Green HRM practices in textile sector of Pakistan and its impact on green innovation and environmental sustainability

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MUHAMMAD AWAIS-E-YAZDAN
MUHAMMAD SHAHZAD IQBAL
MUDASSAR MUSHTAQ
RAMONA BIRAU
VIRGIL POPESCU
PETRE VALERIU NINULESCU

ABSTRACT – REZUMAT

Green HRM practices in textile sector of Pakistan and its impact on green innovation and environmental sustainability

The issue of Environmental sustainability is getting more attention from academia over the last few years. Green Human Resource Management Practices (GHRM) are important in every aspect of environmental sustainability. This research study examines the impact of Green Human Resource Management Practices on environmental sustainability through the mediating role of green innovation in the textile sector of Pakistan. This study is quantitative in nature, and data was collected through a survey questionnaire. The data was analysed with the help of SPSS and Smart PLS. The findings indicate that GHRM practices significantly contribute to green innovations. Green innovations such as green product innovation and green process innovation significantly contribute to environmental sustainability.

Keywords: *green human resource management, green product innovation, green industry innovation, green process innovation, environmental sustainability*

Practici privind managementul verde al resurselor umane în sectorul textil din Pakistan și impactul acestora asupra inovației ecologice și sustenabilităţii mediului

Problema sustenabilităţii mediului a primit din ce în ce mai multă atenție din partea mediului academic în ultimii ani. Practicile ecologice de management al resurselor umane (PEMRU) au un rol important în fiecare aspect al sustenabilităţii mediului. Acest studiu de cercetare examinează impactul practicilor ecologice de management al resurselor umane asupra sustenabilităţii mediului prin rolul de mediere al inovației ecologice în sectorul textil din Pakistan. Acest studiu este de natură cantitativă, iar datele au fost colectate prin metoda sondajului. Datele au fost analizate cu ajutorul programelor SPSS și Smart PLS. Rezultatele empirice indică faptul că practicile ecologice de management al resurselor umane contribuie în mod semnificativ la inovațiile ecologice. Inovațiile ecologice, cum ar fi inovarea produselor „verzi” și inovarea proceselor ecologice, contribuie în mod semnificativ la sustenabilitatea mediului.

Cuvinte-cheie*: managementul verde al resurselor umane, inovare de produse ecologice, inovare verde în industrie, inovare de procese ecologice, sustenabilitatea mediului*

INTRODUCTION

Globalization has brought new environmental challenges, and governments and businesses both increasingly understand how important environmental sustainability is for long-term social and economic well-being [1]. A growing number of businesses are turning to green human resource management (GHRM) to improve their image and meet environmental objectives as a result of government mandates, environmental regulations, and stakeholders [2]. To improve environmental performance and obtain a competitive edge, GHRM practices are becoming more important [3]. It is an emerging perspective for the researchers. GHRM are the methods executed to eliminate the negative environmental facets to upgrade the positive environmental footprints of the organizations. GHRM allows employees to take an active part in sustainable applications and urges others to take active participation in sustainability problems. These factors apply human resource practices to the viable usage of resources of the organization to enhance environmental sustainability. More and more, GHRM is seen as a critical instrument for adopting green initiatives and environmental management practices [4]. By “the HRM elements of environmental management”, we mean anything that has to do with people management [5]. Economic growth is the most important factor in ensuring the long-term viability of businesses [6]. One of the elements that contribute to climate change is economic growth [7]. As a result, businesses must be accountable for environmental protection as economic actors [8]. All business players, from SMEs to corporations, must exercise environmental control. Innovative choices are linked to frontline workers' knowledge, abilities, and behaviours that generate value, according to [9] and

[10]. Employees' green skills, motivation, and opportunities will be difficult to apply in a company with no green innovation culture.

MOTIVATION OF THE STUDY

To investigate and explain the HRM-performance connection in the context of Pakistan's textile industry, the study used the resource-based view (RBV) of the business and the ability-motivation-opportunity (AMO) theory. The connection between human capital and business performance is not new, and it may be found in existing HRM and strategy literature [11]. According to the resource-based view (RBV) of the business, competitive advantage and performance are determined by how companies utilize strategic resources that are valuable, uncommon, and difficult to duplicate by market competitors [12].

