

Impact of Green HR practices on Employee Creativity and Green Operational Innovation: with moderating role of Motivation

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ABSTRACT

The purpose of this study is to investigate how employee creativity and green operational innovation are impacted by Green Human Resource Management approaches. It specifically looks at how important (GHRM) practices like green hiring and selection, green training and development, green management and performance evaluation, and green reward and compensation affect the development of creative and ecologically friendly organizational practices. Data was collected through questionnaires from employees working in private manufacturing industries in Pakistan using a five-point Likert scale. Therefore, the research strategy employed in this study was the survey method. This research is classified as a cross-sectional study because the data collection was done all at once. The study included a sample of 33 manufacturing companies. Data were collected in 2023, in which 200 valid responses were obtained. This study uses a PLS-SEM tool to estimate the research model. Our research reveals a notable willingness among decision-makers in the business administration sector to enhance environmental outcomes. During the data collection process, we observed a heightened readiness within the industrial sector to invest in sustainable practices, thereby augmenting long-term performance and sustaining a competitive edge. Organizations can indeed enhance their performance by embracing innovative methodologies and adopting a multifaceted approach to yield superior results. The significance of this study lies in how Green HR supports a process that reduces and eliminates environmental waste, and redesigns HR products, tools, and procedures to achieve enhanced performance and cost savings. As organizations increasingly recognize the importance of environmental considerations, integrating green practices into their regular operations is becoming more prevalent.

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INTRODUCTION

The 21st century has witnessed a growing global interest in environmental concerns across various domains, including politics, public affairs, and business (Victor, 2001). Industrial pollution, with its detrimental effects on the environment, particularly through the release of hazardous substances, has become a significant issue. Governments and non-governmental organizations (NGOs) worldwide have implemented rules and Techniques to lessen and including halting the depletion of natural resources and lessening the adverse effects they have on society at large (Christmann & Taylor, 2002; Shrivastava & Berger, 2010). Green human resource management (GHRM) techniques have emerged as an effective way to instill sustainability principles in company culture and encourage a long-term change in business operations. Creating a company culture that reflects moral values and encourages employee participation, especially in the context of sustainability, is essential. The HR department plays a crucial role in fostering a positive work environment, where employees are empowered to contribute as environmental ambassadors and key drivers of sustainable development efforts.

Research has shown that GHRM practices yield numerous benefits for employees, improving organizational reputation, performance, and effectiveness (Cherian & Jacob, 2012). Moreover, the concept of "going green" has been advocated across various functions within firms to motivate employees towards embracing environmentally-friendly practices (Chaudhary, 2019; Longoni et al., 2018). Recent studies have examined the relationship between HRM and climate change, emphasizing the advantages of green practices for competitiveness (Ahmad, 2015; Bhutto, 2016; Jabbour & Jabbour, 2016; Jackson et al., 2011; Yang et al., 2011). The practices that make up green resource management (GHRM) include green performance evaluations, green training programs, green incentive programs, and green hiring and selection procedures. These procedures are meant to encourage environmentally responsible and sustainable practices in businesses, have been identified as key elements in linking HR with environmental concerns (Daily & Huang, 2001; Fernandez et al., 2003; Madsen & Ulhoi, 2001; Masri & Jaaron, 2017).

Motivating employees towards embracing a "green" mindset has been suggested as an effective approach (Chaudhary, 2019; Longoni et al., 2018). Sustainable organizations are increasingly focused on minimizing their environmental impact, understanding the consequences of their activities, and implementing measures to prevent pollution and degradation (Rondinelli & Berry, 2000). Bridging the gap between GHRM and environmental research and teaching is essential (Khan et al., 2019). This study aims to investigate the relationship between green HRM practices and green operational innovation and employee creativity. Green hiring and selection, green training and development, green performance management and review, and green compensation and incentives are some examples of these methods.

Companies, being significant contributors to environmental problems, bear a responsibility to address these issues (Bebbington, 2001; Ragas et al., 2017). GHRM is a fundamental concept for organizations, as it influences sustainability efforts within the environmental context. Additionally, GHRM has been shown to enhance employee success in the environmental dimension (Ren et al., 2018). Green Human Resources Management (GHRM) serves as a key tool for implementing sustainability through traditional HR practices, environmental policy, technical objectives, and strategic HR management dimensions (Gholami et al., 2016). This conceptual study primarily focuses on various strategies to motivate staff to engage in green practices within organizations. Human resource practices that foster creative behavior should be designed to establish high-performance work systems. Creativity is defined as the ability to generate innovative and useful concepts, is crucial for achieving superior organizational outcomes (Shalley & Gilson, 2004; Zhang & Bartol, 2010). HR Management (HRM) plays a critical role in stimulating innovation processes and enhancing competitiveness within companies (Jiang et al., 2012; Jimenez-Jimenez & Sanz-Valle, 2011; Paletz & Peng, 2009).

Recent research by Simpson and Samson (2010) and Roscoe et al. (2019) has shown that businesses provide green training to staff members to enhance their capacity to cut down on pollution and waste. Engaging in environmentally-conscious teamwork significantly reduces waste and enhances a company's Environmental Performance (Roscoe et al., 2019; Daily et al., 2007). According to this study, green operational innovation involves the adoption of major adjustments or new procedures in a company's product manufacturing and processes (Hammer, 2004). In the context of green businesses, innovation involves altering production practices to reduce resource consumption, prevent pollution, and introduce environmental management systems (Eiadat et al., 2008). Green innovation encompasses various types of innovations aimed at minimizing harm and environmental damage while optimizing the use of natural resources, culminating in the creation of environmentally friendly goods, services, or procedures. GHRM practices enable companies to reduce costs while retaining talent. By adopting green practices, organizations can create growth opportunities, reduce their carbon footprint, achieve operational savings, enhance employee satisfaction and engagement, and foster higher productivity and sustainability. Additionally, cultivating a culture that prioritizes employee well-being and health contributes to improved retention rates. Green initiatives in the workplace also present opportunities for positive public relations, allowing organizations to highlight their environmental contributions to potential customers and generate new sales (Khan, 2019).

The significance of this study lies in how Green HR supports a process that reduces and reducing environmental waste and improving performance and cost-effectiveness through the redesign of HR tools, processes and products. As organizations increasingly recognize the importance of environmental considerations, integrating green practices into their regular operations is becoming more prevalent. To fill existing knowledge gaps, this study examines the relationship between employee creativity and green operational innovation and green human resource management (GHRM) practices, as well as motivation as a moderating factor. Furthermore, this study serves as evidence of the engagement of manufacturing companies in Pakistan with green practices.

