

## The Effect of Green Human Resource Management Practices on Pro-environmental Behavior in Manufacturing Industry

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### Abstract

**Purpose:** This study aimed at examining the role of green human resource management practices in promoting pro-environmental behaviors in the manufacturing sector of Ethiopia. **Design/methodology/approach:** An explanatory design with deductive approach and quantitative method was employed since it followed the positivism research paradigm. A self-administered questionnaire survey was used to collect data from 351 employees of large scale manufacturing companies in Amhara Regional State. The study employed structural equation modeling approach with AMOS 23.0 to test the hypothesized model. **Findings:** The results of this investigation disclosed that green human resource management practice has a significant and positive effect on pro-environmental behaviors in large scale manufacturing companies. Besides, green recruitment and selection, performance management appraisal, training and development, reward and compensation, and empowerment have a significant and positive effect on pro-environmental behaviors. **Originality/Value:** The study revealed that the green empowerment influences pro-environmental behavior strongly, which is a new contribution to the existing literature of human resource management. This dimension can provide new dimensions to design green human resource management which is based on environmental sustainability paradigm. This can strengthen the organizational capabilities aiming to increasing pro-environmental behaviors in order to have a deep-seated environmental conservation and protection strategy.

**Keywords:** 1.Green Human Resource Management; 2.Pro-environmental Behavior; 3.Manufacturing Industry

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### INTRODUCTION

The journey towards realizing sustainable growth and development is achieved if a given nation can put its optimum effort in developing and transforming the manufacturing industry (Stijns, 2005). In this twenty-first century, developing the manufacturing sector remains relevant to poor countries given the fact that it plays an important role for poverty reduction and sustainable economic growth (Naude & Szirmai, 2012). The same case is true in the Ethiopian context as the country has been focusing on ensuring rapid, sustainable and broad-based growth through enhancing productivity of manufacturing and agriculture, improving quality of production and stimulating competition in the economy (NPC, 2016).

In these days, as the only certainty is uncertainty, manufacturing industry running in these dynamic and competitive business scenarios need to have the sure source of core competencies, like greening human

resource practices (Florida & Davison, 2001) as such practices become to be a means of improving green employee behavior (Paille&Boiral, 2013), and then such pro-environmental behavior can also realize social, economic and environmental performance of the manufacturing companies (Wagner, 2005). Consequently, organizations need to create encouraging environments for managing economic and environmental performances, looking the dynamic situations through having environmental oriented values (Ferreira *et al.*, 2010).

In the same vein, there is a growing awareness that many serious environmental problems threatening the planet are, at least to some extent, associated with human actions (Nordlund&Garvill, 2002). Hence, elucidating motives and determinants relating to pro-environmental behaviour is of paramount importance for changing human behaviors towards an environmentally responsible direction (Nguyen *et al.*, 2016), and then companies can maintain their competitive advantages within this continuously changing business world (Szirmai&Verspagna, 2015). In an effort to do this, researchers have sought to understand the influence of various factors on pro-environmental behaviour in the manufacturing industry (Naude &Szirmai, 2012) as environmental sustainability is best applicable in this sector (Tseng *et al.*, 2013).

Employees play an important role in developing the corporate greening by performing a wide range of pro-environmental behaviors (Lulfs& Hahn, 2013). This happens due to the fact that irreversible climate changes, prevalence of environmental pollution, and resource limitations are increasing at an alarming speed (Steg *et al.*, 2014). Due to this, organizations around the world have started to implement various pro-environmental initiatives (Zibarras&Coan, 2015).

Regardless of the growing interest in studying environmental management and its potential benefits to industry success, few studies have examined the antecedents of employees' pro-environmental behaviors (Rehman *et al.*, 2016). Thus, further scientific investigations need to be conducted pertaining to examining the different drivers of greening the behaviors of employees in the manufacturing sector (Zhanet *al.*, 2016; Saeed *et al.*, 2019). Despite various factors have been identified as the determinant of pro-environmental behaviour in different contexts (Rehman *et al.*, 2016), determining the role of green human resource management practices in promoting employee's greening behavior in the manufacturing sector needs to have more scientific research (Zhanet *al.*, 2016; Saeed *et al.*, 2019).

