Jurnal Ilmiah Manajemen dan Bisnis (JIMBI), 6(2) 2025: 308-318
DOI: 10.31289/jimbi.v6i2.6530
Jurnal Ilmiah Manajemen dan Bisnis (JIMBI)
Available online http://jurnalmahasiswa.uma.ac.id/index.php/jimbi
Diterima: 18 Januari 2025; Direview: 03 November 2025; Disetujui: 23 Desember 2025

Pengaruh Pengadaan, Produksi, dan Distribusi Hijau Terhadap Kinerja Perusahaan pada Industri Kecil ban Menengah di Pekanbaru

The Influence of Green Procurement, Production, and Distribution on Firm Performance in Small and Medium Industries in Pekanbaru

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Abstrak

Industri manufaktur di Pekanbaru menunjukkan pertumbuhan seiring dengan peningkatan produktivitas, yang mencerminkan peningkatan kinerja pada perusahaan industri kecil dan menengah. Penerapan manajemen rantai pasokan hijau (GSCM) merupakan salah satu strategi yang diyakini dapat meningkatkan kinerja perusahaan. Penelitian ini bertujuan untuk menganalisis pengaruh tiga dimensi GSCM—pengadaan hijau, produksi hijau, dan distribusi hijau—terhadap kinerja perusahaan. Penelitian ini menggunakan pendekatan kuantitatif dengan menyebarkan kuesioner kepada 45 perusahaan industri kecil dan menengah di Pekanbaru. Analisis data dilakukan dengan menggunakan perangkat lunak SPSS. Hasil penelitian ini menunjukkan bahwa produksi hijau dan distribusi hijau berpengaruh signifikan terhadap kinerja perusahaan, sedangkan pengadaan hijau tidak berpengaruh signifikan terhadap kinerja perusahaan.
Kata Kunci: Manajemen Rantai Pasokan Hijau; Pengadaan Hijau; Produksi Hijau; Distribusi Hijau; Kinerja Perusahaan

Abstract

The manufacturing industry in Pekanbaru is showing growth along with increased productivity, reflecting improved performance in small and medium-sized industrial companies. The implementation of green supply chain management (GSCM) is one strategy believed to improve firm performance. This study aims to analyze the influence of three dimensions of GSCM—green procurement, green production, and green distribution—on firm performance. This study used a quantitative approach by distributing questionnaires to 45 small and medium-sized industrial companies in Pekanbaru. Data analysis was performed using SPSS software. The results of this study indicate that green production and green distribution have a significant effect on firm performance, while green procurement does not have a significant effect on firm performance.
***Keywords**: Green Supply Chain Management; Green Procurement; Green Production; Green Distribution; Firm Performance*

***How to Cite**:* Rahmawati, R., Berampu, L.T., & Daulay I.N. (2025). Pengaruh Pengadaan, Produksi, dan Distribusi Hijau Terhadap Kinerja Perusahaan pada Industri Kecil ban Menengah di Pekanbaru. *Jurnal Ilmiah Manajemen dan Bisnis (JIMBI), 6(2): 308-318,*

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PENDAHULUAN

The manufacturing industry plays a crucial role in Pekanbaru City's economic development, contributing 20.14% to the total Gross Regional Domestic Product (GRDP) in 2023 and recording 4.09% growth compared to the previous year (Gunawan, 2025). This increase reflects improved productivity industrial sector.

Despite its significant contribution to the economy, manufacturing activities, from raw material procurement to product distribution, often have negative environmental impacts, such as air pollution, liquid waste, and solid waste. Without proper management, these impacts can damage ecosystems and disrupt the well-being of surrounding communities (Yurizka & Murwaningsari, 2024). Therefore, the need to integrate environmental aspects into supply chain management has emerged, giving rise to the concept of Green Supply Chain Management (GSCM). The implementation of GSCM is becoming increasingly relevant in line with Indonesian government regulations that require companies to conduct environmentally friendly business activities. For example, Law No. 32 of 2009 on Environmental Protection and Management and Law No. 18 of 2008 on Waste Management encourage businesses to reduce waste generation and choose raw materials that are recyclable or environmentally friendly.

