

Green Human Resource Management in Manufacturing Company

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Abstract: Industrial sector is one of the biggest contributors to environmental degradation which concerns in making a green sustainability business. The implementation of Green Manufacturing in the world faces obstacles to gain profit rather than to improve or develop. Manufacturing companies have to develop Green human resources management (GHRM) as a HRM application for minimizing the negative impact caused by the activities in all business processes. The main objective of this research is to investigate the relationship between Green Competency, Green Motivation, and Green Employee Involvement, with Environment Performance, and to examine how the organization can increase their Environmental Performance. To gain better understanding for environmental performance, research uses Organizational Citizenship Behaviour towards Environment to moderating the relationship between Green Competency, Green Motivation, and Green Employee Involvement, with Environment Performance. Quantitative method is applied and the primary data is collected using a questionnaire using a 5 point likert scale. Analysis using Structural Equation Modelling to investigate a sample of 100 Head Office employees in one of a manufacturing company in Indonesia. Results of the study reveal that Green Motivation and Employee Involvement has a positive impact on Environmental Performance. The finding of this study will be used as references for the Human Resource Division to make programs to enhance company environmental performance.

Keywords: Green HRM, Green Competency, Green Motivation, Green Employee Involvement, Organization Citizenship Behaviour towards Environment, Environmental Performance, SMART PLS.

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I. Introduction

Manufacturing industry faces the challenge to comply with the regulation associated with the environmental issues of limited natural resources, global warming, and waste management. Environmental awareness is increasing all over the world to encourage the industry to carry out the green industry applying the concept of Green Manufacturing (Ghazilla et al., 2015). However, manufacturing companies that implement Green Manufacturing are still very rare. Most companies consider the application of Green Manufacturing as obstacles to gain profit rather than to improve or develop (Rehman et al., 2013). This has become one of the obstacles in the implementation of Green Manufacturing in the world, including in Indonesia. Other barriers in applying Green Manufacturing is the limited awareness of the trend of 'green', limited access in the Green Manufacturing literature, the lack of knowledge about Green Manufacturing, as well as the scarcity of information of Green Manufacturing implementation in the company (Sangwan and Mittal, 2015).

Realizing their environmental responsibility and the regulation, manufacturing companies shall have the efforts to manage and monitor the environment. Environmental management practices that manufacturing companies have exogenously performed for years have been gathered under the International Standards Organization (ISO) 14001 EMS User Guide Specifications. ISO 14001 Standard defines the basic elements of an effective environmental management system that includes the resources needed to develop, implement and review organizational structure, planning activities, responsibilities, procedures, processes and environmental policy (Polat Dede, 2019). The impacts of the companies on the environment are documentable with all Green Manufacturing practices and make a contribution to the economy.

Green human resources management (GHRM) is an effort to develop HRM applications for minimizing the damages that may be caused by the activities of the companies in all business processes (Zaid, Bon & Jaaron, 2018). The employee's eco-friendly behavior will improve the firm's environmental performance (Lo et al., 2012). GHRM affects employee's eco-friendly behavior to achieve ecological sustainability. (Y. J. Kim et al, 2019). So, GHRM policies have to be set up to enhance environmental performance toward best practices in employees' commitment and eco-friendly behavior. However, studies revealed that employee's eco-friendly is a part of the outcome variable of organizational commitment.

The main contribution of this research endeavor is to facilitate a better understanding of how implementing GHRM practices in a manufacturing company enhances environmental performance via employees' behavior which are termed Organisational Citizenship Behavior towards Environment (OCBE). Anwar et al (2019) stated that OCBE are willful action taken by employees to fulfill companies environmental performance. This study will focus on Green HRM practices and employees who work in the manufacturing industry for enhancing sustainability. The objectives of this research are sevenfold: (1) to investigate the relation between Green Competence building practices and OCBE; (2) to examine Green Motivation enhancing practices and OCBE; (3) to investigate Green Employee involvement practices and OCBE; (4) to explore OCBE and Environmental Performance; (5) to examine the mediation of OCBE with Green Competence building practices and Environment Performance; (6) to examine the mediation of OCBE with Green Motivation enhancing practices and Environment Performance; (7) to examine the mediation of OCBE with Green Employee involvement practices and Environment Performance.