The manufacturing sector is considered to be a source of various forms of environmental pollution in both developed and developing countries, and this needs managerial activities to be critically assessed, monitored and rectified (Rehman *et al.*, 2016). Because of the important role and effects of manufacturing sector on economic growth of nations (Szirmai&Verspagna, 2015; Marconi *et al.*, 2016), there is an increasing need for adopting effective environmentally friendly practices that can mitigate environmental impacts of this vital sector. As a result, experts and academics need to invest their valuable resources in conducting scientific investigations related to environmental issues and sustainable development (Dumont *et al.*, 2017). Despite the manufacturing sector becomes to be a potential source of environmental problems (Opatha&Arulrajah, 2014), authors are not giving a critical attention (Masri&Jaaron, 2017). Accordingly, further scientific investigation related to environmental issues in the manufacturing sector that aims to provide concepts and theories for HR managers in applying and developing GHRM for the improvement of pro-environmental behaviors becomes to be worthwhile (Jabbour&Jabbour, 2016).

Consequently, this paper intends to provide mainly these two contributions in the manufacturing sector: first, this study is helpful to understand how green human resource management practices can influence pro-environmental behaviors; second, this study helps in clarifying one's understanding pertaining to how each dimensions of green human resource management practices can improve employee's greening behaviors.

Accordingly, this research paper examined the role of green human resource management practices in promoting pro-environmental behaviors in the manufacturing industry.

## LITERATURE REVIEW

### Conceptual Framework

Employees' pro-environmental behavior can be defined as 'willingness to engage in pro-environmental activities' (Scherbaum *et al.*, 2008). This behavior essentially contributes to promote environmental performance (Vicente-Molina *et al.*, 2013). As experts of the area clearly put, the behavior of conserving, work sustainability, avoiding harm, influencing others, and taking initiative are the manifestation of pro environmental behavior (Paille&Boiral, 2013). The participation of employees to address environmental issues and engage in pro-environmental behaviors is considered as an effective strategy to become environmentally responsible organization and enhance environmental performance (Bissing-Olson *et al.*, 2012). Previous researchers have determined the different factors of employee's greening behavior (Rehman *et al.*, 2016) including green human resource management practices in the manufacturing sector (Saeed *et al.*, 2019).

Green Human Resources Management (GHRM) refers to applying the human resource management practices to reinforce environmentally sustainable practices, and increase employee's commitment on the issues of environmental sustainability (Masri&Jaaron, 2017). In a very similar way, green human resource management can also be understood as HRM practices with an intention to promote environment-friendly use of resources, which will reinforce the cause of environmental performance in general, and will increase employee awareness and commitments on the issues of environmental management in particular (Tang *et al.*, 2018).

Studies that consider green HRM's multidimensional nature took into account its diverse-related dimensions (Tang *et al.*, 2018). Mishra (2017) asserts that green HRM is implemented throughout the HRM process of planning, recruitment and selection, training and development, and compensation and appraisal, with an aim to maintain green objectives. The emergence of green HRM includes the extent of improving the social (i.e., work-life balance) and economic well-being (i.e., sustain profits) beside awareness toward environmental concern (i.e., reduced wastes). Renwick *et al.* (2013) suggested that recruiting and selecting, training and developing environmental knowledge, performance management and appraisal, reward and compensation, and employee empowerment are considered as the constituents of green HRM. The present study employed the Renwick *et al.*'s framework as this model has been considered as relatively feasible to measure green human resource management practices in the manufacturing industry (Masri&Jaaron, 2017).

Inherently, human irresponsible activities at work can cause environmental degradation (Ones & Dilchert, 2012). Green HRM practices are used to stimulate employees' responsible behavior to preserve the environment (Cherian & Jacob, 2012). Furthermore, Jackson and Seo (2010) asserted that companies which pay attention to the greening of human factors may be more productive, thus gaining a competitive advantage (Cherian & Jacob, 2012). The manufacturing of products with lower environmental impact requires the support of HRM (Govindarajulu & Daily, 2004). This has been asserted by Jabbour and Santos (2008) who stated that superior pro-environmental behavior outcome requires HRM practices that support the whole implementation and maintenance of environmental management systems in the given organization.