Current research shows that human resource management (HRM) has evolved from antiquated practices like those that saw little participation from employees to ones that allow employees to improve their skills, knowledge, and attitudes via participation and support [13–15]. When we look at the literature on sustainable HRM, we see GHRM as an important addition since it focuses on corporate environmental management practices and connects HRM practices with the company's environmental management activities via green HRM [16, 17].

Innovation, for all means and purposes, ensures not just a competitive edge, but also environmental and social benefits [18]. Related core ideas have arisen when environmental innovation, eco-innovation, GI, and sustainable innovation are assigned to various corporate divisions [19]. According to prior research, the phrases ecological innovation, eco-innovation, environmental innovation, and GI are equivalent [20]. Sustainable innovation includes both social and environmental components [21].

Green innovation is defined as the adoption of organizational practices such as green and sustainable raw materials, the use of fewer materials during product design using eco-design principles, and the goal of reducing emissions, water, electricity, and other raw materials consumption [22]. Several studies have found that green innovative organizations are more successful [23] and have better overall performance than their competitors because they use their green resources and capabilities to respond quickly and appropriately to customer needs [24] and add intangible values and assets [25]. HR management techniques that focus on building a commitment culture rather than compliance have a positive effect on a company's creative mindset [13, 26]. Furthermore, strategic HRM has a positive influence on product innovation in organizations with a dynamic culture and a flat organizational structure, as stated by Wei, Liu and Herndon [27].

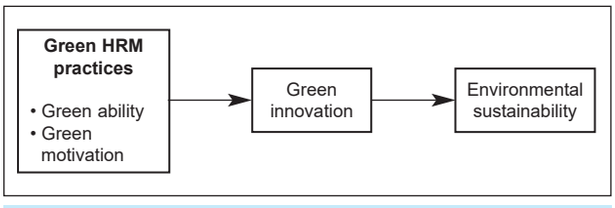

Fig. 1. Research framework

RESEARCH METHODOLOGY

The research work trails applicable research techniques and numerical methods that are reinforced by the value of aggregations and extent [28]. The suggested agenda in figure 1 is deductively explored to quantify the connection between proposed ways and start the submitted results. The research is cross-sectional since the data around variables A and B were collected to represent happening at a unique point in time [29]. Due to limited, time, resources and budgetary constraints, this study focused on those textile units that also have outlets and offer brands. A structured questionnaire was used to gather the essential data from textiles. Questionnaires were distributed to the Managers (Top level to bottom level) of the textiles sectors of Faisalabad. Data was collected from middle-level managers and operation managers from the textile sector from Lahore and Faisalabad cities of Pakistan.

Data analysis

Microsoft Excel (2016), PLS Smart 3.0, and IBM SPSS Statistics 23 bundle were utilized to conduct the required information results. For the approval of an instrument validity of the variables examination were decided

Demographics of the respondents

Table 1 depicts the demographic information of respondents which included gender, age, work experience, and designation. The details are presented in the table.

Common method bias

Harman's single factor score, in which all items (testing latent variables) are put into one common factor, is one of the easiest techniques to determine whether CMB is present in your research. If the overall variance for a single element is less than 50%, CMB is not affecting your data, and hence the findings [30]. The test released rotated arrangements of eleven variables with one factor clarifying 24.08% of the variance, and eleven elements clarifying 67.96% of the fluctuation (table 2). The un-rotated arrangements did not produce a general factor, recommending that 'common method variance' does not seem to be risky.

Measurement model

The measurement model analysis explains how dimensions of latent variables are dignified regarding their measurement properties and perceived (observed) items [31]. This specific section highlights the evaluation of the outer model (measurement) by assessing the internal consistency, item reliability, discriminant validity and convergent reliability [22].

