

The Role of Green Human Resources and Supply Chain Management on the Sustainability Performance

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Abstract

This study aims to analyze the effect of human resource management and green supply chain management on the company's sustainability performance. This research uses quantitative methods. This research was tested using Structural Equation Modeling (SEM) based on Partial Least Square (PLS). Research data use medium and large category manufacturing (manufacturing) companies in KEPRI Province in 2021. The results show that green human resource management has a positive and significant effect on sustainability performance while supply chain management does not affect sustainability performance. In the next study, it is recommended to use mixed methods through questionnaires and interviews so that the data obtained is more complete.

Keywords: SEM-PLS, human resource management, green supply chain management, sustainability performance

Introduction

The manufacturing industry plays a major role in Indonesia's economic growth. This is evidenced by the more stable growth of the manufacturing industry during the Covid-19 pandemic, where most of the performance of the economic sector experienced a decline, but the manufacturing industry was still able to grow by 3.68% in the third quarter of 2021 (Ministry of Investment/BKPM, 2022). In 2021 the manufacturing industry is also the largest contributor to Indonesia's non-oil and gas exports, namely 80.78% of Indonesia's total exports (Statistics, 2022). In line with the relatively good growth of the manufacturing industry at the national level, the Riau Archipelago Province as one of the industrial areas in Indonesia also shows the same data. In June 2022 the number of company exports in the Riau Islands Province was 1,593.96 million USD. Of the total exports of the Riau Archipelago Province, it was dominated by the non-oil and gas sector of USD 1,242.32 million, with the largest contributor being the manufacturing industry engaged in electrical machinery or equipment of USD 593.87 million, with export destination countries being Singapore, China, Malaysia. and South Korea (Central Bureau of Statistics for Riau Islands Province, 2022).

The rapidly growing manufacturing industry in the Riau Archipelago Province has had a positive impact as a support for the economy. But on the other hand, of course, it also has a negative impact if the operational activities of a manufacturing company are not managed properly. Research Annunziata et al., (2018); Ch'ng et al., (2021) argue that companies must align economic, social, and environmental goals (triple bottom line) during fierce competition and societal demands for the company's sustainable performance. According to Foo et al., (2018), sustainability performance consists of the first three aspects, namely, economic performance is related to the company's ability to reduce company consumption costs such as resource procurement, energy consumption, appropriate waste processing to minimize fines arising from negligence in the management environment. Economic performance is also measured by sales growth, market share, and the company's ability to make a profit. The second aspect is environmental performance related to the company's ability to reduce water, air, and soil pollution, avoid, or reduce the use of hazardous materials, reduce the frequency of work accidents, and save energy use. The last aspect is social performance related to employee welfare as stipulated in the Labor Laws in every country, both developing and developed countries, such as the

establishment of the District/City Minimum Wage (UMK), health benefits, annual leave, a safe and free workplace. from bad treatment, harassment, and violence.

Rasit et al., (2019) in their research said that company efforts to reduce the impact of business operations on the environment can create long-term value in the form of competitiveness and economic performance so that they are considered able to improve business performance. In the theory of NRBV (natural resource based-view) Hart, (1995) suggests that environmentally friendly practices are rare and not easy to imitate. Companies as organizations that want to survive amidst the onslaught of global competition are forced to adopt environmentally friendly practices, one of the environmentally friendly strategies implemented by the company is human resources management and green supply chain management.

According to research by Seman et al., (2019); Mensah et al., (2020) green supply chain management is the integration of internal and external supply chain activities with environmental approaches such as reducing energy consumption and pollution. Research (Cankaya & Sezen, 2019) suggests that green supply chain management includes procurement, manufacturing, packaging, distribution, marketing, investment recovery, and internal environmental management processes. Habib et al., (2020) in his research found a significant positive effect of green supply chain management on the company's sustainability performance. Green supply chain management practices will improve economic performance through reducing waste management costs and in the long-term green supply chain management practices will have an impact on sales and profit growth. The environmental performance will also increase through reducing water, energy, and fuel consumption while increasing social performance can be through awareness, safety, job security, and the welfare of the community around the company. The same research was also conducted by Rasit et al., (2019) which suggested that there was a significant positive influence between green supply chain management on the sustainability performance of MSMEs in Malaysia. Environmentally friendly product design practices and strong cooperation between departments in dealing with problems are driving factors for sustainable performance.

The complexity of the divisions involved in managing the company's internal environment makes it important for companies to change the culture and mindset that leads to environmentally friendly behavior to form an environmentally friendly ideology across divisions within the company Zaid et al., (2018). Efforts to instill an environmentally friendly ideology require human resource management which involves recruitment, training, performance evaluation, and appreciation processes that are environmentally oriented (Liu et al., 2021; Sadat & Alquaiti, 2020). The HRM function is a partner for the company in formulating sustainability values and strategies (Yong et al., 2020). Research by Acquah et al., (2021) found that there is a significant influence between green human resource management on environmental performance, companies equip employees with environmentally friendly knowledge which aims to motivate employees to improve environmental performance. The next finding is that there is a significant positive influence between green human resource management and social performance, companies that implement green human resource management practices will get an environmentally friendly image. This study also found a significant negative effect between human resource management and the company's economic performance, the implementation of training and development through an environmentally friendly approach requires quite expensive costs. Based on the background and previous research, the hypothesis in this study is:

1. Green supply chain management has a significant positive effect on sustainable performance.
2. Green human resource management has a significant positive effect on sustainable performance.