Green HRM practices result in greater efficiencies, lower costs and create an atmosphere of better employee relationship (Lulfs & Hahn, 2013; Tang *et al.*, 2018), which in turn helps organizations to operate in an environmental-friendly manner (DuBois & Dubois, 2012; Zibarras & Coan, 2015). Green HRM practices, such as planning corporate environmental management initiatives/programs/activities, setting green targets, goals and responsibilities, making new employees familiar with greening efforts of the organization and

encourage them to engage in green interpersonal citizenship behavior, providing regular feedback to the employees or teams to achieve environmental goals or improve their environmental performance, and creating opportunities to the employee to involve and participate in green suggestion schemes, are likely to increase employee pro-environmental cognition (Renwick et al., 2013; Saeed et al., 2019).

Tseng et al. (2013) suggest that designing jobs and work settings that encourage employees to learn about the environment and providing regular and frequent trainings about environmental management systems increase an employee's concern and motivation to engage in pro-environmental activities. Nishii et al. (2008) assert that employees perceive their organization's HRM practices as a determinant of their work attitudes and behaviors. Therefore, if an organization incorporates greening in its human policies, employees would display behaviors that resonate and act in accordance with the organization's green policies (Renwick et al., 2013; O'Donohue&Torugsa, 2016). Due to these worthwhile contributions of GHRM practices on the enhancement of pro-environmental behaviors, scholars and experts start to turn their attention to the role of greening HR practices in promoting the pro-environmental behaviors (Mishra, 2017; Tang et al., 2018), and this topic becomes quite critical in the manufacturing industry (Masri&Jaaron, 2017).

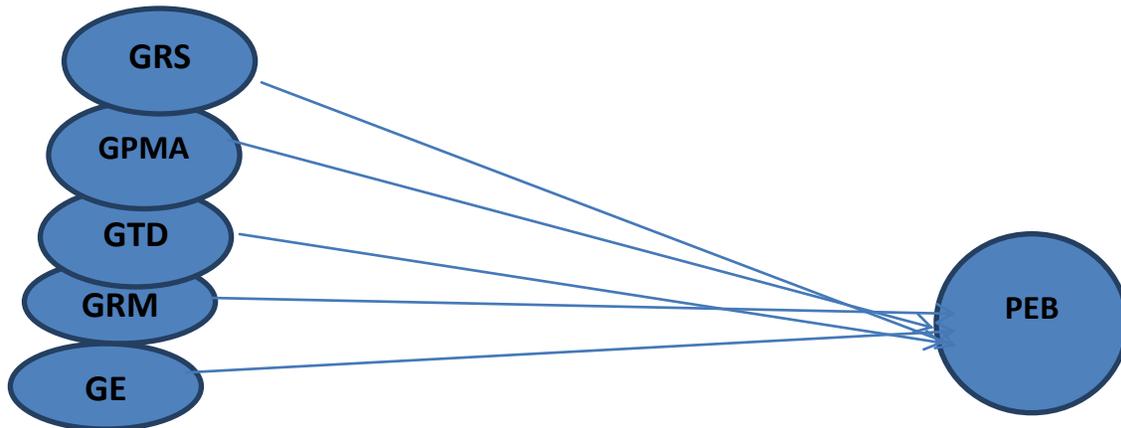
Although there is an increasing extent of the substantial literature about GHRM in developed countries (Jackson & Seo, 2010; Jackson et al., 2011; Renwick et al., 2013; Renwick et al., 2016, Ehnert et al., 2016; Jabbour&Jabbour, 2016; O'Donohue&Torugsa, 2016; Mishra, 2017; Masri&Jaaron, 2017; Tang et al., 2018), there is still uncertainty about what GHRM practices are needed for an effective enhancement of green employee behaviors in developing countries, and how these practices can be connected and incorporated in workplace to help an organization achieve green corporate culture and maximize environmental performance (Cherian & Jacob, 2012; Sathyapriya et al., 2013; Jabbar & Abid, 2014; Ahmad, 2015; Haddock-Miller et al., 2016); paying little attention to prioritizing and validating such practices that can operationalize activities necessary for environmental sustainability in the manufacturing industry (Masri&Jaaron, 2017).

In fact, several researchers discussed the lack of empirical studies from the manufacturing sector in the developing countries (Zhan et al., 2016; Rehman et al., 2016). The value of these studies also increases if they are carried out in a challenging environment of a developing country, like Ethiopia. However, in addition to the research gap identified earlier, the novelty of this study is two-fold. First, this paper presented a first study of its kind in Ethiopia, and among very few studies exploring GHRM in the context of developing countries as Jabbar and Abid (2014), Mishra et al. (2014), and Bhutto and Aurazeb (2016) argued. Second, despite the major impacts of political instability and movement obstacles, Ethiopia is an active member to implement international agreements on environmental issues that contributes to meeting international environmental priorities (EPA, 2010).