II. Literature Review

Green HRM can be better to be understood in the concept of Ability Motivation Opportunity (AMO) theory. AMO is one of the the most popular theory to describe and understanding the concept of HRM on organisational (Appelbaum, 2000. The AMO framework has become one of the most established bases for modeling employee performance (Tuuli, M. M., 2012). (Armstrong & Brown, 2019) stated that performance depends on the employee's ability, motivation, and opportunity as follows: ability to do the job (knowledge, Skill, Competency), motivation to do the job because they want to do it, and opportunity to perform. Employee Performance can be measured with these three components: having the necessary skills, giving an appropriate motivation and offering an opportunity to participate (Marin Garcia, 2016).

The AMO framework proposes that HRM that improve employee's abilities, motivation and opportunity lead to the OCBE. OCBE of employees is one of the bridges between high performance employee and organisational performance (Anwar et al., 2019). Conceptual models of this research are shown in Figure 1 below.

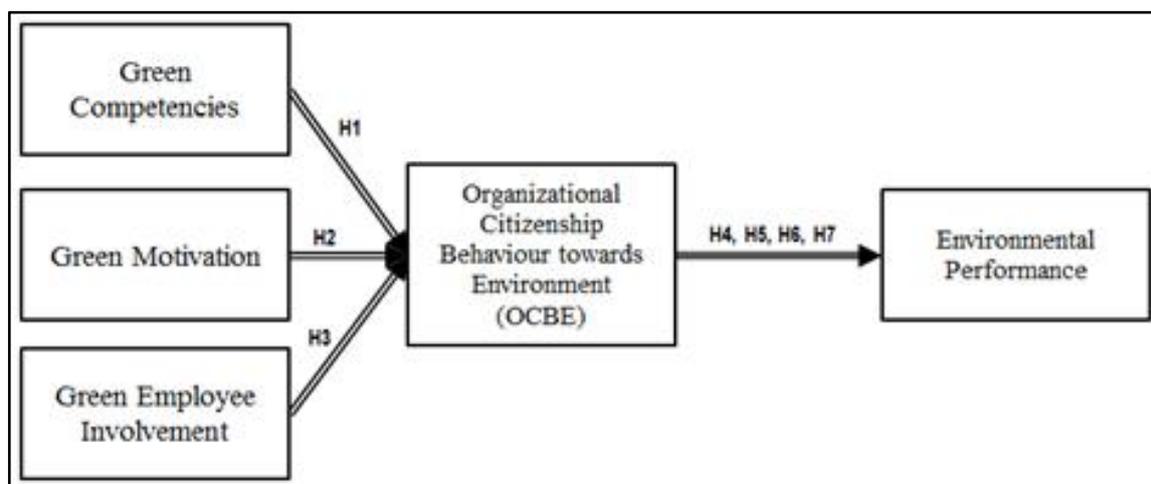


Figure 1 Green Human Resource Management Model (Anwar et.al. 2019)

Further studies is needed to complete research model to find the most suitable model for AMO theory to understanding Green HRM.. Relationship between Green HRM and Environment Performance while mediated by OCBE is often underestimated. Green HRM can produce long-term outcomes if we can find the solutions for the mediating processHarvey et al. (2013).

The relationship of green competence (Ability) building practices and OCBE

Siyambalapatiya et al. (2018) stated that green image, environmental policy and environmental performance could be published to attract suitable candidates. (Zibarras and Coan, 2015) stated that Green hiring is one of the important phase in GHRM practices, important for firms or company to hire employees that interesting in environmental issue, which can improve the environmental performance for the company. The participation of all employees in green initiatives will enhance opportunities to upgrade their capabilities. Therefore, training and development is needed to increase employee's skill, awareness, and knowledge to carry out environmental activities (Mousa et al., 2019). Green training consists of knowledge about environment, it helps employee to connect the knowledge with behaviour. Providing employees with environmental knowledge is essential to improve company environmental performance.

In this research we want to analyze the relationship, is green competency impact Green employee competence practices and OCBE significantly.

