LEVERAGING GREEN HUMAN RESOURCE MANAGEMENT PRACTICES TOWARDS ENVIRONMENTAL PERFORMANCE: AN EMPIRICAL EVIDENCE FROM THE MANUFACTURING CONTEXT IN EMERGING ECONOMY

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ABSTRACT

This study investigates the role of green human resource management (GHRM) practices on environmental performance (EP) of manufacturing organizations in Bangladesh. The study utilized a questionnaire survey among 328 manufacturing organizations selected conveniently from a population of 5608 firms located in Dhaka and Chattogram. PLS-SEM (partial least squares) was employed to assess the proposed research model. Out of six, three hypotheses were supported. Particularly, green job analysis and job description, green training and development, and green reward and compensation practices significantly influence environmental performance of manufacturing organizations. This study provides valuable insights for organizations on the GHRM-EP link in a unique South-Asian context with high level of environmental degradation. This research also contributes to fill the research gap as few studies have investigated the under-researched area. The findings are of important to scholars, decision makers, and practitioners. Further, the study explains the limitations and directions for future studies.

Keywords: GHRM practices, manufacturing sector, emerging economy.

1. INTRODUCTION

Environmental performance (EP) has drawn a global concern due to rampant environmental pollution driven by the industrial revolution and creates substantial pressure on manufacturing enterprises to utilize green management practices to improve their EP (Rehman et al., 2016). EP system has become a critical aspect of attaining inclusive development through aligning environmental management practices in the corporate agenda (Wagner, 2013). Recently, organizations have been utilizing HRM to foster greening performance as it significantly influences organizational values, policies, and strategies, and attaining sustainable competitive advantage. Consequently, scholarship (e.g., Renwick et al., 2016) has stressed to study the nexus between HRM practices and EP. The integration of green practices into HRM is indicated as

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green human resource management (GHRM) influencing enterprises to become pro-environmental by stimulating human resources towards greater EP (Kim et al., 2019).

Manufacturing organizations mainly facilitate environmental degradation in both the developing and developed economies that warrant sincere managerial efforts to address the matter and reduce its impact (Rehman et al., 2016). Since manufacturing organizations play a vibrant role on the socio-economic development of a nation, effective pro-environmental policies and practices are essential to curve the detrimental effects of environmental degradation (Masri & Jaaron, 2017). Initiating environment-friendly practices must include various divisions, departments, and employees at all levels to greening organizations. HRM practices particularly green HRM in this regard may play a pivotal role in promoting environmental sustainability (Yong et al., 2019).

Although numerous researchers studied green HRM and EP substantially in the developed economy perspective (Jabbour & Jabbour, 2016; Kim et al., 2019; Renwick et al., 2016; Yong et al., 2019), however, there is a lack of consistency about which GHRM practices are relatively essential to promote EP in other contexts. Previous studies have demonstrated that several GHRM practices are yet to be addressed and significant development in the GHRM during last few decades, thus far, it is still in its infancy, and there are still potentialities for further development of research in the field (Yong et al., 2019). Besides, a little attention has been directed to validate and prioritize GHRM practices to operationalize EP. Thus, various manufacturing enterprises fail to integrate GHRM practices in greening corporate performance. Thus, this study examines the influence of key GHRM practices on the EP of manufacturing enterprises. To this end, the study collected data from 328 organizations located in the two capital cities, Dhaka and Chattogram, in Bangladesh, where most of the industrial enterprises are located.

Moreover, there are evidences about the GHRM practices in the service sector such as banking sector in Bangladesh but manufacturing industries are poor in GHRM practices. However, the important GHRM practices in the banking sector include green investment management, online and paperless deposit management, in-house greening, e-recruitment, e-training and development, and creating awareness among employees (Hossen et al., 2018). In addition, many Bangladeshi manufacturing organizations have started to adopt GHRM practices such as green recruitment and selection, designing job, green training and development, green empowerment, green appraisal system, and green compensations to gain competitive edge (Uddin et al., 2020). It is a new approach to integrate ecological aspects with HR policies. Organizations across the globe are adopting GHRM practices to facilitate employees' eco-friendly contributions. Thus, based on above, the motivation for this research is to examine whether in consistent with other contexts GHRM practices in this perspective drive significantly the EP of manufacturing companies in Bangladesh.

Academic scholarship highlighted the dearth of empirical evidence on GHRM in the context of developing economies like Bangladesh on manufacturing industries (Uddin et al., 2020). By addressing this gap, this study is significant mainly due to two reasons. First, this study perhaps is first of its kind in Bangladesh. Examining GHRM practices among manufacturing industries is essential because Bangladesh is one of the worst affected countries in the world leaving around 234000 deaths, including 80000 in urban areas due to environmental pollution and related health hazards caused by such pollution. Second, due to increased environmental challenges,

Bangladesh pays a high price for environmental pollution in its urban areas with a loss of $6.5 billion or about 3.4 percent of its GDP. Moreover, two cities (e.g., Dhaka and Chattogram) have reported a 28% of all deaths in Bangladesh due to pollution-related diseases, compared to a 16% global average. Increased industrialization raises the amount of waste generated, without proper collection and disposal, led to water-logging in these cities (The World Bank, 2020). These challenges present Bangladeshi manufacturing industries an appropriate context to examine GHRM practices for environmental sustainability.