Thus, this study proposed the below hypotheses:

- H<sub>1</sub>: Green Recruitment and Selection (GRS) has a significant and positive effect on pro-environmental behavior (PEB).
- H<sub>2</sub>: Green Performance Management Appraisal (GPMA) has a significant and positive effect on pro-environmental behavior (PEB).
- H<sub>3</sub>: Green Training and Development (GTD) has a significant and positive effect on pro-environmental behavior (PEB).
- H<sub>4</sub>: Green Reward and Compensation (GRC) has a significant and positive effect on pro-environmental behavior (PEB).
- H<sub>5</sub>: Green Empowerment (GE) has a significant and positive effect on pro-environmental behavior (PEB).

Based on above discussion, the study proposed research model as per the above empirical as well as theoretical frameworks in Figure 1.



**Figure 1: Conceptual Framework;Source: Compiled from Previous Literature**

**METHODS**

The study focused on examining the role of green human resource management practices in promoting pro-environmental behavior in the large manufacturing companies through survey strategy with explanatory research design. The study employed a self-administered standardized questionnaire as an instrument of data collection. All latent constructs were measured with multi-item scales with a five-point Likert scale (ranging from 1= strongly disagree to 5 = strongly agree).

**Population and Sampling**

This study stratified manufacturing industry into different companies by using Stratified Sampling Technique. In Amhara regional State, manufacturing sectors were grouped in to three, namely: *Agro-processing, wood & Steel, and Textile & Leather* as per trade, industry and market office. This technique was employed due to the fact that these latent research variables (i.e., GHRM and pro-environmental behavior) are influenced by the types of sectors, and it has been argued that differences in types (like food, beverage, steel, and others) can have a significant difference on GHRM (Masri&Jaaron, 2017) and pro-environmental behavior (Nguyen *et al.*, 2016). Besides, in each sector, there are different companies in each group and were considered as sub-strata. Thus, the researchers employed a proportionate stratified sampling technique, and respondents were selected randomly from each stratum. In order to select the sampled respondents, simple random sampling technique was employed, and for the interview part, purposive sampling was used. The survey was conducted on 85 *Agro-processing, wood & Steel, and Textile & Leather* companies with 386 respondents among which only 351 responses were used with a response rate of 91 percent.

Co-variance based Structural Equation Modeling (CB – SEM) was applied in Analyzing Moment of Structures (AMOS) version 23.0 for data analysis. A pilot test for the research instruments with 50 initial questionnaires were distributed to employees of large scale manufacturing companies for checking reliability. The values of Cronbach’s alpha for Green Recruitment and Selection (GRS); Green Performance Management Appraisal (GPMA), Green Training and Development (GTD), Green Reward and Compensation (GRC), Green Empowerment (GE) as a dimension of Green Human Resource Management Practices (GHRMP); and Pro-environmental Behavior (PEB) latent constructs were 0.81, 0.80, 0.88, 0.90, 0.77, and 0.66 respectively.

Therefore, the scale reliability of each construct was established since all values for each latent construct exceed 0.65.

## RESULTS

### Measurement Model Assessments

The demographic details of respondents used in the survey reveal that majority of respondents in terms of gender, marital status, academic qualification, work experience, and sector type were male, unmarried, BA/Bsc, less than 5 years, and agro-processing respectively. Table 1 explains the full details of large scale manufacturing companies:

**Table 1: Demographic Details of Respondents (N = 351)**

Characteristics	Group	N=351	
		Frequency	Percentage (%)
Gender	Male	195	55.6
	Female	156	44.4
Marital status	Single	185	52.7
	Married	144	41.0
	Divorced	22	6.3
Academic qualification	Diploma (10+3)	136	38.7
	BA/Bsc	186	53.0
	MA/Msc	29	8.3
Experience	≤ 5year	209	59.5
	6-10 years	106	30.2
	11-15 years	20	5.7
	≥16 years	16	4.6
Sector type	Agro-processing	121	34.5
	Wood & Steel	116	33.0
	Textile & Leather	114	32.5

Source: Authors' Observation

Structural Equation Modeling approach was employed to test the research hypotheses. This approach is a two-stage multivariate analysis tool in which confirmatory factor analysis needs to be used in evaluating the measurement model and then the structural model proceeds (Kline, 2011). Accordingly, this study assessed its measurement model through confirmatory factor analysis ahead of evaluating the structural model and testing the hypotheses.