This paper begins by presenting the study's objectives, contributions, and knowledge gaps. Subsequently, it reviews relevant literature to elucidate Human resource management techniques that have evolved into Green HRM (Green HRM) techniques that encourage employees' innovative capabilities and promote green operational innovation. The third section discusses the study's design, methodology, and analytical approach. In the fourth section, the empirical model is presented alongside the statistical results. Finally, the study concludes by discussing managerial and practical implications, as well as providing future directions and acknowledging limitations.

THEORETICAL BACKGROUND AND HYPOTHESES DEVELOPMENT

Ability–Motivation–Opportunity theory (AMO)

The present study used the Ability-Motivation-Opportunity (AMO) theory to investigate the attributes that lead to exceptional performance in the workplace. Cheema and Javerd (2017) have supported this theory, emphasizing its applicability to green Human Resource Management (HRM) issues. The AMO theory can facilitate the creation of a sustainable environment by enhancing the abilities, motivation, and opportunities for development of staff members, top managers, and the company as a whole (Anwar et al., 2018). According to AMO theory, implementing green HRM practices can increase employee's autonomy to participate in organizational citizenship behaviors that benefit the environment, ultimately contributing to a company's eco-efficiency (Appelbaum et al., 2000).

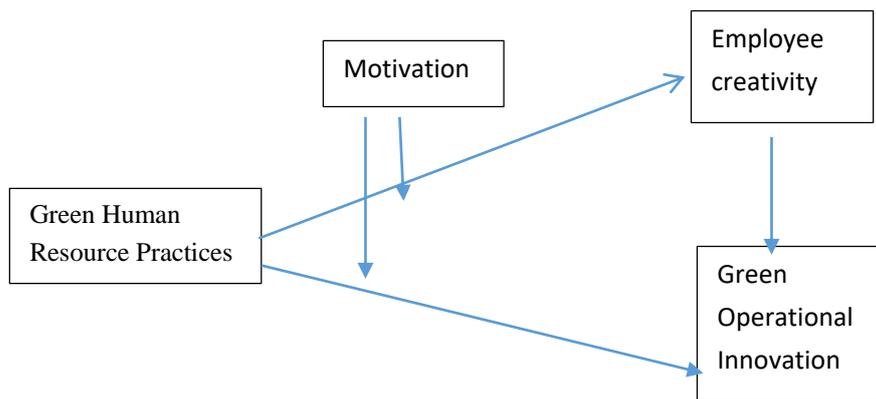


Figure 1: Research Model

Green human resource practices and Green Operational Innovation

Companies, being major contributors to environmental problems, it plays a vital part in tackling environmental issues (Bebbington, 2001; Ragas et al., 2017). Consequently, companies face pressure from various stakeholders to adopt environmentally responsible practices (McGuire and Germaine, 2015). As a response, organizations have started exploring unique methods to tackle environmental issues, with Green Human Resource Management (GHRM) emerging as one such approach (Bhutto, 2016; Mandip, 2012).

GHRM practices have been shown to yield both public and monetary benefits, and they involve integrating environmental considerations into HRM functions (Renwick et al., 2013). Moreover, several organizational departments have pushed the concept of "Going Green" to encourage staff members to embrace ecologically friendly behaviors (Chaudhary, 2019; Longoni et al., 2018). GHRM practices strategically align with the goals of organizations, enhancing employee engagement and supporting sustainable business outcomes (Yusoff et al., 2015). Roscoe, Subramanian, Jabbour & Chong (2019) argue that hiring environmentally conscious employees and providing effective green training can enhance ecological responsiveness within the organization.

Organizations can enhance their recruitment efforts and retention rates by incorporating environmental considerations into the recruitment process (Ahmad, 2015). Green recruitment practices may involve assessing candidates' environmental awareness, conviction, and care (Renwick et al., 2013) or communicating environmental criteria-related messages during the recruitment process (Arulrajah et al., 2015). Candidates who demonstrate a commitment to the environment can be assured that the organization values environmental ethics and sustainability (Jackson & Seo, 2010). Attracting and employing environmentally conscious candidates may be essential to the long-term success of the firm (Renwick et al., 2013).

To recruit suitable applicants, companies should also focus on enhancing their reputation and positioning (Kapil, 2015; Guerci et al., 2016; Mani et al., 2018). Additionally, interviews should incorporate environmental questions to assess candidates' environmental awareness (Razab et al., 2015). Organizations can further emphasize their commitment to environmental protection by creating environmentally friendly job descriptions and specifications (Arulrajah et al., 2015) and establishing positions that focus on the organization's environmental initiatives (Opatha, 2013).

Operational innovation involves significant changes in a company's production activities and processes aimed at improving products and services (Hammer, 2004). In order to comply with rules and improve the company's reputation, green operational innovation focuses on developing eco-friendly practices, such as increasing resource efficiency and putting environmental management systems in place (Rosa & Pierpaolo, 2010; Kammerer, 2009). GHRM practices are instrumental in facilitating eco-innovation and achieving sustainable excellence (Jia et al., 2018; Chen and Chang, 2013). Green management practices contribute to attracting, developing, and retaining green employees who support green innovation and drive superior organizational performance (Kaur et al., 2019; Leal-Millan et al., 2016).

Green training and development

In GHRM, green training (GT) is crucial since it raises employees' understanding of the environmental impact of corporate operations (Bansal & Roth, 2000), teaching waste reduction and energy conservation practices (Zoogah,

2011), and fostering environmental consciousness within the organization (Roy & Thérin, 2008). Environmental sustainability training is essential for cultivating employees' engagement in environmental issues and promoting environmentally responsible behavior (Fernández et al., 2003; Del Brío et al., 2007). An organized environmental training program can give employees the knowledge and abilities they need to handle environmental issues (Renwick et al., 2013; Lee, 2009).

Green performance management and appraisal

The Human Resources department should develop a performance assessment system that integrates environmental sustainability behavioural and technical skills (Ahmad, 2015). Evaluating people's environmentally conscious actions while performing their job responsibilities is known as "green performance management" (Tang et al., 2018). Effective performance management processes can enhance employee motivation to engage in green initiatives within the organization (Renwick et al., 2013). However, implementing green performance management presents challenges, such as measuring environmental standards across different departments and obtaining reliable performance data (Renwick et al., 2013).

Green reward and compensation

Green incentives and rewards can improve environmental performance in businesses and increase employee happiness (Jabbour & Jabbour, 2016; Jabbour & Santos, 2008). Compensation and reward systems that are linked to environmental performance can help achieve the company's green goals (Zoogah, 2011). Recognizing and rewarding employees for their environmental contributions through various incentives, such as bonuses, gifts, or positive feedback, can reinforce desired environmentally responsible behaviors (Renwick et al., 2013; Kapil, 2015; Arulrajah et al., 2015).