Green supply chain management (GSCM) is a strategic approach that integrates environmental considerations throughout the supply chain, from raw material procurement to production and distribution processes (Nazir et al., 2024). Previous studies have shown different results regarding the impact of GSCM on firm performance. (Gibral et al., 2022) and (Habib et al., 2021) found a significant positive impact, while (Novitasari & Agustia, 2021) reported no significant impact. These differing findings highlight the need for further research, particularly in the context of small and medium-sized industries in Pekanbaru, where the implementation of GSCM is still relatively new.

Based on this background, this study aims to analyze the impact of the three main dimensions of GSCM—green procurement, green production, and green distribution—on firm performance in small and medium-sized industries in Pekanbaru. The results of this study are expected to contribute empirically to the development of GSCM literature and provide practical implications for managers in improving firm performance through the implementation of sustainable supply chain practices.

OBJECTIVES:

1. To analyze the influence of green procurement on firm performance in small and medium-sized industries in Pekanbaru.
2. To analyze the influence of green production on firm performance in small and medium-sized industries in Pekanbaru.
3. To analyze the influence of green distribution on firm performance in small and medium-sized industries in Pekanbaru.
4. To analyze the simultaneous effect of green procurement, green production, and green distribution on firm performance in small and medium-sized industries in Pekanbaru.

HYPOTHESIS

1. Green procurement has a significant impact on firm performance.
2. Green production has a significant impact on firm performance.
3. Green distribution has a significant impact on firm performance.
4. Green procurement, green production, and green distribution simultaneously affect on firm performance

METODE PENELITIAN

The population in this study was small and medium-sized industrial companies operating in Pekanbaru. The sampling technique used was non-probability sampling with the purposive sampling method. There were 45 respondents, consisting of managers, leaders, supervisors, and branch heads at small and medium-sized industrial companies.

Data analysis was conducted using multiple linear regression with SPSS software. Before the regression analysis was performed, the research instruments were first tested through validity

and reliability tests. Subsequently, classical assumption tests were conducted, including normality tests, multicollinearity tests, and heteroscedasticity tests to ensure the model's validity.

Hypothesis testing was conducted using the t-test to determine the partial effect of each independent variable (green procurement, green production, and green distribution) on company performance, as well as the F-test to test the simultaneous effect of the three variables. Additionally, the coefficient of determination (R^2) was calculated to determine the extent to which the independent variables could explain the variation in the dependent variable.

Table 1. Research Variables and Indicators

No.	Variable	Definition	Indicators
1	Green Procurement	Environmentally friendly procurement is a strategic approach in supply chain management that emphasizes the procurement of products and services that have a lower environmental impact	1. The company includes environmental aspects in the specifications of goods purchased from suppliers; 2. Cooperates with suppliers for environmental purposes; 3. Selects suppliers based on environmental certification; 4. The company consistently chooses suppliers that strive to eliminate the use of hazardous materials
2	Green Production	Green production is the use of environmentally and socially friendly practices aimed at reducing the negative impacts of production activities while balancing efforts to achieve economic profit	1. The company pays attention to energy use in production activities; 2. The company implements product recycling systems; 3. Modernization of production equipment; 4. Control over waste produced
3	Green Distribution	Green distribution consists of environmentally friendly logistics and environmentally friendly packaging	1. Good delivery route planning; 2. Use of eco-friendly packaging; 3. Use of reusable containers; 4. reducing the use of packaging
4	firm Performance	Performance describes the company's ability to achieve its objectives, generate profit, and increase company value	1. Efficiency in raw material usage; 2. Increase in the company's average profit; 3. Improvement of the company's reputation; 4. Market share growth