H1 : Green competence building practices is significantly related to OCBE

The relationship of green motivation (Motivation) enhancing practices and OCBE

Green motivation enhances all activities to motivate employees to align their behavior with the organisation's environmental goals (Harvey et al., 2013). Giving reward to employees for good environmental behavior increases commitment to environmental responsibility (Yong and Mohd-Yosoff, 2016), (Nejati et al, 2017) and contributes to the organisational citizenship behaviour environment (Govindarajulu & Daily, 2004). Financial and non-financial rewards combined is more effective in motivate employees to get involve in company environmental activities (Renwick et al., 2013). Providing a reward and competencies system will motivate employee to commit with company environmental initiatives (Mousa and Othman, 2019). In this research, we want to analyze the relationship between Green employee motivation practices and OCBE

H2 : Green motivation enhancing practices is significantly related to OCBE

The relationship of green employee involvement (Opportunity) practices and OCBE

Tang et al. (2017) stated that one of the important dimensions in GHRM is green involvement. Employees can be provided with opportunities to participate in environmental management to stimulate them supporting the prevention of pollution and identify environmental opportunities. Employee's green behavior and awareness can be built with providing a mutual learning climate. The atmosphere of supervision among employees can enhance their awareness of environmental issues. Working with other can give employee chance to share their knowledge, experience, and solutions (Daily et al., 2007). In this research, we want to analyze the relationship between Green employee involvement practices and OCBE.

H3 : Green employee involvement practices is significantly related to OCBE

The relationship between OCBE and environmental performance

Paille et al. (2014) explained OCBE reflects an employee's behaviour by performing action beyond expected that benefit the natural environment. The important factor to support environmental performance is the employee's willingness to engage in pro-environmental behaviors such as OCBE. Paille et al. (2014) also stated that OCBE is positively related to environmental performance. In this paper, it would be analyzed the relationship between OCBE and environmental performance.

H4 : OCBE is significantly related to Environmental Performance

The mediating role of OCBE

The job of HR rehearses is to make a setting that encourages authoritative citizenship conduct among representatives with the end goal that, when workers go over their job necessities to invest an additional energy, help their collaborators and bolster hierarchical exercises, at that point the degree of hierarchical execution ought to be high (Messersmith et al., 2011). OCBE predicted as a mediating component between HR ecological action connections (Paillé et al., 2014).

Paillé et al. (2014) analyze the relationship between strategic HRM, OCBE, and company environmental performance. The aftereffects of the examination found that HRM have relation to the environmental performance of an association, while OCBE was found to mediate connection between HRM and environmental performance. Alt and Spitzack (2016) stated that Employees with better green competency have a higher environmental performance through the indication of OCBE among representatives. In addition, Pinzone et al. (2016) stated that Green HRM is related with OCBE, while Daily et al. (2009) noticed that OCBE prompts environmental performance. Thus, OCBE is pushed as a way to make an interpretation of Green HRM practices to enhance environmental performance.

Based on analysis, the hypothesis :

H5 : OCBE significantly mediate the relationship between green competence building practices and environmental performance

H6 : OCBE significantly mediate the relationship between green motivation enhancing practices and environmental performance

H7 : OCBE significantly mediate the relationship between green employee involvement practices and environmental performance

III. Research Methods

The study is a quantitative study designed to explain the effect among variables through hypothesis testing. Questionnaires are distributed to 100 workers at one of the manufacturing companies in Indonesia. The exogenous variables are Green Competencies (X1), Green Motivation (X2), and Green Employee Involvement (X3). The mediating variable is OCBE (X4). Environmental Performance (Y1) is an endogenous variable.

Five point Likert Scale was used to measure the research item, where 1 represents strongly disagree and 5 represents strongly agree. Measurement items were adapted from Anwar, et.al. (2019) attached in appendix 1. Sample data was obtained with systematic random sampling technique. Validity and reliability tests were carried out where all of the variable items have validity scores up to 0.6. Since there are only 100 respondents, a Structural equation model (SEM) with Partial Least Square (PLS) was applied to analyze the model. Al-Dhaafri et al. (2016) stated that PLS-SEM is commonly used for complex cause and effect relationships models for measuring latent constructs. The validity and reliability testing model were confirmed through assessment of the measurement model prior to the hypotheses testing as detailed in the next section. Conceptual framework in this study can be shown in Figure 1.

FINDINGS

Respondents in this study are 100 employees at Manufacturing Company in Indonesia, with some characteristics according to age, education, and work period. Sample characteristics are described as follows: 65% respondents have age less than 30, 19% respondents with age between 30 and 44, 11% respondents with age between 45 and 55, and 5% respondents with age above 55. Characteristics according to education, 82% respondents at bachelor degree, and 18% others have their master degree. According to work periode, 27% respondent have work periods under 1 years, 41% respondents have work periods between 1 years and 3 years, 18% respondents have work periods between 3 years and 5 years, 9% respondents with work periods between 5 and 15 years, and the rest 5% respondents with work periods above 15 years.