Materials and Methods

The method used in this research is quantitative research which examines the relationship between variables and is measured numerically and analyzed using various statistical techniques (Luis & Moncayo, 2019). This research is hypothesis testing, which is a systematic procedure to test the relationship of a hypothesis so that it can be concluded that a hypothesis can be accepted or rejected (Hair et al., 2020). The analytical method used is Structural Equation Modeling (SEM) based on Partial Least Square (PLS). The population that is the object of this study is a manufacturing company in the Riau Archipelago Province which has an ISO 14001 Environmental Management System (EMS). The number of manufacturing companies in the Riau Archipelago Province that have ISO 14001 by city or district can be seen in Table 3.1 below:

Table 1 : Number of manufacturing companies in Riau Islands Province

Province	City/District	Number of manufacturing companies	Number of ISO 14001 Certified Manufacturing Companies
Kepulauan Riau	Karimun	16 companies	3 companies
	Lingga	6 companies	0 companies
	Natuna	3 companies	0 companies
	Bintan	19 companies	2 companies
	Tanjung Pinang	18 companies	1 company
	Batam	492 companies	51 companies
Total		554 companies	57 companies

Sumber:(BPS Kepri, 2021) (BPS Kepri, 2021)

Table 3.1 shows the number of manufacturing companies in Riau Islands Province as many as 554 companies and only 57 companies have ISO 14001 certification. Respondents in this study are those who are responsible for the company's operational activities, starting from supply chain managers and HR managers who know accurate information regarding the condition of the companies (Zaid et al., 2018). The source of data used in this research is primary data. Primary data is data collected specifically for the research project being carried out (Genot et al., 2018).

The dependent variable in this study is the company's sustainability performance covering three dimensions, namely economic, social, and environmental performance (Habib et al., 2020; Phan & Baird, 2015). These dimensions consist of 5 questions with Likert scale measurements from 1 to 5 (1 = Strongly Disagree, 2 = Disagree, 3 = Disagree, 4 = Agree, and 5 = Strongly Agree). There are 2 independent variables in the study, namely: 1). Green human resource management consists of 7 questions (Mousa & Othman, 2020) with a Likert scale measurement from 1 to 5. 2). Green supply chain management as measured by 5 questions via a Likert scale of 1 to 5.

Results and Discussion

Respondents to this study were 90 people from 57 manufacturing companies in the Riau Archipelago Province. Questionnaires were distributed to two analysis units in each company, with a total of 114 respondents, only 90 people filled out the questionnaire. This shows that the percentage level of participation of respondents in this study was only 79%. The manufacturing companies sampled in this study have different characteristics. Descriptive statistics based on the number of employees, gender, position, age, length of work, and highest education of the respondents can be seen in Tables 2 and 3

Table 2 : Descriptive statistics
(N=90)

Number of employees	Number	Percentage
Number of Employees 20 - 100 people	6	6,67%
Number of Employees >100 people	84	93,33%
Sex		
Man	67	74,44%
Woman	23	25,56%
Position		
Supply chain managers	46	51,11%
HR managers	44	48,89%
Age		
21 - 30 Years Old	13	14,44%
≥ 30 - 40 Years Old	24	26,67%
≥ 40 - 50 Years Old	47	52,22%

≥ 50 - 60 Years Old	6	6,67%
Length of time spent at the current position		
Less than 1 year	7	7,78%
≥1 - <3 Years	23	25,56%
≥3 - <5 Years	21	23,33%
≥5 - <10 Years	17	18,89%
≥10 Years	22	24,44%
Education Level		
High School/Vocational High School	2	2,22%
Diploma	7	7,78%
Bachelor's degree	53	58,89%
Master's degree	26	28,89%
Doctor	2	2,22%

Table 3 : Statistik Deskriptif Variable

Variable	N	Mean	Standard Deviasi
Green human resource management	90	4,26	0,86
Green supply chain management	90	4,21	0,78
Sustainable performance	90	4,15	0,76

The average value of all indicators on the variable green human resource management is 4.26 which indicates that manufacturing companies in Riau Islands Province agree to implement green human resource management practices. The highest standard deviation value is 0.86. This indicates that there are different opinions on the green human resource management variable. In the green supply chain management variable, the average value of all indicators is 4.21 which indicates that the Riau Islands Province manufacturing companies agree to implement green supply chain management practices with a standard deviation value of 0.78. The next variable is sustainability performance which has an average value of 4.15 which is relatively low when compared to other variables, this indicates that manufacturing companies in the Riau Archipelago Province implement green supply chain management practices at different levels with a standard deviation value of 0.76.