Table 1

DEMOGRAPHIC VARIABLES OF THE TEXTILE MANUFACTURING INDUSTRY		
Demographic variables	**Frequency**	**Percentage (%)**
Gender		
Male	216	94.3
Female	13	5.7
Age		
21 – 25 years	53	23.1
26 – 30 years	29	12.7
31 – 35 years	128	55.9
Above 35	19	8.3
Work Experience		
Less than 5 years	62	27.1
5 to 10 years	72	31.4
10 to 15 years	49	21.4
15 to 20 years	43	18.8
Above 20 years	3	1.3
Designation		
Senior Officer	15	6.6
Assistant Manager	56	24.5
Deputy Manager	17	7.4
Manager	67	29.3
General Manager	74	32.3

Including 45 items to explain the four constructs of the model. Using the PLS algorithm for all reflective constructs was accomplished. The reflective scale's

Table 2

HARMAN'S ONE-FACTOR TEST COMMON METHOD BIAS			
Component	**Initial Eigenvalues**		
	Total	**% of Variance**	**Cumulative (%)**
1	10.836	24.080	24.080
2	4.607	10.239	34.319
3	2.929	6.509	40.828
4	2.239	4.976	45.803
5	1.835	4.079	49.882
6	1.727	3.838	53.721
7	1.550	3.444	57.165
8	1.426	3.169	60.333
9	1.264	2.809	63.142
10	1.162	2.583	65.725
11	1.007	2.238	67.963

Note: Extraction Method: Principal Component Analysis.

reliability was assessed by the SMART-PLS algorithm, through the estimations of convergent reliability and discriminant validity. The following model depicts latent variables (circles) and their measuring items (rectangles) appear in figure 2.

The results show that all latent variables in the model are reflective by nature and it is defined by results that all-inclusive quality of the reflective variable's measure of PLS loadings, Cronbach's alpha, constructs 'AVE & composite reliability which is shown in table 3.