Indicator Reliability

Closer Outer Loading Value to 1 indicates a strong relationship between attributes in the variable. Result of the Outer Loading from the first iteration in Table 1, it shows that the values of 2.2, 2.3, 4.1, 4.2, and 5.3 are below 0,7, which indicates that the attributes have insignificant contribution to the variable. Other values than those above have values greater than 0,7, which represent an important point that the attributes have significant contribution to the measured variables.

Table 1 Outer Loading Table (Final)

	Green Competencies (X1)	Green Motivation (X2)	Green Employee Involvement (X3)	OCBE (X4)	Enviromental Performance (Y1)
1.2	0,763				
1.3	0,745				
1.4	0,907				
1.5	0,899				
1.6	0,917				
2.1		0,816			
2.4		0,789			
2.5		0,921			
2.6		0,923			
3.1			0,868		
3.2			0,909		
3.3			0,772		
3.4			0,768		
3.5			0,771		
4.3				0,822	
4.4				0,826	
4.5				0,779	
4.6				0,834	
4.7				0,888	
4.8				0,878	
4.9				0,883	
4.10				0,920	
5.1					0,844
5.4					0,794
5.5					0,844
5.6					0,768
5.7					0,845
5.8					0,859
5.9					0,855
5.10					0,840

5.11	0,754
5.12	0,887
5.13	0,902
5.14	0,886

After 4 iterations, the model has no longer attributes that have outer loading below 0,7. In Figure 2 show the final research model.

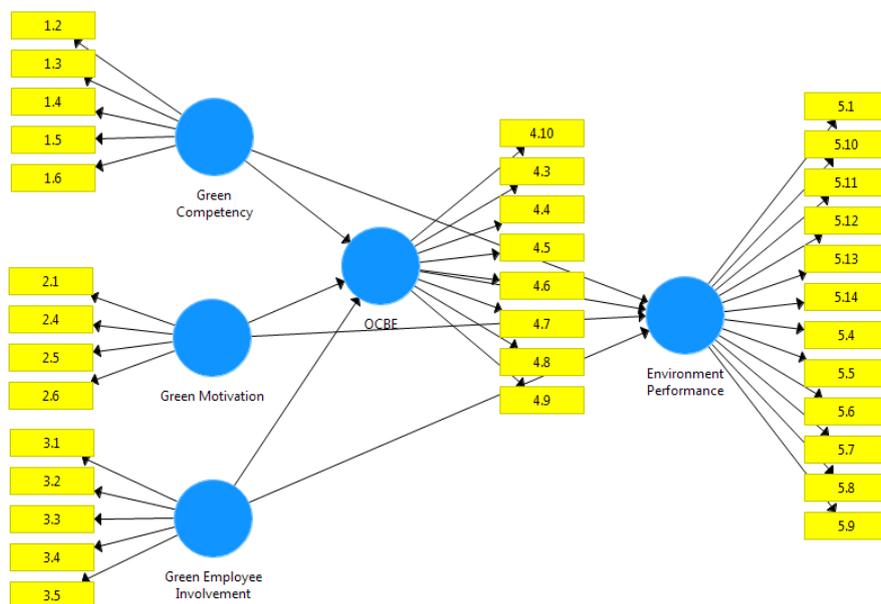


Figure 2 Final Model

After the insignificant attribute in questionnaire is taken out, cronbach’s alpha value for variable Green Competency, Green Motivation, Green Employee Involvement, OCBE, and Environmental Performance is above 0,6, it can be concluded that the questionnaire items are reliable and can be trusted to collect the data for the research. Composite reliability value for all variables is above 0,7 as shown in Table 2, and AVE value for all variables exceeds the acceptance value 0,5 so the data collected by questionnaire are reliable and can be used for the research.

Table. 2 Construct Reliability and Validity

	Cronbach's Alpha	Composite Reliability	(AVE)
Green Competency (X1)	0,963	0,933	0,736
Green Motivation (X2)	0,909	0,933	0,777
Green Emp Involvement (X3)	0,877	0,911	0,672
OCBE (X4)	0,949	0,957	0,738
Environmental Performance (Y1)	0,963	0,967	0,713

Discriminant Validity

According to Ferdinand (2006) , the test of validity is commonly used to measure research tools such as questionnaires that are valid or invalid. Valid has represented the meaning of ‘good’, hence the test of validity is performed to measure the thing that should be measured. There are many types of validity tests, as in this paper, discriminant validity is conducted to measure the validity of the research tools.