HASIL DAN PEMBAHASAN

I. Respondent Demographics

Respondent characteristics contain a general description and explanation of the respondents. This section is intended to identify the most dominant type of respondent in this study. This section aims to provide a clearer picture of the respondents in order to strengthen the explanation of the research results:

Table 2. Research Respondents

NNo	Gender	Total	Percentage
1	Male	24	53,3%
2	Female	21	46,7%
Total		45	100%

Source: Processed Data

The table shows that the respondents in this study consisted of 24 men (53.3%) and 21 women (46.7%). Although the proportions are relatively balanced, this data still shows that managers in small and medium-sized industrial companies in Pekanbaru are still predominantly male. This can be influenced by social and cultural factors that position men as dominant in public and professional spaces.

II. Descriptive Analysis Results

Descriptive statistical analysis was conducted to obtain a preliminary picture of the distribution of respondents' answers to each item in the questionnaire. This analysis included calculations such as mean, median, mode, and standard deviation. The data will be presented in tables.

Table 3. Descriptive Analysis of Green Procurement Variable

Code	Statement	Std. Deviation	Mean	Category
X1.1	The company includes environmental aspects in the specifications of goods purchased from suppliers	0.763	3.91	High
X1.2	The company cooperates with suppliers in managing environmental impacts	0.763	3.69	High
X1.3	The company prioritizes suppliers with environmental certification	0.618	4.27	Very High
X1.4	The company consistently selects suppliers that strive to eliminate the use of hazardous materials	0.624	4.44	Very High
Average score of green procurement variable			4.08	High

Source: Processed Data

According to the table, small and medium-sized industrial companies in Pekanbaru that participated in the survey strive to minimize their environmental impact in their raw material procurement activities. This is evident from the average overall score of green procurement variables are 4,08, which is in the "High" category. these results indicate that the companies possess a good level of commitment to the implementation of green procurement principles.

Table 4. Descriptive Analysis of Green Production Variable

Code	Statement	Std. Deviation	Mean	Category
X2.1	The company strives to minimize the use of electricity in the production	0.739	4.00	High
X2.2	The company implements a product recycling system. such as for unsold products or returned used products	0.695	3.51	High
X2.3	The company modernizes production equipment	0.848	3.91	High
X2.4	The company implements controls over the waste generated	0.795	4.22	Very High
Average score of green production variable			3.91	High

According to the table. it can be concluded that the responses to all statements in the green production variable showed an average score 3.91, which is categorized as "High.". This reflects that the small and medium-sized industrial companies in Pekanbaru have a good level of attention and commitment to implementing environmentally friendly principles in their production processes.

Table 5. Descriptive Analysis of Green Distribution Variable

Code	Statement	Std. Deviation	Mean	Category
X3.1	The company designs delivery routes efficiently to minimize delivery distance	0.842	4.20	Very High
X3.2	The company uses eco-friendly packaging materials	0.885	3.89	High
X3.3	The company uses reusable containers	0.883	3.76	High
X3.4	The company has a policy to reduce unnecessary packaging	0.751	3.93	High
Average score of green production variable			3.95	High

Based on table, responses to statements on the green distribution variable showed an average value is 3.95, which is categorized as "High.". This reflects that the small and medium-sized industrial companies in Pekanbaru have a high level of commitment to integrating environmentally friendly principles into their distribution activities.

Table 6. Descriptive Analysis of Firm Performance Variable

Code	Statement	Std. Deviation	Mean	Category
Y.1	There has been an increase in the efficiency of raw material usage without reducing production quality	0.747	4.18	High
Y.2	The company's average profit has increased over the last period	0.869	3.53	High
Y.3	The company's positive image among customers has improved	0.580	4.27	Very High
Y.4	The company has experienced an increase in market share in its industry	0.876	3.78	High
Average score of firm performance variable			3.94	High

The average value of the firm performance variable is 3.94, which is in the "High" category. This finding reflects that the small and medium-sized industrial companies where the respondents work have good overall performance. The results also indicate the company's ability to maintain operational quality and achieve its set goals. Additionally, the high score on this variable may indicate that the company is capable of competing in the market and has positive prospects for continued growth in the future.