The first step in measurement model is that evaluating the preliminary assumptions (Hair *et al.*, 2010). Hair *et al.* (2010) suggested that a good model fit is maintained if the chi-square statistics is insignificant; the value of Normed X<sup>2</sup> is less than 5.00; RMSEA values less than 0.08; the values of GFI, CFI, and TLI are greater than 0.90. Table 1 (see in the appendix) shows that X<sup>2</sup> /DF= 8.35, RMSEA= 0.145, TLI= 0.86, CFI= 0.90, GFI= 0.91. Accordingly, the measurement model showed a better fit to the data considering all the loading items as shown in Table 2.

**Table 2: Measurement Model Fit Indices**

Model	X <sup>2</sup>	df	P	X <sup>2</sup> /df	GFI	CFI	TLI	RMSEA
Final Model	1747.416	512	0.000	3.413	0.91	0.90	0.86	0.083

Source: Author's Calculation

Byrne (2009) noted that unidimensionality is assessed by using the standardized factor loading of items. Amos 23 results demonstrate that the respective loadings of items for GSR, GPMA, GTD, GRC, GE and PEB were greater than 0.60 (see fig.2). Thus, in line with the criterion value suggested by Byrne (2009), items of their respective factors were loaded satisfactory. The internal consistency of construct is evaluated through the help of composite reliability with a minimum value of 0.70 and above (Hair *et al.*, 2010). Pertaining to the composite reliability, values of all constructs are greater than 0.70. Hence, the reliability of each construct is established. Hair *et al.* (2010) noted that convergent validity is maintained if the values of AVE and CR are more than 0.50 and 0.70 respectively. In case of the values of the average variance extracted, all study factors are more than 0.50, and composite reliabilities of constructs are also greater than 0.70. Accordingly, these values confirmed that the convergent validity of constructs is established as per authors' calculation.

In case of discriminant validity, results demonstrate that the respective Square Root value of AVE for each construct exceed all correlations between constructs (Fornell&Larcker, 1981). In addition, all correlation values between factors are less than 0.85 as per the criterion suggested by Hair *et al.* (2010). Thus, these values confirmed that the study factors are different to each other.