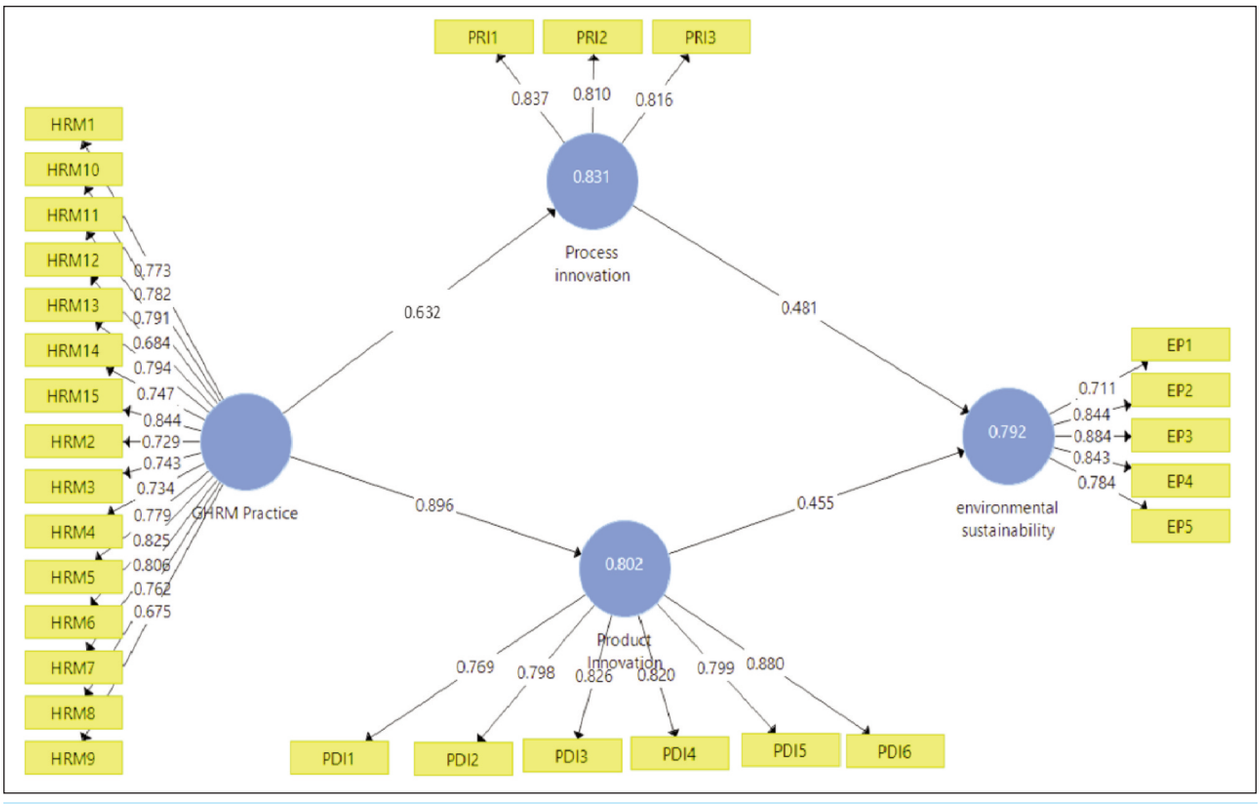

Fig. 2. Measurement model

Table 3

MEASUREMENT STATISTICS OF CONSTRUCTS				
Constructs, Dimensions, Items	**Item loading**	**AVE**	**CR**	**A**
Environmental sustainability (ES)		0.872	0.908	0.665
ES1	0.711			
ES2	0.844			
ES3	0.884			
ES4	0.843			
ES5	0.784			
Human Resource Management		0.949	0.955	0.587
HRM1	0.773			
HRM2	0.729			
HRM3	0.743			
HRM4	0.734			
HRM5	0.779			
HRM6	0.825			
HRM7	0.806			
HRM8	0.762			
HRM9	0.675			
HRM10	0.782			
HRM11	0.791			
HRM12	0.684			
HRM13	0.794			
HRM14	0.747			
HRM15	0.844			
Product Innovation		0.899	0.923	0.666
PDI1	0.769			
PDI2	0.798			
PDI3	0.826			
PDI4	0.820			
PDI5	0.799			
PDI6	0.880			
Process Innovation		0.759	0.861	0.675
PRI1	0.837			
PRI2	0.810			
PRI3	0.816			

First order constructs

By evaluating the first-order construct the item's loading was assessed (table 3). Regarding Green HRM practices, it consisted of fifteen items. The outer loadings fluctuated from 0.675 to 0.844 for the concerned items, and all items are significant at the level of 0.5 which is shown by the *t*-value results. Product innovation with no dimension but it comprises six items. The outer loadings fluctuated from 0.769 to 0.880 for the concerned items, and all items are significant which is shown by the *t*-value results. Process innovation is assessed by three items with no dimension. The outer loadings fluctuated from 0.816 to 0.837 for the concerned items, and all items are significant at the level of 0.5 which is shown by the *t*-value results. Environmental Sustainability was assessed by five items and it has no dimension as well, the outer loadings fluctuated from 0.711 to 0.884 for the concerned items, and all items are significant at the level of 0.5 which is shown by the *t*-value results.

Item reliability

All item's reliability is robust, as can be seen in table 3, Cronbach's alpha (α) is greater than 0.7. Moreover, composite reliability (CR) fluctuated from .861 to .955, which surpasses the prescribed limit of 0.70, affirming that all loadings used for this research have shown satisfactory indicator reliability.
Ultimately, all item's loadings are over the 0.6 cutoff [32].

Structural model

The Structural equation model (SEM) was assessed dependent on five criteria: (1) Path coefficient (β) that shows either relationship is weak or strong between

constructs; (2) level of variance clarified or R square (R^2) which generally was called regression score; (3) standardized root mean square residual (SRMR); (4) *t*-values significance which clarify the relationship among variables are significant or not; (5) The Q2 that estimates how well the model reproduced the perceived values and its estimates of parameters [33].

Model fit

The SRMR of the model was 0.077, which demonstrates a sufficient model fit. An SRMR value under 0.08 was prescribed to be appropriate for PLS path models [34].

