficacy (GSE)" in the research reported at Moroccan resorts. Ari et al. (2020) connected GHRM to enterprise-wise recognized pro-environmental behaviors including "task-related pro-environmental behaviors", "proactive pro-environmental

behaviors", "green recovery performance, and green voice behavior" through the moderating effect of work engagement and JS in the hospitality, and tourism industry. Based on the discussion, it is feasible to employ empirical research to analyze the moderating and mediating influence of GHRM-outcomes relationships in the manufacturing sector using the variables "meaningfulness through work, transformational leadership, green culture, environmental responsibility, green self-efficacy, work engagement, and job satisfaction".

6. Managerial implications

This research has produced a robust roadmap that will help specialists comprehend the current status of the manufacturing industry and design a long-term goal for greening the workforce by recognizing the moderation and mediation implications of the antecedents and effects of GHRMP. Policymakers can assess the domains that require more concerted effort based on the antecedents' significance and the theoretical framework's hierarchy level by recognizing the antecedents. Depending on their interconnections, the study also demonstrates the moderating and mediating effects of all analyzed antecedents and outcomes. This will make it simpler for senior executives and authorities to concentrate their efforts on enhancing the requirements and concentrating on the strategic outcomes so that the manufacturing industry may remain to see meaningful results from the effective use of GHRMP. To support the development of GHRM policies that are realistic and appropriate, antecedents might well be addressed. Managers would certainly benefit from this in their ongoing attempts to concentrate on these antecedents to achieve their intended results. Before implementing GHRM practices, managers will gain from the research's recommendations regarding how to recognize each antecedent's impact to use the relevant moderators and mediators to accomplish the desired outcomes. Decision-makers may take extra precautions while adopting GHRM principles by identifying the antecedents with powerful driving influences.

Most of our review's focus has concentrated on academic research on GHRM. According to our organizing paradigm, firms must pay greater attention to both organizationally driven environmental management changes and changes in employee perceptions and conceptions of GHRM. Firms should promote a green "work-life balance (GWLb)" among their workforce to harmonize employee attitudes toward the environment in their personal lives with legal requirements at work. According to research by Bose and Gupta (2017), the GHRMP, which includes green "selection and recruitment, learning and development, performance evaluation, and compensation and rewards," helps the firm progress sustainability in organizational effectiveness by instilling green awareness and

competencies in the employees who are accountable for carrying out business overall operations. Hence, to enhance the sustainability of the firms, the company's management must therefore integrate environmental factors into their HRM practices and activities, including "recruiting and selection, training and development, performance appraisal, rewards and compensation systems", etc. The long-term commitment to the sustainable growth of the organization should include green HRM practices. Employing HRM tactics with an environmental focus can help organizations foster environmentally friendly behavior at the individual level. To ensure success, there must be closer integration of GHRM and environmental practices, together with synchronization of policymaking and counseling on their effective execution. Companies should understand that employees who used green HRM strategies at the workplace significantly contribute to environmental performance. The organizations should remember that goal of GHRM systems is to support employee-driven initiatives in various functions. Organizational citizenship behaviors (OCB) can be displayed outside of the workplace through individual tasks that are performed in support of the organization's commitments and also in support of colleagues through togetherness.

7. Conclusions

Through this study, a comprehensive examination of the causes and effects of GHRMP from earlier empirical research in the manufacturing industry has been performed. Since GHRM is still a young field, it is presently difficult to determine which theoretical viewpoints are most likely to be advantageous for ongoing development. With the support of our review of the literature, we bring two original perspectives to the subject of green HRM. Before organizing the available research on GHRM mediators and moderators in the manufacturing industry, this review presents academics with a platform to investigate the literature on the mediators and moderators of GHRM (as well as its determinants and outcomes) to better comprehend the field. Second, based on compelling theoretical arguments, we recommend new potential underlying and mediating variables that may be examined in later studies on the links between antecedents and GHRM outcomes.

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