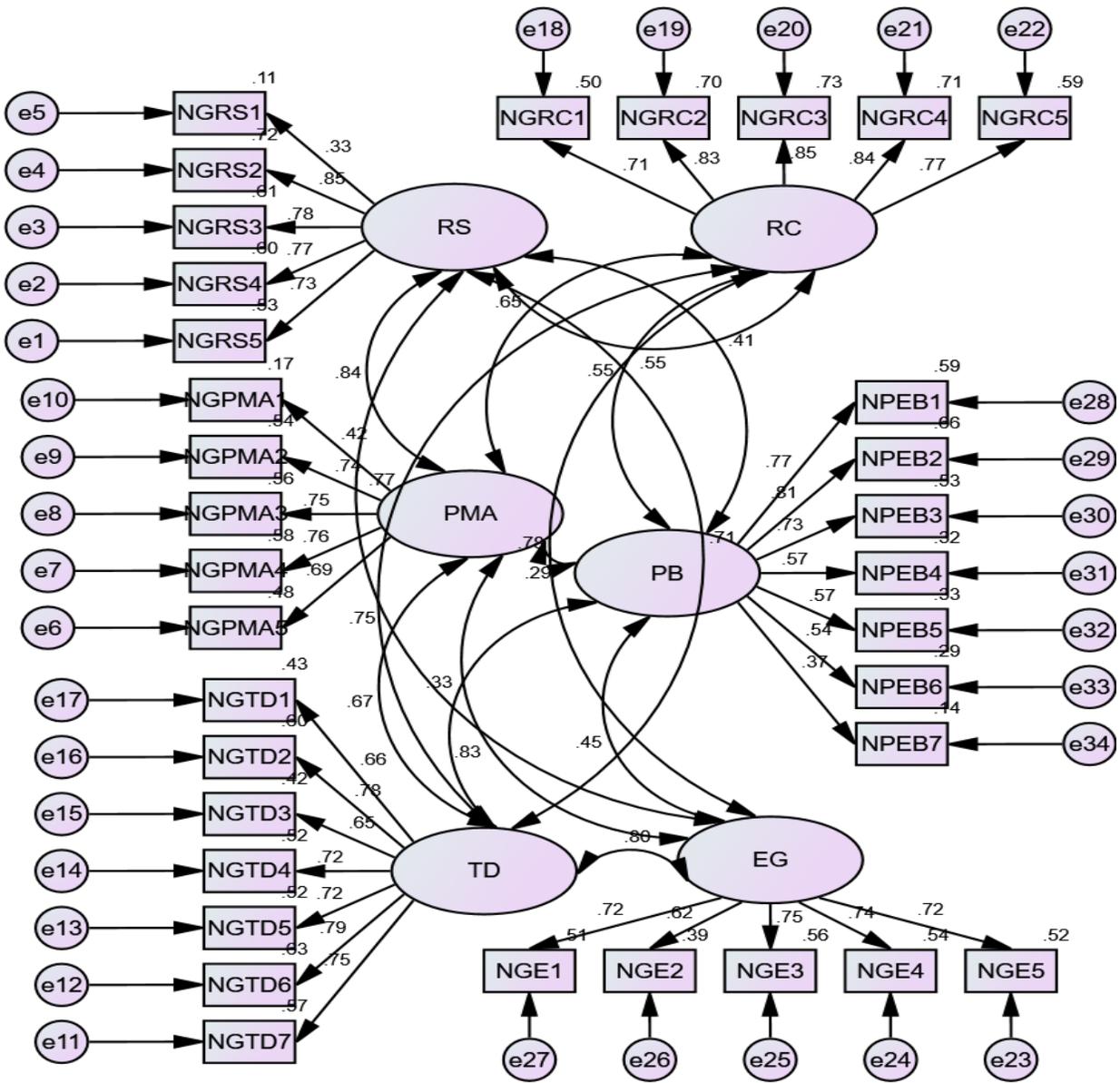


Figure 2: Measurement Model

**Structural Model Assessment**

Like to the measurement model, the structural model fit is also evaluated by employing the major fit indices as the criterion suggested by Hair *et al.* (2010). SEM result demonstrates that RMSEA = 0.145, TLI= 0.86, CFI= 0.90, GFI= 0.91, X<sup>2</sup> /DF= 8.35 and chi-square statistics is insignificant. Table 3 represents the structural model assessment of the sample data.

**Table 3: Structural Model Fit Indices**

Model	X <sup>2</sup>	df	P	X <sup>2</sup> /df	GFI	CFI	TLI	RMSEA
Final Model	158.373	19	0.000	8.35	0.91	0.90	0.86	0.145