Based on the above, this also makes some noteworthy contributions to the environmental sustainability literature. Particularly, this study investigates the role of GHRM practices on the EP of manufacturing companies in a South-Asian developing context, the findings of which will enrich the existing literature of EP and corporate sustainability. Further, the findings may provide empirical evidence for HRM professionals and practitioners, who intend to use them, to increase sustainable competitive advantage.

1.1. Underpinning theories

This study grounds on the *ability-motivation-opportunity (AMO)* theory and OCBE theory to study the relationship between GHRM practices and EP of manufacturing firms. The AMO theory postulates that an organization's HRM functions develop employees' 'ability (recruitment & selection, training and development), motivation (rewards and compensation), and opportunity (performance management and appraisal, empowerment & participation)' improve firm performance (Singh et al., 2020). Given this, we predict that GHRM practices aim to attract, motivate, and compensating employees' job duties towards EP. Previous studies using AMO theory suggested that GHRM practices help firms attaining sustainable performance through adopting GJAJD, GRS, GTD, GPMA, and empowerment as they facilitate utilizing green human capital for improving green performance (Singh et al., 2020).

The study also draws on the organizational citizenship behavior for environment (OCBE) to study the GHRM-EP nexus. OCBE theory postulates that employees exhibit extra-role voluntary actions and green behavior beyond their formal job duties that contribute to EP (Luu, 2019). Employees, who demonstrate OCBE, tend to decrease personal and organizational resource consumption, and manage industrial and household wastes, take initiatives to recycle papers and cans, preserve resources and energy, dispose of wastes, and adapt and implement active environmental management strategies (Lamm et al., 2013). OCBE stimulates employees undertaking green interventions towards demonstrating caring and sensible behaviors to protect ecology (Pham et al., 2019).

1.2. Green human resources management

Researchers defined GHRM as "the systematic and planned alignment of HRM practices with organizational goals" (Kim et al., 2019). GHRM is a unique approach to integrate traditional HRM functions with the ecological performance (Gilal et al., 2019). HR managers are mainly responsible to empower and train organization's employees to accomplish their job tasks in a green manner by integrating HRM practices and environmental policies (Al Kerdawy, 2018). Moreover, top-level managers could establish and communicate environmental sustainable policies, practices, and vision among employees for better understanding of EP. Organizations

need to establish green performance criteria and measure employee performance considering these criteria as well as link the reward system with EP.

1.3. Green human resource management practices and environmental performance

Previous studies provided evidence that using effective HRM practices improves EP of organizations. For example, Jabbour and Santos (2008) studied HRM practices of ISO 14001 certified organizations, which revealed that organizations could enhance EP through adopting HRM practices across the organization. In another study, findings (e.g., Paille et al., 2014) showed that using HRM practices at the corporate level significantly improve ecological performance. It is due to the involvement of employees at all levels from top to bottom in organization. In another study in the hospitability industry, Chan et al. (2014) found that HRM practices such as hiring candidates with environmental understanding, and environmental training improved EP. However, this study examines GHRM-EP linkage since to date few studies have studied the role of GHRM on EP of manufacturing organizations in a unique Bangladeshi context (Moktadir et al., 2019).

2.   LITERATURE AND HYPOTHESES DEVELOPMENT

2.1. Green job analysis and job description (GJAJD)

GJAJD entails "environmental issues in all the job descriptions transform the commitment to the environment into an employee's obligation beside the usual activities of their jobs" (Jabbour, 2011). A systematic GJAJD assures that employees perform their specific value creating tasks with proper utilization of resources (Yong et al., 2019). Job analysis significantly contribute to enhancing productivity, decreasing costs, improving work environment, and developing administrative efficiency (Roscoe et al., 2019). Job descriptions might also include environmental management duties for a position, environmental reporting and disclosure, forensic accounting, and adopting green approaches for communication (Jabbour et al., 2016).

Previous studies, except those of Jabbour (2011) and Yong et al. (2019), provide little evidence on the importance of job analysis and description on EP. However, according to Jabbour (2011), inclusion of green duties in the job duties allows employees to acquire better sustainable knowledge. In fact, the study of Yong et al. (2019) did not find any significant influence of job environmental analysis and job description on EP in the Malaysian perspective. This may be due to rare incorporation of green issues in the process of job analysis and job description (Jabbour, 2011). These mixed and insufficient findings of previous studies warrant further investigation of GJAJD on EP. Thus, this study proposes the following hypothesis:

> *H1. Green analysis and job description has significant positive influence on EP.*

2.2. Green recruitment and selection

Green recruitment and selection (GRS) focuses on hiring employees with pro-environmental knowledge and environmental sustainability (Renwick et al., 2016). Organizations attract such employees by making investment to develop environmental images and reputations (Masri &

Jaaron, 2017). Companies could communicate their green initiatives and goals to the potential employees through annual report, newsletters, and company websites to make them understand the organizational green focus (Guerci et al., 2016). This approach helps organizations to hire sensible candidates with pro-environmental attitudes and behaviors. GRS helps organizations to communicate fresh recruitment about organizational ecological values by stressing on green norms, values, knowledge, green efforts, and clarify ecological expectations from green selection (Renwick et al., 2016). Researchers (Wehrmeyer, 1996) suggested orientation program to share green information, objectives, policies, and values, and interview system to assess candidates' acquaintance with organizational green initiatives. To this end, Ojo and Rahman (2019) showed that GRS should include ecological questions in the selection process and to design green-focused jobs to improve environmental management. However, GRS through hiring environment-oriented employees can improve organizational EP. Thus, the study proposed following hypothesis:

H2. GRS has significant positive influence on EP.