Parh coefficient (β) and t-value

In this study, the path coefficient was led to assess the relationship of the variables as hypothesized [35]. The resampling criteria of bootstrapping were run in accordance to induce statistical inference and to observe the influence of confidence intervals of path coefficients [36]. Table 4 indicates the results of the sample bootstrap analysis like (1) standardized path co-efficient (β), and (2) corresponding *t* and *p* values results.

SEM analysis was used with Smart-PLS to test all the Hypotheses. Latent variables were entered into the model and connected in a path, internal brand management as independent variable, employee brand building behaviour as mediation, and perceived brand ethicality as moderator and brand performance as dependent variable.

The first hypothesis shows Green human resource management practices will have a significant impact on Product innovation. The results show there is a significant relationship between GHRM practices and process innovation ($\beta = 0.632$; $t = 43.537$, $p < 0.0000$), supporting H1. Moreover, findings showed that GHRMS practices have a significant impact on product innovation ($\beta = 0.896$; $t = 23.459$, $p < 0.000$) supported H2. The third hypothesis shows there is a positive relationship between Product innovation and environmental sustainability ($\beta = 0.481$; $t = 4.888$, $p < 0.000$) accepting H3. The four hypotheses show there is a positive relationship between Process

Table 4

RESULT OF STRUCTURAL MODEL AND HYPOTHESES TESTING				
Hypothesis	**B**	**|t value|^**	***p* value**	**Decision**
GHRM Practice → Process innovation	0.632	43.537	0.000	Supported
GHRM Practice → Product Innovation	0.896	23.459	0.000	Supported
Process innovation → environmental sustainability	0.481	4.848	0.000	Supported
Product Innovation → environmental sustainability	0.455	4.328	0.000	Supported