Source: Author's Calculation

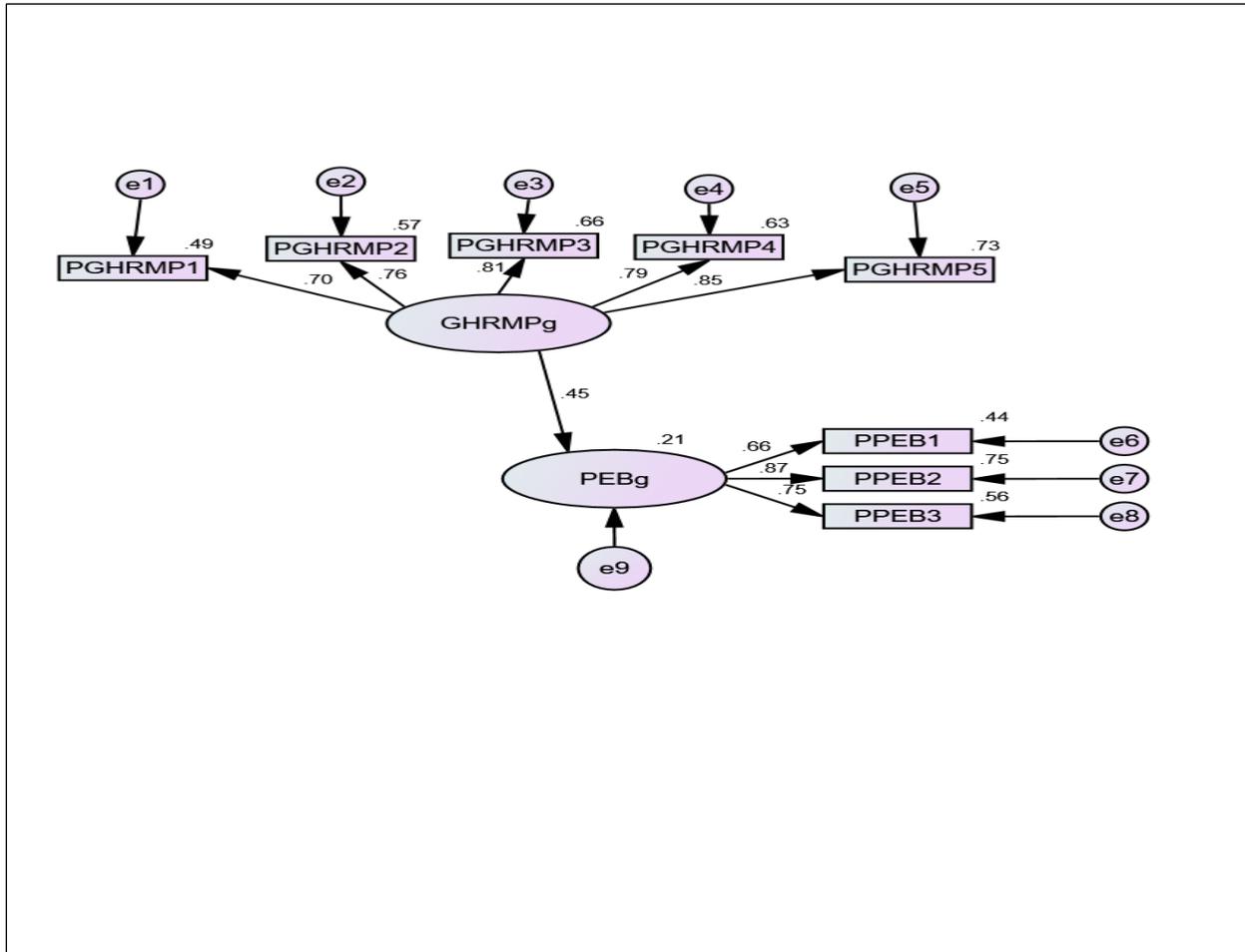


Figure 3: Structural Model

**Regression Weights and Coefficient of Determination**

Measuring the direct effect of green human resource management practices on pro-environmental behavior in large scale manufacturing companies was the main objective under the present study. SEM with AMOS 23.0 was employed to examine this objective. This study evaluated the model fit of this hypothesized structural model before testing the proposed hypotheses by taking the path coefficients ( $\beta$ ), and their associated t-values or critical ratio (C.R). In this case, to consider the coefficients to be significant at  $p < 0.05$ , a C.R value of 1.96 or more was used as the criterion suggested by Hair *et al.* (2010). Decisions related to supporting or rejecting hypothesis were done at the end as well.

This hypothesis was focused on testing the direct effects of green human resource management practices on pro-environmental behavior. Figure 3 demonstrates that green human resource management practice has a significant and positive effect on pro-environmental behavior ( $\beta = 0.45$ ,  $CR = 6.560$ ,  $P < 0.001$ ). With regard to the explaining power, green human resource management practices explained 21 percent ( $R^2 = 0.21$ ) of the variance in pro-environmental behavior whereas the rest 79 percent was related to other variables, which were not included in the present study.

Consequently, it was proposed that green human resource management practice has a direct and significant positive influence on pro-environmental behavior in large scale manufacturing industry. Based on the AMOS results of this study, this hypothesis was supported.

## CONCLUSION AND IMPLICATIONS

AMOS results show that green human resource management practice has a significant and positive correlation with pro-environmental behavior. It is concluded that the different practices of green human resource management in large scale manufacturing industry can have a significant covariance with an employee's pro-environmental behavior.