2.3. Green training and development (GTD)

GTD develops organizational environmental management ability and green behavior through improving employees' green knowledge and practices by which organizations could pursue their environmental sustainability goals and aspirations (Ojo & Raman, 2019). Previous studies viewed GTD a key approach to promote EP. For example, Teixeira et al. (2012) examined the role of GTD on EP of Brazilian organizations that revealed a significant impact of training on EP. Likewise, other researchers (e.g., Opatha & Arulrajah, 2014) also demonstrated a significant positive role of GTD on environmental consciousness. Similarly, Arulrajah et al. (2015) highlighted importance of green training and education for employees in imparting essential skills and knowledge for effective EP. Hence, training programs need to be designed on the basis of training needs to attain the maximum green facilities. In this contexture, Daily et al. (2012) surveyed 220 Mexican manufacturing companies to examine the role of environmental training and empowerment on EP. The authors reported that environmental training than empowerment exerted relatively more impact on EP. In this milieu, Renwick et al. (2016) suggested to incorporate environmental analysis of workplace, recycling, waste management, and developing personal environmental efficiency in the process of green training and development agenda. Hence, the study proposed;

H3. ETD positively influences EP.

2.4. Green performance management and appraisal (GPMA)

Environmental performance management (EPM) aims to attain the desired level of EP through evaluating employees' contribution in the process of EP (Ahmad, 2015). EPM facilitates organizational environmental management, and defend green efforts from being deteriorated (Jackson & Seo, 2010). For greater EP, organizations need to establish green performance indicators such as EP goals, measure EP behaviors, EP duties, and evaluate attaining green objectives by employing environmental rating systems (Sharma & Gupta, 2015). Researchers suggested including EP rating in employees and managers' evaluation system (Renwick et al., 2016). However, managers need to give regular feedback on how well employees contribute to

the attainment of EP goals (Arulrajah, et al., 2015) as such feedback may help employees to improve their green skills, knowledge, and abilities that ultimately facilitates better EP. Therefore, this study hypothesized that:

H4: Green performance management system positively influences green performance.

2.5. Green Reward and Compensation (GRC)

Organizations can promote EP designing an eco-reward system. To achieve this, organizations could expedite EP from compensation and reward system by encouraging greening behaviors and avoiding anti-environmental behaviors of employees (Jabbour & Jabbour, 2016). Compensation system needs to be designed in pursuit of management's aspirations to EP while stimulating employees towards green behaviors (Daily et al., 2012). Compensation programs aiming to inspire people towards greening efforts should be linked with outcomes of environmental projects. However, scholarship suggested several types of rewards and incentives to facilitate green performance. Rewards may be divided into monetary (i.e., cash incentives, premiums, and cash), non-monetary (i.e., gifts, leaves, and sabbaticals), recognitions (i.e., appreciation, external roles, awards, publicity, dinners), and positive feedbacks on environmental performance (Opatha & Arulrajah, 2014). These rewards recognize employees for their contributions to promote EP by rewarding and individuals for their dedicated greening efforts (Arulrajah et al., 2015). Other studies also evidenced similar findings that reported positive reinforcements such as appreciation letter and plaques can facilitate EP better than other rewards (Masri & Jaaron, 2017). Hence, it is hypothesized that:

H5: Green reward and compensation system improve EP.