Discriminant validity compares each square root of AVE to each correlation value of construct, as if the value of square root AVE is greater, the criteria of Discriminant validity is accepted. The test is conducted by referring to the Fornell-Larker criterion, as the results are shown in Table 3.

Table 3 Discriminant Validity Table

	Green Competency (X1)	Green Motivation (X2)	Green Emp Involvement (X3)	OCBE (X4)	Environmental Performance (Y1)
Green Competency (X1)	0,858				
Green Motivation (X2)	0,596	0,881			
Green Emp Involvement (X3)	0,786	0,757	0,820		
OCBE (X4)	0,688	0,591	0,753	0,859	
Environmental Performance (Y1)	0,763	0,842	0,915	0,735	0,845

From table 3, it can be concluded that the diagonal, which is square root value of AVE is greater than the correlation score, hence the model is valid and accepted since the discriminant validity criteria is fulfilled.

Coefficient of Determination (R Square)

The R-Square value of the model is 0,897, this value indicates how much the exogenous variable predicts the endogenous variable (Environment Performance). R-Square value indicates how much your model can predict the endogenous variable. Table 4 indicates that the model R-Square classified as high criterion.

Table 4 R-Square Table (Sleimi & Emeagwali, 2017)

R-Square	Criterion
> 0,75	High
> 0,5	Moderate
> 0,25	Low

Path Coefficient

Path coefficient determines the hypothesis testing for the model, analyse relation between variables. Table 5 showed the path coefficient result for the model.

Table 5 Path Coefficient

	Original Sample	St Dev	T - Value	P - Value
Green Competency → Environment Performance	0,097	0,064	1,522	0,129
Green Competency → OCBE	0,253	0,153	1,648	0,100
Green Employee Involvement → Environmental Performance	0,526	0,075	6,978	0,000
Green Employee Involvement → OCBE	0,516	0,183	2,821	0,005
Green Motivation → Environmental Performance	0,347	0,061	5,646	0,000
Green Motivation → OCBE	0,050	0,121	0,412	0,681
OCBE → Environmental Performance	0,066	0,059	1,133	0,250

From the table above we can see that the highlighted green p-value is below 0,05 (5% alpha), this indicates that green employee involvement and green motivation have significant impact on environmental performance. For moderating variable OCBE, only Green Employee Involvement has a significant impact on OCBE. Positive value of the original sample column indicates a positive relation between two variables.

Effect Size

Effect Size determines the contribution of exogenous variables to effect endogenous variables. The higher the effect size value, the greater the contribution of exogenous variables to endogenous variables. Table 6 showed that Green Employee Involvement has the highest Effect Value. Green Employee Involvement has the biggest contribution to affect Environmental Performance. Effect size criterion is shown in Table.6 below

Table 6 Effect Size Table

Green Competency (X1)	Green Motivation (X2)	Green Emp Involvement (X3)	OCBE (X4)	Environmental Performance (Y1)
Green Competency (X1)			0,253	0,114
Green Motivation (X2)			0,050	0,350
Green Emp Involvement (X3)			0,516	0,561
OCBE (X4)				0,066
Environmental Performance (Y1)				

Table. 7 Effect Size Criterion (Sleimi & Emeagwali, 2017)

R-Square	Criterion
> 0.75	High
> 0.5	Moderate
> 0.25	Low

From the table above we can see that Green Employee Involvement has moderate effect on predicting environment performance and moderate effect on predicting our moderating variable OCBE. Other variable have considerably low effect on predicting environmental performance and OCBE

Indirect Effect

Determines whether the moderating factor (OCBE) mediating relation between green competencies, green motivation, and green employee involvement, to environmental performance. Table 8 showed the result of indirect effect analysis.

Table 8 Indirect Effects

	T - Value	P - Value
Green Competency → OCBE → Environment Performance	0,897	0,370
Green Employee Involvement → OCBE → Environment Performance	0,772	0,440
Green Motivation → OCBE → Environment Performance	0,298	0,766

The result table showed that p-value for every variable is above 0,05, meaning that the moderating factor (OCBE) did not significantly moderate the relation between exogenous variable to endogenous variable.