Validity Test Results

Validity testing is conducted to determine whether the measurement instrument (questionnaire) is capable of measuring the concept. A measurement instrument is considered valid if the calculated r value is greater than the r table value. To determine the r table value, df = n-2 = 45-2 = 43, and the significance value (α) = 0.05 (5%). The n value is the sample size. Based on df = 43 and a significance value of 0.05, the r table value is 0.2940. If the calculated r value is greater than 0.2940, the research instrument is considered valid. Otherwise, if the calculated r value is less than 0.2940, the research instrument is invalid and cannot be used in this study.

Table 7. Validity Test Results

Variable	Instrument	Calculated R	R table	Description
Green Procurement (X1)	X1.1	0.838	0.294	Valid
	X1.2	0.718	0.294	Valid
	X1.3	0.661	0.294	Valid
	X1.4	0.59	0.294	Valid
Green Production (X2)	X2.1	0.609	0.294	Valid
	X2.2	0.742	0.294	Valid
	X2.3	0.689	0.294	Valid
	X2.4	0.722	0.294	Valid
Green Distribution (X3)	X3.1	0.771	0.294	Valid
	X3.2	0.733	0.294	Valid
	X3.3	0.772	0.294	Valid
	X3.4	0.674	0.294	Valid
Firm Performance (Y)	Y.1	0.525	0.294	Valid
	Y.2	0.785	0.294	Valid
	Y.3	0.748	0.294	Valid
	Y.4	0.786	0.294	Valid

Source: Processed Data

Based on the results of the validity test, all instruments from each variable show the calculated r value greater than the r table value. Therefore, it can be concluded that all research instruments are valid and can be used in this research.

Reliability Test Results

Reliability testing aims to measure the consistency of the measurement results. A reliable measurement instrument (questionnaire) will get similar results when used repeatedly. An instrument is considered reliable if its Cronbach's Alpha value is greater than 0.60. Conversely, if its Cronbach's Alpha value is less than 0.06, the instrument is considered unreliable.

Table 8. Reliability Test Results

Variable	Cronbach's Alpha	Critical value	Description
Green Procurement (X1)	0.664	0.6	Reliable
Green Production (X2)	0.630	0.6	Reliable
Green Distribution (X3)	0.721	0.6	Reliable
Firm Performance (Y)	0.665	0.6	Reliable

Source: Processed Data

Based on the reliability test results shown in Table 5.13, it is known that all variables have a Cronbach's Alpha value of more than 0.6. it means that the measurement instruments for each variable are reliable.

Classical Assumption Test

The classical assumption test is a series of statistical tests conducted to ensure that the multiple linear regression model meets the required basic assumptions. The classical assumption tests in this study include normality test, multicollinearity test, and heteroscedasticity test.

Normality Tests

The normality test aims to ensure that the residuals in the regression model are normally distributed. If this assumption is not met, the results of the regression analysis can be biased. The normality test in this study was evaluated using the Kolmogorov-Smirnov (K-S) test. If the significance value (p-value) is greater than 0.05, the residuals are normally distributed. After conducting the Kolmogorov-Smirnov (K-S) test, the following results were obtained:

Table 8. Normality Tests Result

One-Sample Kolmogorov-Smirnov Test		
		Unstandardized Residual
N		45
Normal Parametersa.b	Mean	0.0000000
	Std. Deviation	1.44582285
Most Extreme Differences	Absolute	0.066
	Positive	0.048
	Negative	-0.066
Test Statistic		0.066
Asymp. Sig. (2-tailed)		0.200c.d

a. Test distribution is Normal.
b. Calculated from data.
c. Lilliefors Significance Correction.
d. This is a lower bound of the true significance.
Source: Processed Data

Based on the results of the normality test using the Kolmogorov-Smirnov method, a significance value of 0.2 was obtained. Because the significance value is greater than 0.05 (0.2 > 0.05), it can be concluded that the residual data in the regression model is normally distributed. This result indicates that the normality assumption has been met, so the regression model used is suitable for further analysis.