Sustainable organizations recognize the environmental impact of their activities and aim to implement practices that reduce pollution and protect the environment (Rondinelli & Berry, 2000). Khan et al. (2019) found that sustainable performance is positively impacted when environmental engagement is incorporated into organizational operations. Similarly, Chaudhary (2019) the organizational performance and Green Human Resource Management (GHRM) practices have been demonstrated to be positively correlated. Companies that implement GHRM practices focusing on employee environmental responsibility are more likely to introduce innovative processes and technologies that reduce their ecological footprint. For instance, company that promotes green training programs and supports employee suggestions for eco-friendly production methods is more likely to achieve operational innovation by implementing energy-efficient processes or waste reduction strategies (Chaudhary, 2019).

H1: There is a positive impact of Green Human Resource Practices on Green Operational Innovation.

Green Human Resource Practices and Employee Creativity

Human resource practices that foster creativity are essential for the development of high-performance work systems. HRM plays a crucial role in encouraging innovative processes and information sharing within organizations (Li et al., Liu, 2006; Jiang et al., 2012). The relation between HR practices and creativity of employee is an area that requires further exploration to gain insight into how HR practices impact creativity. An organization that encourages employee creativity through GHRM practices, such as providing training programs that emphasize innovative thinking or recognizing and rewarding employees for their creative ideas, is more likely to have a workforce that generates novel and valuable ideas for sustainable product development or process improvements. For instance, an employee in a technology company who is encouraged to explore environmentally friendly solutions and is given the opportunity to present innovative ideas for green energy solutions demonstrates the positive impact of GHRM practices on employee creativity (Li, et al., 2006).

H2: There is a positive impact of Green Human Resource Practices on Employee Creativity.

Motivation and employee creativity

Increasing organizational competitiveness is largely dependent on employee motivation (Chhotray et al., 2018). Extrinsic and intrinsic motivation are two types of employee motivation (Breugh et al., 2018). Internal aspirations and personal fulfilment are the source of intrinsic motivation, whereas possibilities for job advancement or compensation are the source of extrinsic motivation (Vanek, 2017). Intrinsic motivation is considered more impactful and long-lasting, as it stems from employees themselves (Froese et al., 2016). Employee turnover intentions can also be influenced by motivation, with higher motivation levels associated with reduced turnover (Froese et al., 2016).

Motivational procedures within HRM practices can promote employee creativity (Parker, 2000). The impact of HRM strategies on employee outcomes has been examined using the AMO framework, which places an emphasis on individual ability, motivation, and opportunity (Tariq et al., 2016). Employees' perception of a high-engagement HRM system can positively impact their creative performance (Dorenbosch et al., 2005). Motivated employees who are provided with opportunities for skill development and are recognized for their creative contributions are more likely

to engage in environmentally innovative behaviors. For instance, an organization that offers incentives, fosters a supportive work environment, and provides training programs to enhance employees' knowledge of sustainable practices is likely to have motivated employees who contribute to green operational innovation. An employee who feels valued for their creative ideas and is rewarded for their contributions to the company's sustainability initiatives illustrates how employee creativity and Green Human Resource Management (GHRM) practices are positively moderated by motivation, strengthening the effect of GHRM initiatives on encouraging creative ideas among staff members (Tariq et al., 2016).

H3: Motivation positively moderates the relationship between Green Human Resource Practices and Employee Creativity.

Motivation and green operational innovation

Motivated workers are essential for encouraging creativity and improving overall company success (Park and Jo, 2018). Green innovation organizations that prioritize environmental considerations have been found to achieve higher performance (Albort-Morant, 2018). Motivated employees who are encouraged and supported through GHRM practices are more likely to contribute to green operational innovation. Organizations that establish a culture of motivation by providing incentives, performance evaluations aligned with environmental goals, and recognition for innovative contributions are likely to experience improvements in their environmental performance. For instance, an employee who is motivated by the organization's recognition of their green initiatives and is provided with opportunities for professional development illustrates the beneficial moderating effect of motivation on the connection between GHRM practices and green operational innovation (Albort-Morant, 2018).

H4: Motivation positively moderates the relationship between Green Human Resource Practices and Green Operational Innovation.

Employee Creativity and Green Operational Innovation

Employee creativity encompasses the development of innovative and useful ideas related to products, processes, and work routines (Amabile, 1988; Yousaf et al., 2019). Creativity is highly regarded in business environments, as it enables the development of innovative and improved ideas, leading to higher performance and positive changes in the workplace (Proctor, 2014; Koseoglu et al., 2017). By putting supportive measures into place and creating an inspiring work environment, managers play a crucial role in encouraging and enhancing employee creativity (Amabile & Pillemer, 2012; Koseoglu et al., 2017).

Employee creativity is the foundation of innovation within organizations (Shalley & Gilson, 2004). The creative ideas generated by employees contribute to operational improvements and innovation performance (Antoncic et al., 2018; Patterson & Zibarras, 2017). Companies that encourage their staff to think creatively and outside the box in order to foster a creative culture and providing platforms for idea generation are more likely to achieve green operational innovation. Employees who are given the freedom to explore innovative solutions and are supported through resources and recognition are likely to contribute in order to develop and implement ecologically appropriate, sustainable practices and procedures. For instance, an employee who suggests a new method for recycling waste materials and actively participates in the implementation of the process demonstrates the positive impact of employee creativity on green operational innovation (Antoncic et al., 2018).

H5: Employee Creativity has a positive impact on Green Operational Innovation.

RESEARCH METHODS

Data was collected through questionnaires from employees working in private manufacturing industries in Pakistan using a five-point Likert scale. Therefore, the survey technique was the research methodology employed in this study. As the data was collected all at once, this study is classified as cross-sectional. The combination of the survey strategy and cross-sectional design is commonly used in research (Saunders et al., 2019).

The study included a sample of 33 manufacturing companies. The sample size was determined using G Power analysis. The measures for GHRM (Global Human Resource Management), as sourced from Masri and Jaaron (2017). The items for the motivation construct were adopted from Tremblay et al. (2009). For creativity and operational innovation, items were adopted from Eisenberger et al. (2010), Ward and Duray (2000), and Ward et al. (1995), respectively.

Data were collected in 2023, in which 200 valid responses were obtained, as shown in Table 1, what constitutes an acceptable sample size for analysis using PLS-SEM, with participants representing companies that manufacture sporting goods, manufacturers of leather and surgical manufacturers.