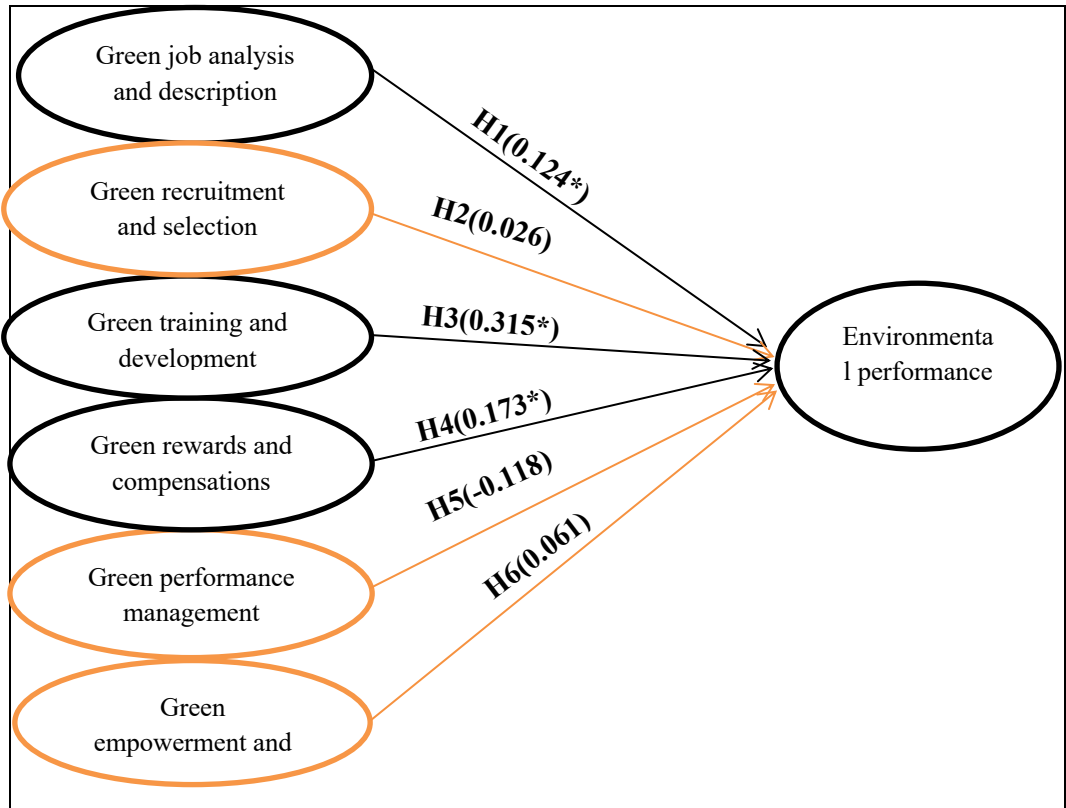## 2.6. Green empowerment and participation (GEP)

GEP entails delegating decision making authority to employees on environmental issues (Daily et al., 2012). Findings reveal that empowered individuals intend to give best of their efforts to generate green ideas, approaches, and process and undertake pro-environmental initiatives (Ahmad, 2015). GEP also helps organizations address ecological challenges of global warming (Liebowitz, 2010). Furthermore, GEP facilitates soliciting opinions and suggestions from employees to establish environmental goals. Employee engagement develops a better understanding about underlying sources of pollution, dealing with evolving situations, and suggesting precautionary initiatives that consequently improve EP (Boiral & Paille, 2012; Renwick et al., 2013). A study conducted by Rothenberg (2003) on employee participation in EM projects in a US automobile industry demonstrated that employee's active engagement and participation in such assignments contributes significantly to attain a good EP. This effective result is perhaps due to employees having contextual and practical skills and expertise that managerial employee's lack (Masri & Jaaron, 2017). Thus, we proposed:

H6: GEP positively influences EP.

2.7. The Conceptual Model

This study aims to investigate the role of GHRM practices on the EP of manufacturing organizations in Bangladesh. In this context, the study proposes a conceptual framework as depicted in Figure 1.

Figure 1: Hypothesized paths and coefficients

3. METHODOLOGY

3.1. Data Collection and Procedure

The study collected data conducting a questionnaire survey among Bangladeshi manufacturing companies. Initially, the study designed a 33-item valid instrument consisting of five dimensions of GHRM (green job analysis and job description, green recruitment and selection, green training and development, green performance management and appraisal, and green reward and compensation) and EP. The instrument was further checked and verified by four academics and four HR professionals to ensure the content validity of the measurement. A revised instrument then was finalized and used to conduct survey to test hypotheses.

The population of this study comprised of 5608 manufacturing companies (Chemical=70, Pharmaceuticals=150, Engineering=200, Textile=72, RMG=4560, Steel=400, Cement=32, Electrical Equipment & Supplies=38, Security and Protection =17, Electronic Components & Supplies =69) in Bangladesh as compiled by the author. Manufacturing companies were chosen due to their sensitivity towards environmental concerns (Guerci et al., 2016), having formal HRM practices (Tzafrir, 2005), and because they need to abide by government rules and regulations (Amran et al., 2012).

The researchers conveniently mailed 500 questionnaires, along with return envelopes, to manufacturing companies. The questionnaires accompanied by a cover letter were distributed to HR personnel (HR managers, HR directors, and HR senior officials) via postal mail service to manufacturing companies located in Dhaka and Chattogram as most of the manufacturing and business organizations are located in these two cities. Moreover, Dhaka and Chattogram are the two capital cities of the country. The cover letter explained the purposes of the study and ensured the complete anonymity of the data and information provided by the respondents. The study conducted survey from October 2019 and January 2020. However, altogether, 351 (70.2%) instruments were returned out of which 24 were discarded. Finally, the study constituted a sample of 328 yielding a response rate 65.6 percent.

3.2. Instrumentation

The multidimensional GHRM practices include six constructs such as 'green job analysis and description', 'green recruitment and selection', 'green training and development', 'green performance management and appraisal', 'green reward and compensation', and 'green employee empowerment and participation'. All the constructs (Table 1) were measured adapting items from literature and using 7-point Likert-type scale ranging from 1(not at all) to 7 (to a very great extent).