II.a Multicollinearity Test

The presence of multicollinearity was assessed using two indicators: the Variance Inflation Factor (VIF) and the tolerance value. A VIF of less than 10 and a tolerance greater than 0.10 are considered that multicollinearity does not pose a significant issue.

Table 9. **Multicollinearity Test Result**

Coefficientsa			
Model		**Collinearity Statistics**	
		Tolerance	**VIF**
1	Green Procurement	0.755	1.325
	Green Production	0.625	1.600
	Green Distribution	0.581	1.721
a. Dependent Variable: Firm Performance			

Source: Processed Data

Based on the table, it can be seen that the VIF values of each variable are below 10 (VIF < 10) and the tolerance values of each variable are greater than 0.10 (tolerance > 0.10). This condition indicates that there is no indication of serious multicollinearity among the independent variables in the research model. Therefore, it can be concluded that each independent variable in the model has a low level of correlation with one another, so the regression model used meets the assumption of multicollinearity freedom and is suitable for further analysis.

II.b Heteroscedasticity Test

The heteroscedasticity test is intended to determine whether the absolute residual variation is the same for all observations. In this study, the heteroscedasticity test was carried out using the Glejser test. The Glejser test is performed by comparing the probability values of the relationship between the independent variables and the absolute residuals with a specified significance level of 0.05. If the significance coefficient is greater than the specified significance level, heteroscedasticity is declared absent among the observed data. The results of the Glejser test are as follows:

The Glejser test indicate that the significance coefficient values of each variable are greater than the predetermined significance level of 0.05. Thus, it can be concluded that there are no signs of heteroscedasticity in the research data. This indicates that the variance of the residuals is constant or homogeneous across all levels of the independent variables, meaning that the regression model used satisfies one of the important assumptions in classical linear regression analysis.

III. Multiple Linear Regression Equation

Multiple linear regression equation is a statistical model employed to examine the relationship between a dependent variable and multiple independent variables. In the context of this research, the multiple linear regression equation is utilized to assess the extent to which the variables of green production, green procurement, and green distribution influence company performance. Based on the regression equation, it is possible to identify the direction of the influence—whether positive or negative—and quantify the extent to which each independent variable contributes to explaining the variation in the dependent variable. The formulation of the regression equation is based on the coefficient values obtained from the results of the multiple linear regression analysis.

Table 11. Multiple Linear Regression Analysis

Coefficients[a]

Model		**Unstandardized Coefficients**		**Standardized Coefficients**		
		B	**Std. Error**	**Beta**	**t**	**Sig.**
1	**(Constant)**	1.438	2.138		0.673	0.505
	Green Procurement	0.195	0.132	0.174	1.474	0.148
	Green Production	0.458	0.135	0.442	3.403	0.001
	Green Distribution	0.252	0.119	0.285	2.113	0.041

a. Dependent Variable: Firm Performance

Source: Processed Data

Based on the results of the multiple linear regression test that had been carried out, the following regression equation model was formed:

$Y = 1{,}438 + 0{,}195X_1 + 0{,}458X_2 + 0{,}252X_3$

According to the regression equation model, the constant value (α) is 1.438. The green procurement coefficient value is 0.195. The green production coefficient value is 0.458 and the green distribution coefficient value is 0.252.

IV. Hypothesis Testing

Hypothesis testing is conducted to determine whether the hypothesis proposed in this study can be accepted or rejected based on the results of the data analysis. This process aims to verify the validity of previously formulated assumptions, thereby providing a strong basis for drawing research conclusions. In this study, hypothesis testing involves three types of tests: partial testing (t-test); simultaneous testing (F-test); and the coefficient of determination.