IV. Discussion

Referring to the result from PLS in figure 3, it can be explained that employee involvement has the most significant role in determining green performance of employees in the company, in which it has the highest value (0,561) compared to green competency and green motivation in terms of exogenous variables. Although the value of 0,561 in employee involvement elaborates a moderate correlation and impact towards environmental performance, while the value of 0,350 (green motivation) and 0,114 (green competency) shows that these two variables have low impact.

From the result above, OCBE doesn't have a significant impact on moderating the relation between green competency, green motivation, and employee involvement, with environmental performance. We can see the p-value from all of the indirect effects from every variable have a value above 5%, it means that OCBE didn't have a significant effect on moderating these variables. Table 9 showed the hypothesis testing result, green employee involvement practices have a significant effect on environmental performance (H3). Thus, hypothesis 3 (H3) is accepted.

Table 9 Hypothesis Testing Result

Description	Result
H1 <i>Green competence building practices is significantly related to OCBE</i>	No Significant effect of Green Competence on OCBE
H2 <i>Green motivation enhancing practices is significantly related to OCBE</i>	No Significant effect of Green Motivation on OCBE
H3 <i>Green employee involvement practices is significantly related to OCBE</i>	Green employee involvement have significant effect on Employee Performance (Y1)
H4 <i>OCBE is significantly related to Environmental Performance</i>	No Significant effect of OCBE on Environmental Performance
H5 <i>OCBE mediate significantly the relationship between green competence building practices and environmental performance</i>	No Significant effect of OCBE on mediating Green Competence and Environmental Performance
H6 <i>OCBE mediate significantly the relationship between green motivation enhancing practices and environmental performance</i>	No Significant effect of OCBE on mediating Green Motivation and Environmental Performance
H7 <i>OCBE mediate significantly the relationship between green employee involvement practices and environmental performance</i>	No Significant effect of OCBE on mediating Green Employee Involvement and Environmental Performance

Anwar (2019) reported a research green employee involvement, green motivation, green competency have a significant effect on environmental performance. It also showed that OCBE played a significant role in moderating green employee involvement, green motivation, green competency and environmental performance. The research conducted in university scope with university employees and students as samples.

This paper shows a result in a manufacturing company, since the industrial sector plays the biggest contributor in environmental degradation. The results of the research are employee involvement and green motivation have significant impact on predicting employee performance, but employee involvement has moderate impact. However, green motivation has relatively low impact on environment performance. OCBE does not have a significant impact on moderating exogenous variables (green competency, green motivation, employee involvement) with endogenous variables (environment performance). The final model result of the research is shown in Figure. 3