Table 1: Constructs/items used in the research instrument

Green job analysis and description (GJAD) (α=0.884; Source: Shah, 2019))
GJAD1: My company has integrated several environmental protection responsibilities in each position.
GJAD2: My company has included green and social needs of the company in job description and specification.
GJAD3: My company has incorporated green capabilities as a distinctive element in job specification.
GJAD4. My company has designed and executed innovative positions to emphasize on environmental protection aspects.
Green recruitment and selection (GRS) (α = 0.749; Source: Jabbour, 2011; Yong & Mohd-Yusoff, 2016)
GRS1: Job description specification includes environmental concerns.
GRS2: Environmental performance of the company attracts highly qualified employees.
GRS3: Selecting candidates who are sufficiently aware of greening to fill job vacancies.
GRS4: Recruitment messages include environment behavior/commitment criteria
GRS5: Job positions designed to focus exclusively on environmental management aspects of the organization.
Green training and development (GTD) (α = 0.831; Source: Arulrajah et al., 2016; Ullah, 2017)
GTD1: Providing environmental training for employees to develop their skills, expertise, and knowledge in the implementation of environmental initiatives, and waste management.
GTD2: Holding workshops and seminars to increase environmental awareness of employees.
GTD3: Providing continuous environmental education to change attitudes and behaviors of employees within the   organization.
GTD4: Staff training for green workplace analysis, career rotation for future green managers, and green skills development.

GTD5: Identifying the training needs of the employees to determine their green needs.

Green performance management and appraisal (GPMA) (α = 0.795; Source: Shah, 2019)

GPMA1: Our company establishes green targets, objectives, and duties for each employee across organization.

GPMA2: In my company, there is communication of green goals.

GPMA3: The use of green criteria to evaluate performance.

GPMA4: My company keeps track of non-compliance or not meeting green objectives.

GPMA5: My company reinforces compliance of meeting environmental goals.

GPMA6: Identification of "Green Superstars" (remarkably talented individuals who perform beyond the standards) and distribution of prizes based on their green contributions.

Green reward and compensation (GRC) (α = 0.875; Source: Shah, 2019)

GRC1: Our compensation system recognizes and rewards contributions in environmental protection.

GRC2: My company rewards green skills acquisition

GRC3: My company rewards for learning a green curriculum.

GRC4: My company uses non-monetary rewards for contributions in environment management such as paid time off, special leave, and gifts to employees and their families.

GRC5: My organization recognizes green initiatives of employees via organization wide publicity and public praise.

Green empowerment and participation (GEP) (α = 0.829: Source: Daily et al., 2012; Glover et al., 2011; Srinivasan & Kurey, 2014))

GEP1: I clearly know how green operations fit with my daily job.

GEP2: I feel share sense of responsibility for the work I do.

GEP3: I am free to make decisions regarding environmental issues.

GEP4: I have significant autonomy in deciding how to handle green issues in practices.

GEP5: I have a voice for green violations.

Environmental Performance (EP) (α = 0.837; Source: Zhu et al., 2008))

EP1: Improved compliance with environmental standards.

EP2: Reduction in airborne emissions.

EP3: Reduction in energy consumption.

EP4: Reduction in material usage.

EP5: Reduction in consumption of hazardous materials.

3.3. Sample Demographics

The results of demographics reveal that most of the companies were from chemical industry (7%), pharmaceutical sector (12%), textile (14%), ready-made RMG (21%), steel (12%), cement (11%), engineering (7%), electronic (9%), electric and supplies (7%). The largest manufacturing companies included in the study employed 1500 to 7000 employees (47.0%), majority of the firms (56%) had 4 to 8 employees in their HRM department. Most of the firms (61.3%) have been serving 15 years and above. The findings also reveal that most of the respondents had master degree (67%) followed by (18%) a bachelor degree. Profile results show that 83% respondents were male while remaining 17% were female respondents. Furthermore, 48% participants were titled as HR managers, followed by 28% as HR directors, 16% as senior HR officers, and while only 8% were participated as HR trainee officers. Regarding length of service, most of the respondents (67%) had work experience of 7 years and more. Concerning geographical location, majority of companies were located in Dhaka (56.7%), followed by Chattogram (43.3%).

4. DATA ANALYSIS

Analysis begins with examining the presence of CMV (common method variance) by employing Harmon's single-factor analysis and examining the CFA model due to utilizing cross-sectional data. The study then calculated descriptive statistics applying SPSS software version 22. Further, we conducted CFA to check the validity and reliability of data before testing the proposed hypotheses (Hair et al., 2017) using SmartPLS 3.2.8 software.

4.1. Test of Common Method Variance (CMV)

Since this study is only based on cross-sectional data, this study tested the presence of CMV applying Harmon's single-factor test (Podsakoff et al., 2012) and a CFA model that loaded all underlying constructs on a common method factor. The EFA output with Varimax Rotation yielded a six-factor result that accounted for a 61% of the total variance explained and the largest (first) factor explained only 42% (<50%) of the variance. on the other, the result of CFA model showed a poor model fit, with $\chi 2(df) = 1047(93)$, CFI = 0.79, GFI = 0.72, NFI = 0.81, and SRMR = 0.07. Thus, the CMV is not a serious concern for the analysis of our data set.