IV.a T-Test Result

The t-test aims to determine whether there is a significant influence between independent variables on the dependent variable partially. In the t-test, if the calculated t-value > t-table or the significance value < 0.05, it means that the independent variable has a significant influence on the dependent variable, and vice versa. The formula to determined t-table is (α / 2; n – k – 1). Based on that formula, t-table value is 2.02. According to Table 11 it can be observed that:

Hypothesis Testing 1: The variable green procurement (X_1) has calculated t-value of 1,474 on firm performance (Y), which is less than the t-table value is 2.02, and the significance value is 0.148, which is greater than 0.05. Therefore, Hypothesis 1 (H1) is rejected, indicating that green procurement hasn't significant influence on firm performance (Y) in small and medium-sized industrial companies in Pekanbaru.

Hypothesis Testing 2: The variable green production (X_2) has calculated t-value of 3.403 on firm performance (Y), which is greater than the t-table value is 2.02, and the significance value is 0,001, which is less than 0.05. Therefore, Hypothesis 3 (H2) is accepted, indicating that green procurement has a positive and significant influence on firm performance (Y) in small and medium-sized industrial companies in Pekanbaru.

Hypothesis Testing 3: The variable green distribution (X_3) has calculated t-value of 2.113 on firm performance (Y), which is greater than the t-table value is 2.02, and the significance value is 0,041, which is less than 0.05. Therefore, Hypothesis 3 (H3) is accepted, indicating that green distribution has a positive and significant influence on firm performance (Y) in small and medium-sized industrial companies in Pekanbaru.

IV.b F-Test Result

The F test is conducted to determine whether all independent variables have a simultaneous effect on the dependent variable. In the f test, if the calculated f value > f table or the significance value < 0.05, it means that the independent variables have a simultaneous effect on the dependent variable, and vice versa. The formula to determined F-table is f (α; k; n – k – 1). Based on that formula, F-table value is 2,83.

Table 12. F Test Result

ANOVAa

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	120.333	3	40.111	17.880	0.000b
	Residual	91.978	41	2.243		
	Total	212.311	44			

a. Dependent Variable: Firm Performance

b. Predictors: (Constant), Green Distribution, Green Procurement, Green Production

Source: Processed Data

Hypothesis Testing 4: The variable green procurement, green production, and green distribution has calculated F-value of 17.880 on firm performance, which is greater than the F-table value is 2,83, and the significance value is 0.000, which is less than 0.05. Therefore, Hypothesis 4 (H4) is accepted, indicating that green procurement, green production, and green distribution have simultaneously ffect on firm performance in small and medium-sized industrial companies in Pekanbaru.

IV.c The Coefficient of Determination

The coefficient of determination measures how much variation in the dependent variable (company performance) can be explained by the independent variables (green production, green procurement, and green distribution). The coefficient of determination ranges from 0 to 1; the greater the R^2 value, the greater the independent variable's ability. The coefficient of determination can only be used if the f-test value is significant. Conversely, if the f-test value is insignificant, the coefficient of determination cannot be used.

Table 13. The Coefficient of Determination

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0,753[a]	0,567	0,535	1,498

a. Predictors: (Constant), Green Distribution, Green Procurement, Green Production

Source: Processed Data

The table shows that the adjusted R^2 value is 0.535, or 53.5%, which is considered moderate according to Hair *et al.*, (2019).The 53.5% value indicates that changes in company performance can be explained by green production, green procurement, and green distribution. The remaining 46.5% is explained by other factors not included in this research.

Disccusion

Based on the results of the tests conducted, it was found that green procurement had no significant effect on performance in small and medium-sized industrial companies in Pekanbaru. This finding aligns with research conducted by (Abdul et al., 2017; Firmansyah et al., 2021). This is because small and medium-sized industrial companies in Pekanbaru have not yet implemented green procurement to its full potential, or not all raw materials for production are sourced from suppliers who implement environmentally friendly practices. This makes it difficult for companies to utilize green procurement as a strategy to improve performance. This suboptimal implementation is due to several factors. From a financial perspective, small and medium-sized industrial companies generally operate with limited budgets. From a knowledge perspective, there is a lack of comprehensive understanding regarding the long-term benefits of adopting green procurement. Additionally, the limited availability of suppliers that have adopted environmental standards further constrains its effective implementation.