Table 1: Demographics of respondentes

Sample Size	Frequency	%
Gender		
Male	136	69%
Female	64	31%
Age		
21-30	162	81%
31-40	30	15%
41-50	8	4%
Education		
Master	120	60%
M.Phil.	12	6%
Bachelor	60	30%
F.A	8	4%
Current experiences		
Less than 1 year	30	15%
1-4 years	162	81%
5-9 years	8	8
Total experiences		
Less than 1 year	30	15%
1-4 years	162	81%
5-9 years	8	8
Department		
HR	102	51
Production	98	49%
Company size		
10-49 employees	170	85%
50-250 employees	30	15%
Industry		
Sports goods manufacturers	108	54%
Leather manufacturers	56	28%
Surgical manufacturers	36	18%
	200	100%

This research employs a PLS-SEM approach to evaluate the research model (Hair et al., 2016). PLS-SEM was chosen because it is suitable for this study, which aims to predict and clarify the variance of important constructs. Furthermore, because PLS-SEM may generate trustworthy results with fewer samples, it is appropriate given the limited sample size. Confirmatory factor analysis is used in the first stage of PLS-SEM to assess the measurement model. The evaluation of the structural model is the next step. Analysing the structural relationships comes next after the measurement model has been validated. The structural model analysis's findings show how well the theoretical framework is supported by the empirical facts (Hair et al., 2016).

Data Analysis

Measurement Model Evaluation

The next step was to perform confirmatory factor analysis. Figure 1 and Table 2 demonstrate that the external loadings of the indicators are greater than 0.6, indicating that the measuring model for both reflecting and formative constructs satisfies the requirement. This indicates that there was no need to exclude any indicator.

Table 1: Indicator Reliability

Construct	Indicator	Outer Loading	
Green recruitment & Selection	Q4GRS	Our announcement of recruitment messages includes environmental behavior/commitment criteria.	0.927
	'Q5GRS	Jobs positions are designed in our firm to focus exclusively on environmental management aspects of the organizations.	0.890
Green Training & Development	Q6GTD	We provide environmental training to the organizational members to increase environmental awareness.	0.793
	Q7GTD	We take into account the needs of environmental issues when training requirement is analyzed.	0.870
	Q8GTD	We follow Induction programs that emphasize environmental issues and concerns.	0.821
	Q9GTD	All training materials are available online for employee to reduce paper cost.	0.654
	Q10GTD	Environmental training is a priority when compared to other types of company training.	0.929
	Q11GTD	We provide environmental training to the organizational members to increase environmental awareness.	0.684
Green performance appraisal	Q12GPA	Employees know their specific green targets, goals and responsibilities.	0.809
	Q13GPA	Environmental behavior/targets and contributions to environmental management are assessed and include in performance indicators/ appraisal and recorded.	0.794
	Q14GPA	Roles of managers in achieving green outcomes are included in appraisals.	0.883
	Q15GPA	Providing regular feedback to the employees or teams to achieve environmental goals or improve their environmental performance.	0.811
	Q16GPA	Firm incorporates environmental management objectives and targets with the performance evaluation system of the organization.	0.890
Green Reward & Compensation	Q17GRC	Environmental performance is recognized publicly	0.795
	Q18GRC	The company offers a non-monetary and monetary reward based on the environmental achievements	0.862
	Q19GRC	We link suggestion schemes into rewards system by introducing rewards for innovative environmental performance	0.728
	Q20IEM	I am presently involved in my work	0.783

Intrinsic extrinsic motivation	Q21IEM	Because this is the type of work I chose to do to attain a certain lifestyle.	0.757
	Q24IEM	Because I derive much pleasure from learning new things.	0.624
	Q27IEM	Because I chose this type of work to attain my career goals.	0.766
	Q28IEM	For the satisfaction I experience from taking on interesting challenges.	0.841
	Q30IEM	Because it is part of the way in which I have chosen to live my life.	0.705
	Q31IEM	Because I want to be very good at this work, otherwise I would be very disappointed.	0.710
	Q33IEM	Because I want to be a winner in life.	0.781
	Q34IEM	Because it is the type of work I have chosen to attain certain important objective.	0.816
Employee Creativity	Q35CR	The employees of our firm try new ideas or methods.	0.846
	Q36CR	Our employees seek new ideas and ways to solve problems.	0.909
	Q37CR	Our employees generate ground-breaking ideas related to their field.	0.730
Green operational innovation	Q39GOI	Our firm has low energy consumption such as water, electricity, gas and petrol during Production/use/disposal.	0.843
	Q40GOI	Our firm recycle, reuse and remanufacture material.	0.703
	Q41GOI	Our firm use cleaner technology to make savings and prevent pollution (such as energy, water and waste).	0.768
	Q42GOI	Our firm send in-house auditor to appraise environmental performance of supplier.	0.907
	Q43GOI	The green know-how in our firm's management guides the process design and innovation.	0.946
	Q44GOI	Our suppliers are low cost green goods provider in terms of unit cost versus competitors' unit cost.	0.918

The average variance extracted (AVE) and composite reliability were then evaluated, as indicated in Table 3. All measurement items exhibit a reasonable degree of internal consistency when the composite reliability is greater than 0.6. Furthermore, it indicates that the measuring items accurately capture the underlying characteristics of each study variable in the analysis if the AVE is higher than 0.5.

Table 2: Composite Reliability & AVE

Composite Reliability & AVE	Cronbach's Alpha	rho_A	Composite Reliability	Average Variance Extracted (AVE)
Employee Creativity	0.793	0.854	0.859	0.609
Green HR Practices	0.850	0.913	0.879	0.352
Green Operational Innovation	0.923	0.941	0.940	0.726
Intrinsic & Extrinsic Motivation	0.914	0.895	0.909	0.417

Subsequently, the discriminant validity was verified, which validity refers to the fact that such concept is different by another. It's already being evaluated a concept that can't be explained by another construct. Using the Fornell-Larcker

criterion, content validity was assessed. The correlations between constructs and their reflected indicators should be less than the square root of each AVE in this evaluation. Good discriminant validity between the constructs is indicated by the square root of the AVE for each construct exceeding the inter-construct correlations, as seen in Table 4.

Table 3: Fornell-Larcker Criterion

Fornell-Larcker Criterion	Employee Creativity	Green HR Practices	Green Operational Innovation	Green Recruitment and Selection	Green performance management	Green reward and compensatio	Green training and development	Intrinsic & Extrinsic Motivation
Employee Creativity	0.780							
Green HR Practices	0.229	0.593						
Green Operational Innovation	0.752	0.371	0.852					
Green Recruitment and Selection	0.027	0.566	0.253	0.580				
Green performance management and appraisal	0.092	0.879	0.159	0.330	0.838			
Green reward and compensation	0.327	0.797	0.276	0.338	0.795	0.797		
Green training and development	0.205	0.782	0.426	0.452	0.456	0.356	0.798	
Intrinsic & Extrinsic Motivation	0.468	0.687	0.556	0.394	0.560	0.624	0.517	0.646

Structural Model Testing

The structural model was evaluated following the conclusion of the validation and reliability tests. In order to comprehend the underlying structural dynamics inside the model, this required assessing its predictive power and examining the connections between the constructs.