4.2. Descriptive Statistics

The descriptive statistics (Table 2) shows mean scores range from 5.96 to 5.27, indicating that most of the respondents perceived the importance of GHRM practices on EP. The std. deviations are close to each other and ranged from 0.8321 to 0.9512, demonstrating consistent dispersion of variables and insignificant differences among them, and normality of the data set. Furthermore, results reported Cronbach's alpha (α) scores (ranged from .749 to .884> .70) beyond threshold value of 0.7, representing adequate internal consistency. The results also revealed no concern for collinearity diagnostics as all the values lie in between 1.106 and 2.741 (Hair et al., 2017).

Table 2: Descriptive Statistics

Constructs	M	SD	1	2	3	4	5	6	7	VIF
GJAD	5.96	.8321								1.106
GRS	5.42	.7945	.53*							1.399
GTD	5.68	.9127	.27	.34*						2.419
GRC	5.36	.8847	.41*	.46*	.32*					1.336
GPMA	5.27	.8946	.31*	.63*	.43*	.34*				2.741
GEP	5.69	.9512	.43*	.51*	.38*	.26	.47*			1.843
EP	5.46	.7124	.36*	.29*	53*	.29*	.34*	.40*		1.732

Note: Cronbach's alpha reliabilities are on the diagonal in parentheses, *Significant

4.3. Measurement model

In this stage, this study examined the measurement model (Table 3) utilizing factor loadings, average variance extracted (AVE), and composite reliability (CR) (Hair et al., 2017; Mahmud et al., 2017) to investigate the convergent and discriminant validity. The result shows that all the items, except item GPMA4, demonstrated loadings of greater than 0.70, CR>0.50, and AVE > 0.70, indicating that the constructs obtained requisite validity and reliability.

Table 3 : Measurement model

Constructs	Items	Loadings	*t*-value	CR	AVE
Green job analysis and job description (GJAJD)	GJAJD1	0.758	12.1	0.927	0.907
	GJAJD2	0.710	12.87		
	GJAJD3	0.805	14.43		
	GJAJD4	0.836	8.37		
	GJAJD5	0.796	16.1		
Green recruitment and selection (GRS)	GRS1	0.886	13.76	0.891	0.784
	GRS2	0.863	14.13		
	GRS3	0.784	12.49		
	GRS4	0.728	11.73		
	GRS5	0.771	16.21		
Green training and development (GTD)	GTD1	0.768	13.27	0.953	0.831
	GTD2	0.795	15.42		
	GTD3	0.849	12.61		
	GTD4	0.850	14.45		
	GTD5	0.775	12.73		
Green reward and compensations (GRC)	GRC1	0.807	11.87	0.947	0.819
	GRC2	0.870	14.28		
	GRC3	0.851	17.01		
	GRC4	0.743	12.23		
	GRC5	0.763	9.46		
Green performance management and appraisal (GPMA)	GPMA1	0.817	16.19	0.876	0.724
	GPMA2	0.758	15.74		
	GPMA3	0.732	14.14		
	GPMA4	0.680	12.57		
	GPMA5	0.765	9.82		
Green empowerment and participation (GEP)	GEP1	0.782	16.23	0.928	0.675
	GEP2	0.707	13.56		
	GEP3	0.805	14.31		
	GEP4	0.836	12.43		
	GEP5	0.796	8.74		
Green HRM (GHRM)	GHRM1	0.834	14.43	0.947	0.819
	GHRM2	0.806	10.86		
	GHRM3	0.814	13.53		
	GHRM4	0.736	14.39		
	GHRM5	0.803	15.17		
	GHRM6	0.872	12.26		
	GHRM7	0.778	9.74		

Further, this study examined discriminant validity (Table 4) employing the HTMT criterion (Henseler et al., 2015), which revealed that all values were less than the threshold value of 0.85 (Kline, 2011), confirming the discriminant validity.

Table 4: Discriminant validity (HTMT criterion)

Construct	1	2	3	4	5	6	7
1. GJAJD							
2. GRC	.672						
3. GTD	.731	.817					
4. GCR	.649	.748	.591				

5. GPMA	.832	.615	.614	.643		
6. GEP	.608	.747	.638	.684	.706	
7. GHRM	.527	.613	.482	.531	.593	.535

Besides, we examined the structural model to test the proposed hypotheses (Table 5). To achieve this, the study ran a bootstrapping procedure on a resample of 5000 (Hair et al., 2017) to attain t-values, p-values, and the bootstrapped confidence intervals.

Altogether, this study proposed six hypotheses (Table 5) and only three were reported to be significant. Particularly, green job analysis and job description (H1) (β=0.124, p=0.036<0.05, t=3.182, f^2 =0.029), GTD (H3) (β=0.315, p=0.015<0.05, t=3.109, f^2 =0.043), and GRC (H4) β=0.173, p=0.005<0.05, t=2.391, f^2 =0.038) demonstrated a significant influence on EP. On the other hand, GRS, green performance management and appraisal, and green empowerment and participation did not explain any significant impact on EP. Hence, only H1, H3, and H4 were supported. The results reported an adjusted R^2 of 0.237 indicating that 23.7 percent of the variance in EP could be accounted for by GHRM constructs. This low R^2 value might be due to the non-significance of some predictor variables. Moreover, inclusion of additional variables may increase the value of R^2 and the true explanatory power of the model. Besides, the data perhaps contain an inherently higher amount of unexplainable variability.