The green production variable was found to have a significant positive effect on performance in small and medium-sized industrial companies in Pekanbaru. This aligns with research conducted by Jassim *et al.*, (2020) and (Kalyar et al., 2020), which found green production to be the most influential green practice on company performance. In small and medium-sized industrial companies in Pekanbaru, the implementation of green production has been shown to have a significant positive impact on company performance because environmentally friendly practices in the production process help companies improve operational efficiency and reduce resource waste. In an era of increasing public awareness of environmental issues, consumers tend to favor companies that demonstrate a true commitment to sustainability. Implementing green production can strengthen a company's reputation, encourage loyalty from existing customers, and attract new customers who care deeply about the environment.

The green distribution variable was found to have a significant positive effect on performance in small and medium-sized industrial companies in Pekanbaru. This study aligns with research conducted by Yildiz Çankaya dan Sezen, (2019) and from (Jermsittiparsert et al., 2019), which also found a positive effect of green distribution on company performance. In small and medium-sized industrial companies in Pekanbaru, the implementation of green distribution is beginning to be recognized as an efficiency strategy that directly impacts operational costs while strengthening the company's image among customers as a company that cares about environmental sustainability.

The results of this study indicate a simultaneous influence of green procurement, green production, and green distribution on the firm performance of small and medium-sized industrial companies in Pekanbaru. The interconnectedness of these three variables as dimensions of green supply chain management plays a significant role in driving this simultaneous influence. Green procurement serves as the initial foundation, ensuring that the raw materials used come from

environmentally friendly sources and meet sustainability standards. Raw materials that have met the standards are then processed through green production, which prioritizes energy efficiency and waste reduction during the production process. The products are then distributed to consumers using a green distribution strategy, which emphasizes logistical efficiency, emission reduction, and the use of recyclable or reusable packaging. When these three elements are implemented well, companies can reduce operational costs, improve regulatory compliance, and build a positive image in the eyes of consumers.

SIMPULAN

Based on the findings of this study, it can be explained that green production and green distribution have a significant effect on firm performance of small and medium-sized industrial companies in Pekanbaru. The results indicate that the higher the level of green production and green distribution practices within a company, the better its performance outcomes. Green production practices include minimizing the use of electrical energy during the production process, controlling the waste produced, modernizing production equipment, and product recycling systems. Meanwhile, green distribution practices include efficient distribution route planning, use of environmentally friendly packaging, use of reusable containers during the delivery process, and minimizing the use of packaging. Each of these practices has been statistically proven to contribute significantly on company performance. For instance, effective control of waste enables companies to mitigate the risk of penalties for non-compliance with environmental regulations, maintain a clean and safe working environment, and enhance their reputation among stakeholders. Efficient distribution route planning helps companies reduce fuel consumption, while also reducing carbon emissions during the delivery process.

The study also finds no significant effect of green procurement on firm performance of small and medium-sized industrial companies in Pekanbaru, likely due to suboptimal implementation arising from the scarcity of suppliers meeting environmental standards, budget constraints, and limited awareness of its long-term benefits. the issue of limited suppliers meeting environmental standards can be overcome by strengthen their network with suppliers who implement environmentally friendly principles by seeking alternative suppliers and participating in industry forums that prioritize sustainability. Furthermore, companies can also provide training to existing suppliers to encourage them to adopt environmentally friendly practices.

In addition, the findings indicate a statistically significant simultaneous effect of green procurement, green production, and green distribution on firm performance of small and medium-sized industrial companies in Pekanbaru. This suggests that these three dimensions of green supply chain management, when implemented collectively, can contribute to enhancing overall firm performance by integrating environmentally sustainable practices across procurement, production, and distribution activities.

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