This investigation has implications for managers in the manufacturing sector. The result of this paper offers a reasonable insight to managers in enabling them to face the challenges of a dynamic business situation. A continuously changing scenario results in intensified competition within the market. In order to be competent enough in this horrible financial market, the manufacturing industry needs to promote employee's greening behavior through practicing green recruitment and selection, green performance management appraisal, green training and development, green reward and compensation, and green empowerment. These greening practices, in turn, can improve the competitiveness of the manufacturing sector within terrible environments. This study provides theoretical contributions to the existing body of knowledge at least in two ways. First, it enhances our theoretical understanding of green human resource management practices and its effect on the pro-environmental behavior in the manufacturing context. Second, this research contributes to the green human resource management literature through revealing how the different green human resource management is strengthened, which in turn promotes employee's greening behavior in the large scale manufacturing companies.

## LIMITATIONS AND FUTURE SCOPE OF THE STUDY

Despite this paper contributes to the body of knowledge pertaining to the role of green human resource management practices in promoting pro-environmental behavior of employees in large scale manufacturing companies, the following limitations were identified and then, future researchers are directed. First, this study was limited to the context of developing countries in terms of geographical area, specifically in Ethiopia. As difference of culture may lead to different influences on study results (Hofstede *et al.*, 2010), this finding will not be generalized to other countries. Consequently, future studies can validate this model in different nations. Second, the present study focused on only green human resource management practices, but other related variables like employee's biospheric value were not included. Therefore, future studies can explore a study to examine the mediating roles of employee's biospheric value in linking green human resource management practices to pro-environmental behavior in the manufacturing industry.

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**Appendix I: Measurement Scale Used**

Items		Scale				
<b>A. Green Human Resource Management Practices</b>						
S.N	<b>Green Recruitment &amp; Selection</b>	1	2	3	4	5
1	In my organization, job description specification includes environmental concerns.					
2	My organization selects applicants who are sufficiently aware of greening to fill job vacancies.					
3	My organization includes environmental criteria in the recruitment messages.					
4	In this organization, job positions are designed that focus exclusively on environmental management aspects of the organizations.					
5	My organization indicates or makes transparent its environmental performance (past and current) in recruitment messages.					
<b>Green performance management and appraisal</b>		1	2	3	4	5
1	Employees know their specific green targets, goals and responsibilities.					
2	Environmental behaviors and contributions to environmental management are assessed and included in performance /appraisal indicators and recorded.					
3	This organization provides regular feedback to the employees or teams to achieve environmental goals or improve their environmental performance.					
4	This organization establishes environmental management information system and environmental audits.					
5	This organization introduces or formally evaluates all employees' green job performance (as far as possible).					
<b>Green training and development</b>		1	2	3	4	5
1	My organization provides environmental training to the organizational members to increase environmental awareness.					
2	Takes into account the needs of environmental issues when training requirements are analyzed.					
3	All training materials are available online for employee to reduce paper					

	cost.					
4	Environmental training is a priority when compared to other types of company's training.					
5	My organization provides environmental education to the workforce.					
6	My organization applies job rotation to train green managers of the future.					
7	My organization provides opportunities to everybody to be trained on environmental management aspects.					
<b>Green reward and compensation</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	Environmental performance is recognized publicly (awards, dinner, and publicity).					
2	My organization applies financial rewarding for good employee environmental performance.					
3	My organization applies non-financial rewarding for good employee environmental performance.					
4	My organization uses rewards for innovative environmental initiative/performance.					
5	My organization communicates its employee's environmental excellence.					
<b>Green empowerment</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	My organization recognizes employees as a key stakeholder in environmental management.					
2	My organization provides opportunities to negotiate with management about green workplace agreement.					
3	My organization introduces green whistle-blowing and help-lines.					
4	My organization offers workshops or forums for staffs to improve environmental behavior and exchange their tacit knowledge.					
5	Involves employees in formulating environmental strategy.					
<b>B. Proenvironmental behavior</b>		<b>1</b>	<b>2</b>	<b>3</b>	<b>4</b>	<b>5</b>
1	I make suggestions and bring new ideas about environmentally friendly practices to environmental committees.					
2	At work, I take part in environmentally friendly programs.					
3	I share my knowledge about the environment with co-workers.					
4	At work, I question practices that are likely to hurt the environment.					
5	In my work, I weigh the consequences of my actions before doing something that could affect the environment.					
6	At work, I perform environmental tasks that are not required by my company.					
7	At work, I avoid wasting resources such as paper, electricity or water.					