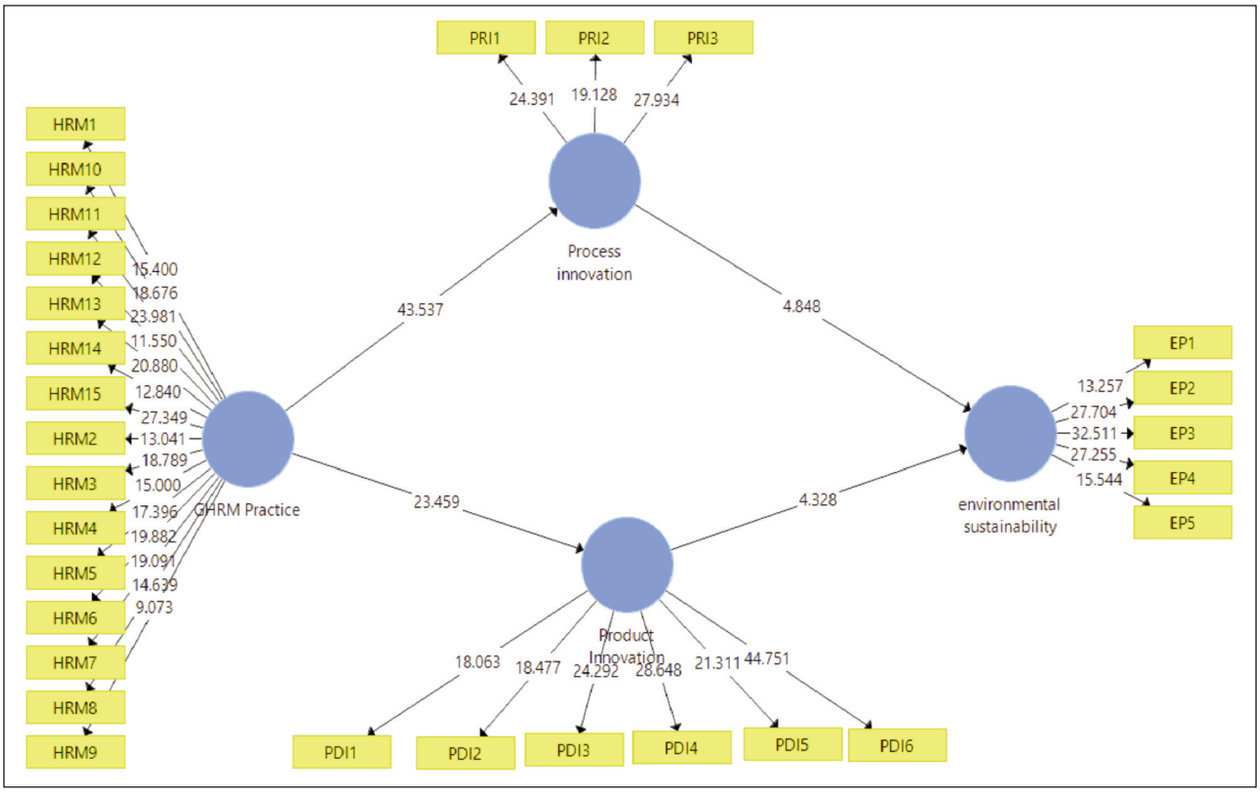

Fig. 3. Bootstrapping

Table 5

DIRECT INDIRECT EFFECTS MEDIATIONS						
Hypothesis	**Relationship**	**Direct effects**	**Indirect effects**	**Total effects**	**VAF**	**Mediation**
H4	GHRM → PDI → ES	β = 0.325 *p*-value = 4.325	β = 0.407 *t* = 3.759 *p*-value = 0.000	β = 0.846 *t*-value = 23.349 *p*-value = 0.000	55%	Partial
H4	GHRM → PRI → ES	β = 0.325 *p*-value = 4.325	β = 0.407 *t* = 3.759 *p*-value = 0.000	β = 0.734 *t*-value = 8.320 *p*-value = 0.000	60%	Partial

Note: β values and P values are shown in table VAF = Variance Accounted For. *p < 0.10, **p < 0.05, ***p < 0.01 (two-tailed).

innovation and environmental sustainability (β = 0.455; *t* = 4.328, *p* < 0.000) accepting H4.

TESTING THE MEDIATING EFFECTS

MacKinnon and Luecken [37] characterize 'Path Analysis' as an unpredictable measurement of relations among constructs which contain mediating as a significant component. The mediation effect issue is essential in any 'path analysis' and SEM. The construct is taken as a mediator considered as an arbitrate between the independent and dependent constructs [38]. The causal advances approach created by [39] has turned out to be most prevalent in testing mediation impacts. The fifth hypothesis indicates that Green innovation has two dimensions such as process innovation and product innovation mediating the relationship between GHRM practices and Environmental sustainability. Process innovation has a significant mediating impact (β = 0.438; *t* = 4.684, *p* < 0.000) on accepting H4. The β value of the direct effect of GHRM practices had a significantly positive effect on product innovation (β = 0.896, *t* = 23.459, *p*-value = 0.000) and had a significantly positive effect on environmental sustainability (β = 0.325, *t* = 4.325, *p*-value = 0.045). As shown in table 5 indirect effect of GHRM Practices on environmental sustainability (β = 0.407, *t* = 3.759, *p*-value = 0.000) showed Partial mediation and supporting hypothesis (4).

The β value of the direct effect of IBM had a significantly positive effect on Process Innovation Environmental sustainability (β = 0.632, *t* = 43.537, *p*-value = 0.000) and had a significantly positive effect on environmental sustainability (β = 0.325, *t* = 4.325, *p*-value = 0.045). As shown in table 5 indirect effect of GHRM Practices on Environmental sustainability (β = 0.407, *t* = 3.759, *p*-value = 0.000) showed Partial mediation and supporting hypothesis (5). In this, the variance accounted for (VAF) describes the size of the indirect effect about the total effect. According to Nitzl et al. [40] and Zhao, Lynch and Chen [41] a partial mediation indicated where the direct and indirect effects are significant.