The structural model (Figure 2), which depicts the relationships (paths) between the constructs, is the theoretical or conceptual part of the route model. The relationships and interactions between the concepts within the model are illustrated by this structural framework. This is also known as the inner model in PLS-SEM, because it shows the latent variables and their relationships.

The next stage is to examine structural model results after this study has shown that structures are measured in reliable and valid ways. The link between conceptions is the focus of this research.

The structural model path coefficient displays the connection between results as well as expecting result concepts. The connection is significant if the t-statistic with one tail is equal to or greater than 1.65 (significance level=5%) (Table 5).

In this study 5 hypotheses were tested (table 6). One is Green HR Practices -> Green Operational Innovation and its t value is 3.376 and its p value is 0.000. Second hypothesis is Green HR Practices -> Employee Creativity and its t value is 0.723 and its p value is 0.235. Third hypothesis is Moderating Effect Motivation -> Employee Creativity and its t is 1.414 and its p value is 0.079. Fourth hypothesis Moderating Effect Motivation -> Green Operational Innovation and its t value is 3.817 and its p value is 0.000. Fifth hypothesis is Employee Creativity -> Green Operational Innovation and its t value is 13.918 and its p value is 0.000.

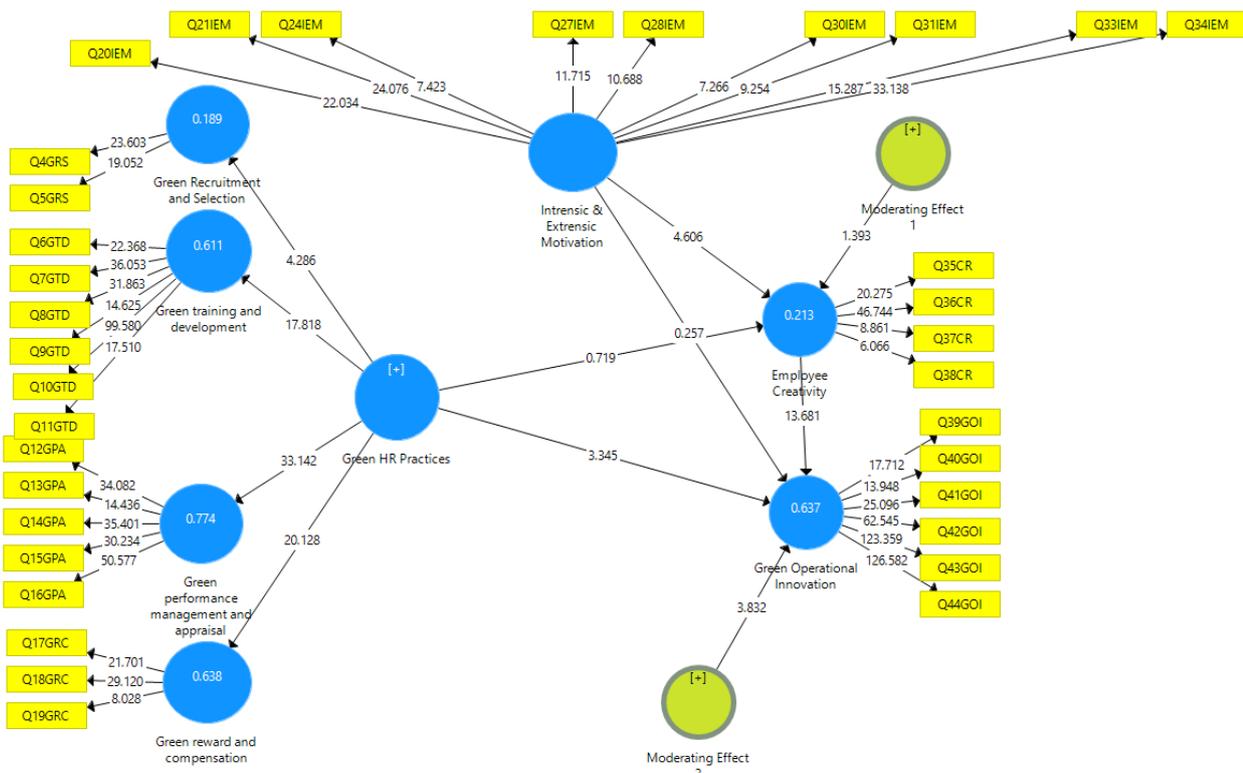


Figure 2: Structural Model Testing

Table 5: Structural Model Path Coefficients

Structural Model Path Coefficients	Original Sample (O)	Sample Mean (M)	Standard Deviation (STDEV)	T Statistics (O/STDEV)	P Values
Employee Creativity -> Green Operational Innovation	0.647	0.649	0.046	13.918	0.000
Green HR Practices -> Employee Creativity	-0.085	-0.095	0.117	0.723	0.235
Green HR Practices -> Green Operational Innovation	0.187	0.179	0.056	3.376	0.000
Moderating Effect Motivation -> Employee Creativity	-0.103	-0.091	0.073	1.414	0.079
Moderating Effect Motivation -> Green Operational Innovation	-0.127	-0.130	0.033	3.817	0.000

Green HR Practices -> Green Operational Innovation its t value is higher than 1.6 so we are accepted this hypothesis. Green HR Practices -> Employee Creativity its t value is less than 1.6 so we have rejected this hypothesis. Moderating Effect Motivation -> Employee Creativity its t value is less than 1.6 so we are rejected this hypothesis. Moderating Effect Motivation -> Green Operational Innovation its t value is higher than 1.6 so we are accepted this hypothesis. Employee Creativity -> Green Operational Innovation its t value is higher than 1.6 so we are accepted this hypothesis.

Table 6: Result Hypothesis

NO	Hypothesis	Result
1	H1: Green HR Practices -> Green Operational Innovation	Accepted
2	H2: Green HR Practices -> Employee Creativity	Rejected
3	H3: Moderating Effect Motivation -> Employee Creativity	Rejected

4	H4: Moderating Effect Motivation -> Green Operational Innovation	Accepted
5	H5: Employee Creativity -> Green Operational Innovation	Accepted

In this study we investigate the moderating effect between motivation and employee creativity is not significant relationship between these variables. Its means motivation is not affected by employee creativity. And the other moderating effect between motivation and green operational innovation is significant relationship between these variables. Its mean motivation is affected on green operational innovation

Table 7: R Square

R Square	R Square
Employee creativity	0.213
Green operational innovation	0.637

The effects of altering the independent variables on the dependent variables are shown in Table 7. In particular, Green Human Resource (GHR) Practices are impacted by Employee Creativity by 0.213. A strong correlation between these categories is also demonstrated by the significant influence of GHR Practices on Green Operational Innovation (coefficient of 0.637).

Understanding the underlying mechanisms can be improved by investigating the mediating and moderating factors that influence the relationship between GHR practices and various outcomes, such as work satisfaction or employee creativity.