Evaluation of the measurement model or outer model begins with testing convergent validity (convergent validity). The measurement model for validity testing can be seen in Table 4 below:

Table 4 : Convergent Validity Test Results

Variable	Indicator	Loading Factor	AVE
Sustainable Performance	KK1	0,73	0,73
	KK2	0,73	
	KK3	0,83	
	KK4	0,89	
	KK5	0,73	
Green Human Resource Management	MSDM1	0,91	0,86
	MSDM2	0,94	
	MSDM3	0,91	

	MSDM4	0,86	
	MSDM5	0,83	
	MSDM6	0,73	
	MSDM7	0,92	
Green Supply Chain Management	MRP1	0,7	0,61
	MRP2	0,78	
	MRP3	0,68	
	MRP4	0,72	
	MRP5	0,67	

Table 4 presents the results of the convergent validity test for each indicator where all indicators are declared valid because the loading factor value is more than 0.6 and the AVE value for each dimension is more than 0.5. A convergent validity test is conducted to measure the accuracy of the indicators in reflecting the variable to be measured. After testing the validity, model measurements were also carried out to test the reliability of the construct. The reliability test was carried out by looking at the value of Cronbach's Alpha and Composite Reliability. The requirements for construct reliability values are Cronbach's Alpha and Composite Reliability values must be more than 0.7. The results of the reliability test can be seen in Table 5 below:

Table 5 : Reliability Test Results

Variable	Cronbach's Alpha	Composite Reliability
Sustainable Performance	0,77	0,82
Green Human Resource Management	0,83	0,92
Green Supply Chain Management	0,9	0,91

Based on the results of validity and reliability testing, the measurement model can be continued to structural model testing. Evaluation of the structural model starts from the feasibility test of the model by looking at the R-Square value. The results of the model feasibility test (Goodness of Fit Model) are shown in Table 6 below:

Table 6 : The Goodness of Fit Model Test Results

Variable	R-Square	Adjusted R-Square
Sustainable Performance	0,54	0,54

Sumber: Data diolah

Based on Table 6, the company's sustainability performance variable has a moderate model where the Adjusted R-Square value is 0.54. This figure indicates that the variables of green human resource management and supply chain management can explain the company's sustainability performance of 54%. The results of the path coefficients, T-Statistics values, and P-Values obtained through the bootstrapping process are shown in Table 7 below:

Table 7 : Hypothesis Test Results

Hipotesis	Coefficients	P-Values	Hasil
H ₁ :Green human resource management has a positive and significant effect on sustainable performance	0,18	0,00	Supported

Hipotesis	Coefficients	P-Values	Hasil
H ₂ : Green supply chain management has a positive and significant effect on sustainable performance	0,13	0,09	Not Supported

Based on the data analysis performed, the discussion of the hypothesis is presented as follows:

H₁: Green human resource management has a positive and significant effect on sustainable performance

The test results show that green human resource management has a coefficient of 0.28 with a T-Statistic and P-Values of 4.39 and 0.00, respectively. This figure indicates that there is a positive and significant influence of green human resource management variables on sustainability performance. Green human resource management plays an important role in creating a company's sustainable performance. According to Kim et al., (2019), green human resources will form an environmentally friendly culture which will ultimately improve the company's environmental performance. Research by Ahmed et al., (2021); Ansari et al., (2021); Chaudhry & Amir, (2020); Liu et al., (2021); Yong et al., (2020) suggest that green human resource management practices are company initiatives to design and implement human resource management systems that support a proactive approach to addressing environmental problems. Green human resource management does not only include awareness of environmental issues but also considers the social, and economic well-being of organizations and employees (Freitas et al., 2020). Research Paille et al., (2020); Rawashdeh, (2018) argued that the dimensions of green human resource management that have the most influence on environmental management practices are training and development.

H₂: Green supply chain management has a positive and significant effect on sustainable performance

The test results show that green supply chain management has a coefficient of 0.07 with a T-Statistic and P-Values of 1.69 and 0.09, respectively. This figure shows that there is no significant effect of green supply chain management variables on the company's sustainability performance. According to research by Sharma & Vredenburg, (1998), green supply chain management will have an impact on the company's sustainability performance if it is accompanied by an increase in the operational quality of environmentally friendly companies. The results of this study are not in line with Ahmed et al., (2020); Cankaya & Sezen, (2019); Rupa & Saif, (2022); Saeed et al., (2018).

Conclusions

The results of this study indicate that green human resource management has a direct influence on the company's sustainability performance while the green supply chain management variable, does not have a direct influence on the company's sustainability performance. Based on the results of the data analysis test performed, the following conclusions are obtained:

1. Green human resource management has a significant positive effect on the sustainable performance of manufacturing companies in Riau Islands Province. Green human resource management practices are a company initiative to design and implement a human resource management system that supports a proactive approach to addressing environmental issues. Green human resource management does not only include awareness of environmental issues but also considers the social and economic welfare of the organization and its employees.
2. Green supply chain management does not affect the sustainability performance of manufacturing companies in the Riau Islands Province. Implementation of a green supply chain that is not accompanied by strong company resources causes the company's sustainability performance to fail.

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