The explanatory power of the model (r^2)

To evaluate the explanatory power of the model the R^2 value was analysed for every predicted variable. It shows the degree to which independent variables illustrate the dependent variables. R^2 in between 0 and 1 with higher values shows a higher level of predictive accuracy. Subsequent values of R^2 describe 0.25 for weak, R^2 0.50 for moderate and R^2 0.75 for substantial. Table 6 displays the percentage of variance clarified for every variable. 80.1% of employee brand-building behaviour and the items related to the variable. Also, 83% of Process innovation was elaborated by GHRM practices. In general, results demonstrate that values of R^2 endogenous variables fulfil the minimum criteria for the 0.10 cut off 'value, which is a sign of a moderately 'parsimonious' mode [42]. Most importantly, the outputs give significant validity to the model.

Table 6

PREDICTIVE RELEVANCE FOR ENDOGENOUS CONSTRUCTS			
No.	**Endogenous variables**	**R^2**	**Q^2**
1	PDI	0.801	0.550
2	PRI	0.830	0.523
3	ES	0.790	0.512

Predictive relevance

For this research, Q^2 was acquired by utilizing cross-validated redundancy systems as proposed by Chin [43]. A Q^2 larger than 0 infers that the model has predictive significance, while a Q-square under 0 proposes that the model needs predictive importance. As appeared in table 6, Q^2 for product innovation is 0.550 and 0.523 for process innovation and for environmental sustainability is 0.512. In this study, Q^2 values are greater than 0 which demonstrates the stability of the model, and the predictive significance of the inner model was satisfactory. The finding recommended that the proposed model has great predictive capacity. Thus, the results of the model fit, path coefficients, t-statistics, R^2, and Q^2 recommended the proposed model is substantial enough to clarify relations among variables, supporting all hypotheses.

CONCLUSION

The study's objective was to determine whether or not GHRM practices influence the environment by examining the mediating impact of green innovation.

According to the study's results, green innovations in the textile industry are very beneficial. Moreover, the study investigated whether the textile industry needed a green innovation to become a more viable economic sector and whether GHRM practices have a positive impact on environmental sustainability, which is in line with previous literature. This is especially true when the impact of GHRM practices on environmental sustainability increases as a result of green innovation, green process innovation, and green product innovation. The study revealed that GHRM practices in organizations contributed to environmental sustainability. The findings of the study contribute to the growing body of literature that shows that green product and process innovation leads to better environmental performance for companies.

LIMITATIONS

The current study is limited to Pakistan's textile sector. As a consequence, we recommend that future studies include the non-manufacturing sector. Second, this study did not look at the effect of environmental attitudes and values on HRM performance outcomes on the level of employees. Third, only internal factors impacting the execution of SMEs' environmental strategy were examined in this study. To better understand how to create, implement, and sustain proactive environmental plans in the non-manufacturing sector, we advise future studies to look at both internal and external elements.

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Authors:

MUHAMMAD AWAIS-E-YAZDAN[1], MUHAMMAD SHAHZAD IQBAL[2], MUDASSAR MUSHTAQ[3], RAMONA BIRAU[4], VIRGIL POPESCU[5], PETRE VALERIU NINULESCU[6]

[1]Department of Occupational Health and Safety, School of Public Health, Walailak University, Nakhon Si Thammarat 80161, Thailand
e-mail: awais.yazdan@gmail.com

[2]Faisalabad Business School, National Textile University Faisalabad, Pakistan
e-mail: shahzad.iqbal@ntu.edu.pk

[3]Faculty of Business & Management Sciences, The Superior University Lahore, Pakistan
e-mail: mudassar172@yahoo.com

[4]Faculty of Economic Science, University Constantin Brancusi of Tg-Jiu, Romania

[5]University of Craiova, Faculty of Economics and Business Administration, Craiova, Romania
e-mail: virgil.popescu@vilaro.ro

[6]University of Craiova, "Eugeniu Carada" Doctoral School of Economic Sciences, Craiova, Romania
e-mail: petre.pregi@yahoo.it

Corresponding author:

RAMONA BIRAU
e-mail: ramona.f.birau@gmail.com