DISCUSSION AND CONCLUSION

In addition to examining Green Human Resource Management (GHRM) approaches, this study sought to explore a new relationship between employee creativity and green operational innovation. It also looked at the moderating effect of motivation on Pakistani manufacturing companies. GHRM has emerged as a widely recognized strategy for instilling an organization's environmental consciousness and fostering ethical values from the onset of employees' engagement. It is evident that the incorporation of green principles into HRM practices resonates throughout an organization's operations, influencing its environmental orientation and the selection of environmentally-conscious employees (Guerci et al., 2016; Renwick et al., 2013; Mandip, 2012).

Our research reveals a notable willingness among decision-makers in the business administration sector to enhance environmental outcomes. During the data collection process, we observed a heightened readiness within the industrial sector to invest in sustainable practices, thereby augmenting long-term performance and sustaining a competitive edge. Organizations can indeed enhance their performance by embracing innovative methodologies and adopting a multifaceted approach to yield superior results.

The study's conclusions showed a robust correlation between green operational innovation and green human resources practices. On the other hand, it was shown that there was no substantial correlation between employee creativity and green HR practices. Notably, the moderating effect of motivation was found to be significantly related to green operational innovation, while no significant relationship was observed between motivation and employee creativity. Furthermore, our findings highlight the significant relationship between employee creativity and green operational innovation.

These findings provide valuable insights into the intricate dynamics of GHRM practices and their impact on organizational outcomes in the context of the Pakistani manufacturing sector. They underscore the importance of considering motivation as a key factor in the pursuit of green operational innovation, further emphasizing the need for organizations to foster creative thinking among employees. This research adds to the growing body of GHRM literature by highlighting the specific challenges and opportunities within the Pakistani industrial sector, and offering a foundation for the development of strategic initiatives aimed at achieving sustainable, environmentally-conscious business practices (Jackson, 2011; Paillé et al., 2013; Wright et al., 2014). In the area of green human resource management (GHRM), this work makes a substantial contribution. In contemporary business operations, GHRM has evolved into a fundamental and widespread practice across all firms, encompassing a broad spectrum of tasks related to managing employees. Within this study, we have employed the Ability Motivation Opportunity (AMO) theory as a conceptual framework to foster the cultivation of a sustainable environment, involving the active participation of employees, senior management, and the organization as a whole.

AMO theory provides a thorough grasp of how employee autonomy is affected by environmental HRM practices, which in turn increases an organization's eco-efficiency. It is imperative to recognize that AMO theory scrutinizes the

intricate interplay between human resources and environmental management. It implies that the combined skills, knowledge, talents, motivations, and opportunities of employees influence the total performance of the organization. This thorough approach elucidates the mechanics and causes of the effectiveness of managerial actions and HRM initiatives in improving business outcomes (Amabile, 1993; Appelbaum et al., 2000).

The application of AMO theory in this research offers a strong foundation for elucidating how sustainable HRM practices might encourage staff commitment and participation in green projects. Organizations can enhance their ecological performance and make significant strides toward overall sustainability goals by providing staff with the required training, incentives, and chances to adopt ecologically responsible behaviors. This research thus underscores the pivotal role of GHRM in fostering environmental responsibility and sustainability within the Pakistani industrial landscape (Jackson, 2011; Paillé et al., 2013).

Furthermore, the insights gleaned from this study are invaluable for both academia and practitioners alike, this knowledge, which is based on AMO theory, gives a thorough grasp of how HRM practices affect company environmental performance and serves as a foundation for creating focused and successful Green HRM initiatives. These tactics might be modified to meet the particular requirements and difficulties that the Pakistani business faces, thereby advancing the broader discourse on sustainable business practices (Wright et al., 2014).

Limitations and future research directions

Data for this study were collected from a sample of 33 manufacturing firms located in Pakistan, with a specific focus on three distinct industry sectors: sports, leather, and surgical. While the findings of this research are pertinent to these industry segments, it is essential to recognize that the scope of this study is not exhaustive, and there exists potential for further exploration across a wider array of industrial categories. Researchers are encouraged to broaden the scope of their investigations by conducting surveys and gathering data from additional types of firms. A more comprehensive grasp of the effects of Green Human Resource (GHR) practices in diverse organizational contexts would be improved by this expansion. It is also crucial to recognize that this study is cross-sectional and is incorporating longitudinal studies into future research could improve comprehension by enabling a more thorough analysis of how these dynamics change over time.

In conclusion, Green Human Resource Management practices serve as a catalyst for the responsible use of environmental resources, contributing to climate sustainability, improving social resources, and fulfilling climate health obligations (Gupta, 2018). Within Green HR practices, environmentally friendly hiring procedures involve evaluating candidates' awareness of climate issues, their convictions, and their commitment (Renwick et al., 2013). This can include communicating messages related to environmental criteria during the hiring process (Arulrajah et al., 2015). It is noteworthy that concern for the environment and information skills training are significant factors, as experienced employees can actively engage in promoting environmental consciousness. Organizations should not only establish environmental guidelines and communicate them to employees but also provide the necessary tools and incentives. When organizations take significant environmental actions, employees become more motivated to support the company's sustainability initiatives. Additionally, eco-friendly competencies can enable policymakers to leverage employees' experiences and skills to address environmental issues within the organization.

Employees can discern a company's commitment to environmental responsibility through company-sponsored ecological community outreach programs. Furthermore, participation in environmental events allows employees to stay informed about the company's environmental initiatives and encourages them to promote environmentally friendly behavior among their colleagues.

REFERENCES

- Ahmad, S. (2015). Green human resource management: Policies and practices. *Cogent Business & Management*, 2(1), 1030817.
- Albort-Morant, G., Leal-Rodríguez, A. L., & De Marchi, V. (2018). Absorptive capacity and relationship learning mechanisms as complementary drivers of green innovation performance. *Journal of Knowledge Management*, 22(2), 432–452.
- Amabile, T. M. (1988). A model of creativity and innovation in organizations. *Research in Organizational Behavior*, 10(1), 123–167.
- Amabile, T. M., & Pillemer, J. (2012). Perspectives on the social psychology of creativity. *Journal of Creative Behavior*, 46(1), 3–15.
- Antoncic, J. A., Antoncic, B., & Li, Z. (2018). Creativity of the entrepreneur, intrapreneurship, and the growth of small and medium-sized enterprises: Evidence from China. *Chinese Business Review*, 17(7), 336–341.
- Anwar, N., Mahmood, N. H. N., Yusoff, Y. M., & Khalid, W. (2018). Review of green human resource management: From the lens of ability-motivation-opportunity framework. *Advanced Science Letters*, 24(4), 2507–2510.