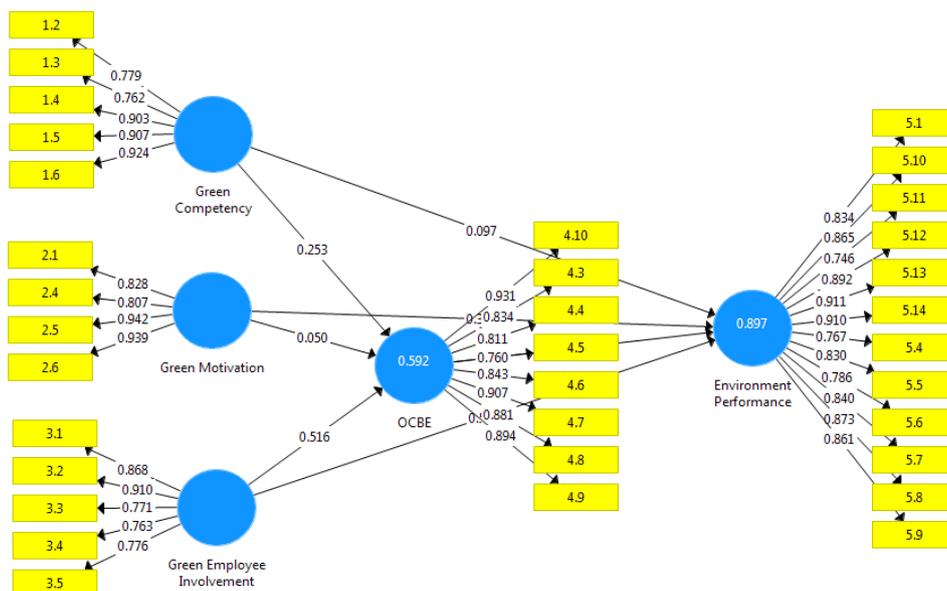


Figure 3 Final Model Relation

Deeper analysis, the variable of green employee involvement with factors consisting of point 3.1, 3.2, 3.3, 3.4, and 3.5 have the most significant factors that affect employee performance, with each of the factors having values of 0,868; 0,910; 0,771; 0,763 and 0,776. 3.1 represents developmental vision to guide actions in environmental management in a company. 3.2 represents employee involvement in environmental activities in a company. 3.3 explains about formal or informal communication channels to spread green culture in companies. 3.4 represents the degree which company encouraged employees to involve in quality improvement and problem solving on green issues, and the last point 3.5 represents employee opportunities to participate in environmental management such as suggestion schemes, community programs for environmental awareness, green initiatives. All the five points determine the strong correlation to predicting Green Employee Involvement. Understanding the factors of green employee involvement and correlation with environmental performance will lead the company to understand how to grow in business while minimizing negative impact on the environment.

On the side of green motivation, 2.5, 2.6, 2.1 and 2.4 have significant impact in terms of green motivation with values 0,942; 0,939; 0,828 and 0,807, from the highest to lowest respectively. 2.5 and 2.6 elaborates the financial incentives and rewards to promote environmental behaviour. Point 2.1 represents if there is any green performance indicator in the performance management system and appraisal. The point 2.4 indicates green travel benefits in the company. As we can see in the research result, financial incentive and rewards is one of the most significant aspects to increase green motivation. Financial aspect is one of the most influencing factors to determine employees motivation in doing environmental practices. Rewards and appreciation for employees that do green action can motivate employees to do that regularly and become habits. Rewards and appreciation such as acknowledgement, complement, and recognition, for example giving monthly awards for employees that consistently have a great environmental performance.

On the point of Environmental Performance, point 5.13, 5.14, 5.12, 5.8, 5.10, 5.9, 5.7, 5.1, 5.5, 5.4, and 5.11 with value 0,911; 0,910; 0,892; 0,873; 0,865; 0,861; 0,840; 0,834; 0,830; 0,767 and 0,746, from the highest to lowest respectively. The point 5.13, 5.12, and 5.14 indicate company activities to promote environmental awareness. Next, point 5.8, 5.10, and 5.9 represent practices related to company effort on reducing greenhouse gas and noise. The recycled products in the company are represented in point 5.7. Company policies and sanctions in environment behaviour can be explained in point 5.1 and 5.11. The point 5.4 and 5.5 represent energy consumption and water consumption in the company.

Organizational Citizenship Behaviour towards Environment didn't moderate relation between green competency, green motivation, and employee involvement with environment performance. It can conclude that organizational behavior towards the environment did not significantly impact the organization environment performance. Companies may be conducting environmental activities and others, but if their employees don't stand a chance to be involved and lack motivation to do these things, it's hard for companies to improve their environmental performance. Based on the respondents, we can conclude that before companies conduct environmental activities, it's better to make sure their employees or shareholders have the motivation and opportunity to do environmental activities.

From the study we can see that employee involvement is about their opportunity to join in environmental activities, clarity of environmental vision in company and matter of communication. It's important for a company to communicate their vision and give the employee an opportunity to involve in company environmental activities, and encourage employees to participate in discussions related to the green environment around the company.

Research results showed the employees that have motivation and opportunity to involve in environment activities have a strong relation with their environmental performance. Their green competency don't have a significant effect on their environmental performance, it indicates the knowledge they possessed didn't actually improve their environmental performance. If they just know how to do it but didn't have the awareness of why this things essential to do, it did not significantly affect their environment

V. Conclusion

Green HRM practices adoption can be successfully implemented if the company encourages employee's motivation and gives opportunity to the employee to participate in the company's green initiative. Financial aspect is one of the most significant aspects to motivate employees in achieving environmental performance. Providing opportunity and involvement for employees in participating company green initiatives will boost chances to achieve a successful environmental performance implementation. This will help organizations in promoting green culture in every aspect in the company. Since there are regulations from the government to control the environment around the company, it's easier to start with company policies and initiative to support environmental performance. Top management should possess strong leadership and commitment to adopt company green initiatives.

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