Table 5: Hypothesis Testing and path coefficients

Hypothesized Paths		Coefficients (β)	Std. error	*t*-value	*p*-value	f^2
H1	GJAJD → EP	0.124**	0.151	3.182	0.036	0.029
H2	GRS → EP	0.026	0.109	0.724	0.471	0
H3	GTD → EP	0.315**	0.145	3.109	0.015	0.043
H4	GRC → EP	0.173**	0.116	2.391	0.005	0.038
H5	GPMA → EP	-0.118	0.124	0.217	0.316	0
H6	GEP → EP	0.061	0.158	0.183	0.329	0.002
R²	0.437					
Adjusted R²	0.237					
Q²	0.142					

Although environmental sustainability might be impacted by many other factors, but since this study studied the role of GHRM practices, R^2 should be greater. However, the R^2 value of 23.7 percent is reckoned to be satisfactory as this research carried out a Power Analysis employing Daniel Soper's online calculator to compute the Post-Hoc Power Analysis, which yielded a power of 0.96. This study, moreover, examined the predictive relevance applying the blindfolding process with an omission distance of 9, and the result reported a Q^2 value of 0.14, a much greater value than 0, demonstrating the sufficient predictive relevance of the structural model. Further, the study assesses the effect size of the predictor constructs using f^2. The f^2 examines the relative impact of a predictor variable on an endogenous construct. Particularly, it evaluates how strongly an exogenous construct contributes to explain a specific endogenous construct in terms of R^2. The result shows that two hypotheses (i.e., *H2* and *H5*) reported f^2 value of zero, which indicates no relative impact of these two constructs such as green recruitment and selection, and green performance management and appraisal to explain EP of manufacturing firms.

5.   DISCUSSION

The findings of this study reveal that three of six proposed hypotheses have been supported; green job analysis and job description, green training and development, and green rewards and compensation significantly impacted EP. These findings demonstrate the significance of GHRM practices to promote EP of manufacturing organizations in Bangladesh. Particularly, the EP depends to some extent on HRM practices that facilitate the greening process of organizations (Jabbour & Santos, 2008).

As expected, findings reveal that the company's three GHRM practices such as GJAJD (H1, $\beta=0.124$, $p=0.036<0.05$), GTD (H3, $\beta=0.315$, $p=0.015<0.05$), and GRC (H4, $\beta=0.173$, $p=0.005<0.05$) showed a significant positive influence on the EP of manufacturing firms. These significant results indicate that the EP can be improved by adopting some green HRM practices. Our results are partially consistent with previous studies (Paille et al., 2014; Daily et al., 2009), which argued that the GHRM practices help organizations maintain ecological balance. In contrary, results reported that GRS (H2, $\beta=0.026$, $p=0.471>0.05$), GPMA (H5, $\beta=-0.118$, $p=0.316>0.05$), and GEP (H6, $\beta=0.061$, $p=0.329<0.05$) did not have any significant influence on the EP. These insignificant findings are partly inconsistent with previous studies (Gilal et al. 2019; Guerci et al., 2016; Kim et al., 2019; Luu, 2019; Masri & Jaaron, 2017), which reported a significant positive impact of GRS, performance management, and empowerment on EP. These inconsistent findings might be due to the differences in the orientation towards adopting GHRM practices by the Bangladeshi firms. In consistent with Hossen et al. (2018), this study argued that the manufacturing firms practice green HRM to a very limited extent that signifies the importance of further studies in this context. Moreover, such practices are not widespread and in the nascent stage of its development as they are in the banking sector and an emerging approach for manufacturing firms to be greener in this area. However, this study suggests that green HRM practices (i.e., GJAJD, GTD, and GEP) are essential GHRM practices for greening their operations. Based on the above, following sections explain the implications of findings.

5.1. *Implications for theory*

First, this study theoretically contributes to advance theory by integrating the AMO (Guest, 2011) and OCBE (Shen & Benson, 2016) theories to explain and understand what HRM practices cause EP of manufacturing firms. Based on our findings, we suggest that green analysis, training and development, and reward and compensation are valuable resources that firms can leverage EP. While advancing AMO and OCBE theory to study GHRM-EP link, this study also suggests that companies need to adopt GHRM practices to analyze attract, train, develop, evaluate, and stimulate employees to demonstrate extra-role behaviors towards greening firms.

Second, the findings reveal that green GJAJD significantly drives EP. These results are somewhat inconsistent with that of Yong et al. (2019), who found an insignificant effect of job analysis and description on EP. The significance of analysis and description could be due to not adopting green aspects in the process of job analysis in this perspective. It also may be due to not following globally recognized green standards such as ISO 14000 requiring companies accomplish GJAJD correctly. However, our finding is in line with Iraldo et al. (2009) and

Comoglio and Botta (2012), who demonstrated a significant positive role of GJAJD on EP. Thus, empirically, the GJAJD might be instrumental for manufacturing firms to promote their EP.