- Appelbaum, E., Bailey, T., Berg, P. B., Kalleberg, A. L., & Bailey, T. A. (2000). *Manufacturing advantage: Why high-performance work systems pay off*. Cornell University Press.
- Arulrajah, A. A., Opatha, H. H. D. N. P., & Nawaratne, N. N. J. (2015). Green human resource management practices: A review. *Sri Lankan Journal of Human Resource Management*, 5(1), 1–16.
- Bebbington, J. (2001). Sustainable development: A review of the international development, business and accounting literature. *Accounting Forum*, 25(2), 128–157.
- Bhutto, S. A. (2016). Effects of green human resources management on firm performance: An empirical study on Pakistani firms. *European Journal of Business and Management*, 8(16), 119–125.
- Breaugh, J., Ritz, A., & Alfes, K. (2018). Work motivation and public service motivation: Disentangling varieties of motivation and job satisfaction. *Public Management Review*, 20(10), 1423–1443.
- Chaudhary, R. (2019). Effects of green human resource management: Testing a moderated mediation model. *International Journal of Productivity and Performance Management*.
- Cheema, S., & Javed, F. (2017). The effects of corporate social responsibility toward green human resource management: The mediating role of sustainable environment. *Cogent Business & Management*, 4(1), 1–10.
- Chen, Y. S., & Chang, C. H. (2013). Greenwash and green trust: The mediation effects of green consumer confusion and green perceived risk. *Journal of Business Ethics*, 114, 489–500.
- Cherian, J., & Jacob, J. (2012). A study of green HR practices and its effective implementation in the organization: A review. *International Journal of Business and Management*, 7(21), 25–33.
- Chhotray, S., Sivertsson, O., & Tell, J. (2018). The roles of leadership, vision, and empowerment in born global companies. *Journal of International Entrepreneurship*, 16(1), 38–57.
- Christmann, P., & Taylor, G. (2002). Globalization and the environment: Strategies for international voluntary environmental initiatives. *Academy of Management Perspectives*, 16(3), 121–135.
- Daily, B. F., & Huang, S. C. (2001). Achieving sustainability through attention to human resource factors in environmental management. *International Journal of Operations and Production Management*, 21(12), 1539–1552.
- Daily, B. F., Bishop, J. W., & Steiner, R. (2007). The mediating role of EMS teamwork as it pertains to HR factors and perceived environmental performance. *Journal of Applied Business Research*, 23(1), 95–109.
- Del Brío, J. Á., Fernandez, E., & Junquera, B. (2007). Management and employee involvement in achieving an environmental action-based competitive advantage: An empirical study. *The International Journal of Human Resource Management*, 18(4), 491–522.
- Dorenbosch, L., Engen, M. L., & Verhagen, M. (2005). On-the-job innovation: The impact of job design and human resource management through production ownership. *Creativity and Innovation Management*, 14, 129–141.
- Eiadat, Y., Kelly, A., Roche, F., & Eyadat, H. (2008). Green and competitive? An empirical test of the mediating role of environmental innovation strategy. *Journal of World Business*, 43(2), 131–145.
- Eisenberger, R., Karagonlar, G., Stinglhamber, F., Neves, P., Becker, T. E., Gonzalez-Morales, M. G., & Steiger-Mueller, M. (2010). Leader–member exchange and affective organizational commitment: The contribution of supervisor's organizational embodiment. *Journal of Applied Psychology*, 95(6), 1085.
- Fernandez, E., Junquera, B., & Ordiz, M. (2003). Organizational culture and human resources in the environmental issue: A review of the literature. *International Journal of Human Resource Management*, 14(4), 634–656.
- Froese, F. J., Kim, K., & Eng, A. (2016). Language, cultural intelligence, and in-patriate turnover intentions: Leveraging values in multinational corporations through in-patriates. *Management International Review*, 56(2), 283–301.
- Gholami, H., Rezaei, G., Zameri, M., & Saman, M. (2016). State-of-the-art green HRM system: Sustainability in the sports center in Malaysia using a multi-methods approach and opportunities for future research.
- Guerci, M., Montanari, F., Scapolan, A., & Epifanio, A. (2016). Green and nongreen recruitment practices for attracting job applicants: Exploring independent and interactive effects. *The International Journal of Human Resource Management*, 27(2), 129–150.
- Hair, J. F., Jr., Hult, G. T. M., Ringle, C., & Sarstedt, M. (2016). *A primer on partial least squares structural equation modeling (PLS-SEM)*. Sage Publications.
- Hammer, M. (2004). Deep change: How operational innovation can transform your company. *Harvard Business Review*, 82, 84–93.
- Jabbour, C. J. C., & Jabbour, A. B. L. de S. (2016). Green human resource management and green supply chain management: Linking two emerging agendas. *Journal of Cleaner Production*, 112(3), 1824–1833.
- Jabbour, C. J. C., & Santos, F. C. A. (2008). Relationships between human resource dimensions and environmental management in companies: Proposal of a model. *Journal of Cleaner Production*, 16(1), 51–58.
- Jackson, S. E., & Seo, J. (2010). The greening of strategic HRM scholarship. *Organization Management Journal*, 7(4), 278–290.
- Jackson, S. E., Renwick, D. W., Jabbour, C. J. C., & Muller-Camen, M. (2011). State-of-the-art and future directions for green human resource management: Introduction to the special issue. *German Journal of Human Resource Management*, 25(2), 99–116.