Third, with regards to the impact of GRS on EP, the findings revealed an insignificant influence on EP. This finding is inconsistent with previous studies in Malaysia (Yong et al., 2019) and Palestine (Masri & Jaaron, 2017) that found a significant relationship between GRS and EP. Indeed, our findings contrast with the result of Guerci et al. (2016), who also reported an insignificance of GRS on EP. This might be due to hiring candidates based on their job-related skills and competencies. This justification is also manifested in the Malaysia context where government hires high-skilled employees enhance national productivity, innovation, and contribution (Saieed, 2018). Hence, GRS may not certainly improve EP, because of firms' focus on skill-based hiring.

Fourth, relating to GTD, our findings demonstrate a significant positive impact on EP. This result is consistent with previous studies (Zaid et al., 2018) that reported a significant impact on EP. Green training perhaps increases environmental consciousness and knowledge; stimulate their innovation and commitment to develop green products and services that eventually improve EP. GTD also reduces consumption of energy and paper, and using environment-friendly raw materials, inputs, and process in the manufacturing system. Since manufacturing firms are reported to demonstrate a profound effect on EP, a solid focus must be given driving manufacturing activities in greener fashion (Guerci et al., 2016). However, the significance of GTD implies that employees with better green efficiency and knowledge can better save the environment. Green training and development, through reducing environmental degradation, can facilitate human beings' well-being by reducing the risk of living in this green planet and making the world a place to live in peace for all the human being (Zhang et al., 2016).

Fifth, findings reported a significant influence of GRC on EP demonstrating its importance in attaining EP. This finding in part consistent with Renwick et al. (2013), who argued that GRC inspires employees to improve EP. However, the significance of green compensation practice might be using green rewards and compensation practice to stimulate employees for better EP. Given this, findings imply that the extensive application of green compensation practice, thus, might keep the environment pollution free. Although, Govindarajulu and Daily (2004) found no influence of green compensation on EP, but if they are integrated with providing proper feedback, empowerment, and communication. However, guided by our understanding, Pfeffer (2010) found GRC effective for human health. It is possibly due to giving specific focus on the environmental aspect with a less importance on community interest. Thus, in the Bangladeshi perspective, the GRC might be a promising approach to improve EP.

Finally, the results found no significant positive impact of GPMA and green empowerment on EP. These insignificant results imply their ineffectiveness to promote EP of manufacturing firms. These results are indeed inconsistent with Masri and Jaaron (2017), who reported a significant effect of GPMA on EP. However, the insignificance of performance management system might be due to lack of green appraisal standards, establishing green goals and objectives, empowering employees on green issues. Researchers argued that green appraisal and empowerment is mainly adopted by companies with high environmental aspirations (Dumont et al., 2016). Previous studies (Robertson & Barling, 2013) in this conjecture highlighted top management's role in

implementing green appraisal system, and empowering and encouraging employees on green efforts.

5.2. Implications for practice

This study also reports numerous implications for managers and policymakers. The proposed model provides deeper insights about ecological outcomes of adopting GHRM practices for manufacturing firms. In the context of indiscriminate environmental degradation by the uncontrolled activities of manufacturing industries across the world, adopting GHRM practices might be essential for corporate sustainability. Particularly, our findings can guide manufacturing companies' management to link among traditional management practices, green goals, and GHRM, which facilitates better employee involvement and commitment towards EP (Masri & Jaaron, 2017). Evidence indicates that the Malaysian manufacturing companies that applied GHRM practices could develop their EP (Yong et al., 2019). In this context, companies can restructure workplace environment to develop and nurture environmental awareness, the significance of green efforts, and their commitment towards EP and social goals. Consider poor EP in Bangladesh with higher level of environmental pollution, this study suggests Bangladeshi manufacturing firms implement GJAJD, GTD, and GRC as valuable GHRM practices for better EP. Thus, the government of Bangladesh must formulate and implement clear and useful green policies, rewards and incentives to direct and encourage firms adopting practices for going green.

5.3. Limitations and directions for future research

First, since this study surveyed only manufacturing companies in Bangladesh that may lack the generalizability of findings, future studies survey service industries for generalized findings. Second, as this study did not find any significant impact of GRS, GPMA, and GEP on EP, hence, further research may use other measures (Roscoe et al., 2019; Al Kerdawy, 2018; Kim et al., 2019; Shah, 2019). Third, this study mainly employed quantitative research approach based on the cross-sectional data that may cause the concern for common method variance. In fact, results reported no concern for CMV. However, future research might use longitudinal, time-lagged, and qualitative data further examining the proposed model. Fourth, this study only sampled from Bangladesh, hence, it suggests conducting future comparative studies including sample from other developing countries such as Singapore, Malaysia, China, and India including top-management support, green knowledge, green attitudes and values, and green human capital on EP. However, the study may provide an alternative lens for those interested in GHRM-EP mechanisms.

6.   CONCLUSION

Thus, adopting greener practices including GHRM is a vital approach to address the climate change. Such approach facilitates organizations' long-term viability and attaining sustainable competitive advantage (Uddin, 2020). Thus, this study, grounded on the RBV and OCBE theories, examines the role of GHRM practices on the EP of manufacturing firms and addresses the research gap. However, results reveal that only green job analysis and description, green training and development, and green compensation improve EP of Bangladeshi manufacturing firms. These findings provide a valuable pathway to attain sustainability in Bangladesh.

Although, some of the results are inconsistent with the literature but that suggest conducting further studies in this regard.

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