- Jia, J., Liu, H., Chin, T., & Hu, D. (2018). The continuous mediating effects of GHRM on employees' green passion via transformational leadership and green creativity. *Sustainability*, 10(9), 3237–3255.
- Jiang, J., Wang, S., & Zhao, S. (2012). Does HRM facilitate employee creativity and organizational innovation? A study of Chinese firms. *The International Journal of Human Resource Management*, 23(19), 4025–4047.
- Jiménez-Jiménez, D., & Sanz-Valle, R. (2011). Innovation, organizational learning, and performance. *Journal of Business Research*, 64(4), 408–417.
- Kammerer, D. (2009). The effects of customer benefit and regulation on environmental product innovation: Empirical evidence from appliance manufacturers in Germany. *Ecological Economics*, 68(8–9), 2285–2295.
- Kapil, K. (2015). Green HRM: Trends and prospects. *GE-International Journal of Management Research*, 3(1), 43–55.
- Kaur, S., Gupta, S., Singh, S. K., & Perano, M. (2019). Organizational ambidexterity through global strategic partnerships: A cognitive computing perspective. *Technological Forecasting and Social Change*, 145, 43–54.
- Koseoglu, G., Liu, Y., & Shalley, C. E. (2017). Working with creative leaders: Exploring the relationship between supervisors' and subordinates' creativity. *The Leadership Quarterly*.
- Leal-Millán, A., Roldán, J. L., Leal-Rodríguez, A. L., & Ortega-Gutiérrez, J. (2016). IT and relationship learning in networks as drivers of green innovation and customer capital: Evidence from the automobile sector. *Journal of Knowledge Management*, 20(3), 444–464.
- Li, Y., Zhao, Y., & Liu, Y. (2006). The relationship between HRM, technology innovation and performance in China. *International Journal of Manpower*, 27(7), 679–697.
- Longoni, A., Luzzini, D., & Guerci, M. (2018). Deploying environmental management across functions: The relationship between green human resource management and green supply chain management. *Journal of Business Ethics*, 151(4), 1081–1095.
- Madsen, H., & Ulhøi, J. P. (2001). Greening of human resources: Environmental awareness and training interests within the workforce. *Industrial Management and Data Systems*, 101(2), 57–65.
- Mandip, G. (2012). Green HRM: People management commitment to environmental sustainability. *Research Journal of Recent Sciences*, 1, 244–252.
- Mani, V., Gunasekaran, A., & Delgado, C. (2018). Enhancing supply chain performance through supplier social sustainability: An emerging economy perspective. *International Journal of Production Economics*, 195, 259–272.
- Masri, H. A., & Jaaron, A. A. (2017). Assessing green human resources management practices in Palestinian manufacturing context: An empirical study. *Journal of Cleaner Production*, 143, 474–489.
- McGuire, D., & Germain, M. L. (2015). Testing the existence of a green contract: An exploratory study. *Advances in Developing Human Resources*, 17(4), 489–503.
- Opatha, H. H. D. N. P. (2013). Green human resource management: A simplified introduction. *Proceedings of the HR Dialogue*, 1(1), 11–21.
- Paillé, P., Boiral, O., & Chen, Y. (2013). Linking environmental management practices and organizational citizenship behaviour for the environment: A social exchange perspective. *The International Journal of Human Resource Management*, 24(18), 3552–3575.
- Paletz, S. B., & Peng, K. (2009). Problem finding and contradiction: Examining the relationship between naive dialectical thinking, ethnicity, and creativity. *Creativity Research Journal*, 21(2–3), 139–151.
- Parker, S. (2000). From passive to proactive motivation: The importance of flexible role orientations and role breadth self-efficacy. *Applied Psychology*, 49, 447–469.
- Proctor, T. (2014). *Creative problem solving for managers*. Routledge.
- Ragas, S. F. P., Tantay, F. M. A., Chua, L. J. C., & Sunio, C. M. C. (2017). Green lifestyle moderates GHRM's impact on job performance. *International Journal of Productivity and Performance Management*, 66(7), 857–872.
- Razab, M. F., Udin, Z. M., & Osman, W. N. (2015). Understanding the role of GHRM towards environmental performance. *Journal of Global Business and Social Entrepreneurship*, 1(2), 118–125.
- Ren, S., Tang, G., & Jackson, S. E. (2018). Green human resource management research in emergence: A review and future directions. *Asia Pacific Journal of Management*, 35, 769–803.
- Renwick, D. W. S., Redman, T., & Maguire, S. (2013). Green human resource management: A review and research agenda. *International Journal of Management Reviews*, 15(1), 1–14.
- Rondinelli, D. A., & Berry, M. A. (2000). Environmental citizenship in multinational corporations: Social responsibility and sustainable development. *European Management Journal*, 18(1), 70–84.
- Rosa, M. D., & Pierpaolo, P. (2010). From green product definitions and classifications to the Green Option Matrix. *Journal of Cleaner Production*, 18(16–17), 1608–1628.
- Roscoe, S., Subramanian, N., Jabbour, C. J., & Chong, T. (2019). Green human resource management and the enablers of green organisational culture: Enhancing a firm's environmental performance for sustainable development. *Business Strategy and the Environment*, 28(5), 737–749.
- Roy, M. J., & Thérin, F. (2008). Knowledge acquisition and environmental commitment in SMEs. *Corporate Social Responsibility and Environmental Management*, 15(5), 249–259.
- Saunders, M., Lewis, P., & Thornhill, A. (2009). *Research methods for business students*.

- Shalley, C. E., & Gilson, L. L. (2004). What leaders need to know: A review of social and contextual factors that can foster or hinder creativity. *The Leadership Quarterly*, 15(1), 33–53.
- Shrivastava, P., & Berger, S. (2010). Sustainability principles: A review and directions. *Organization Management Journal*, 7(4), 246–261.
- Simpson, D., & Samson, D. (2010). Environmental strategy and low waste operations: Exploring complementarities. *Business Strategy and the Environment*, 19(2), 104–118.
- Tang, G., et al. (2018). Green human resource management practices: Scale development and validity. *Asia Pacific Journal of Human Resources*, 56(1), 31–55.
- Tariq, S., Jan, F. A., & Ahmad, M. S. (2016). Green employee empowerment: A systematic literature review on state-of-art in green human resource management. *Quality & Quantity*, 50, 237–269.
- Tremblay, M. A., Blanchard, C. M., Taylor, S., Pelletier, L. G., & Villeneuve, M. (2009). Work extrinsic and intrinsic motivation scale: Its value for organizational psychology research. *Canadian Journal of Behavioural Science*, 41(4), 213.
- Vanek, J. (2017). *The economics of workers' management: A Yugoslav case study*. Routledge.
- Ward, P. T., & Duray, R. (2000). Manufacturing strategy in context: Environment, competitive strategy and manufacturing strategy. *Journal of Operations Management*, 18(2), 123–138.
- Ward, P. T., Duray, R., Leong, G. K., & Sum, C. C. (1995). Business environment, operations strategy, and performance: An empirical study of Singapore manufacturers. *Journal of Operations Management*, 13(2), 99–115.
- Yang, M. G. M., Hong, P., & Modi, S. B. (2011). Impact of lean manufacturing and environmental management on business performance: An empirical study of manufacturing firms. *International Journal of Production Economics*, 129(2), 251–261.
- Yousaf, Z., Majid, A., & Yasir, M. (2019). Is polychronicity a panacea for innovative work behavior among nursing staff? Job embeddedness and moderating role of decentralization. *European Journal of Innovation Management*.
- Yusoff, Y. M., Ramayah, T., & Othman, N. Z. (2015). Why examining adoption factors, HR role and attitude towards using E-HRM is the start-off in determining the successfulness of green HRM. *Journal of Advanced Management Science*, 3, 337–343.
- Zhang, X., & Bartol, K. M. (2010). Linking empowering leadership and employee creativity: The influence of psychological empowerment, intrinsic motivation, and creative process engagement. *Academy of Management Journal*, 53(1), 107–128.
- Zoogah, D. B. (2011). The dynamics of green HRM behaviors: A cognitive social information processing approach. *German Journal of Human Resource Management*, 25(2), 117–139.