Financial Performance: Environmental Performance, Green Accounting, Green Intellectual Capital, Green Product, & Risk Management

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Abstract

The company's goal is to generate optimal profits to maintain the continuity of its business activities. Companies use various methods to make a profit, such as implementing a green business revolution which is also an effort to encourage achieving a sustainable economy. The company adopted a green business strategy due to increased environmental awareness among stakeholders who directed the company to innovate the green business in order to have a competitive advantage and produce good financial performance. The purpose of this study is to test factors that are suspected to affect the company's financial performance in the green business side in the manufacturing industry listed on the Indonesia Stock Exchange for the 2019-2020 period using sampling criteria, a sample of 106 observational data from 53 companies was obtained. The observation data were analyzed with descriptive statistics and regression of panel data. The results showed that only environmental performance affects financial performance because companies in the manufacturing industry can sustainably manage their operating activities so as to be able to obtain optimal profits. The novelty of this study is the empirical finding that environmental performance is able to encourage the financial performance of the manufacturing industry that went public on the Indonesia Stock Exchange. Recommendations for company management to innovate in improving green business strategies combined with their primary business strategies in obtaining financial returns. It is recommended that subsequent researchers re-examine this study's variables in different sectors.

Keywords
Environmental Performance, Financial Performance, Green Accounting, Green Intellectual Capital, and Green Product.

1. Introduction
The company's financial performance is the center of investor attention because it reflects the level of the company's ability to generate profits and prospects for the sustainability of the company's operations. According to Kartadjumena and Rodgers (2019); Shabbir and Wisdom, (2020)financial performance is the foundation for the sustainability of the company's activities because the company is considered to have been able to generate optimal profits, so investors are interested in investing. High financial performance targets encourage various company strategies to increase profits and pay attention to environmental conditions and the surrounding community (Okafor 2018). On the other hand, some industries tend to exploit resources for profit, so the broad pattern of economic growth brings severe environmental problems (Wardhani and Rahadian 2021). The economic growth of a country, especially Indonesia, is due to the increase in operating activities carried out by various industries, causing various forms of pollution (Deswanto and Siregar 2018). The problems caused by this are becoming more severe so that the public and investors are more conservative about the importance of environmental sustainability and economic development (Ullah Khan et al. 2021).The achievement of the company's goal to produce good financial performance needs to be balanced with an increase in environmental awareness among stakeholders because they are policy makers so that the company not only focuses on profit, but also pays attention to environmental conditions by innovating green businesses (Indriastuti et al. 2021).

The manufacturing industry in Indonesia is an industry that changes the landscape and negatively affects the survival of the surrounding community from the waste produced (Nr and Yurniwati 2018). Observation data of manufacturing companies that went public on the Indonesia Stock Exchange (IDX) and listed in proper of the

Ministry of Environment and Forestry which obtained a rating below the blue of 13 percent in 2020 which means that the company's environmental management is not good.Although the number of recipients under the blue is relatively small, it shows that there are still companies that ignore environmental conditions.

Environmental information disclosure can play a role in improving the company's financial performance (Trevlopoulos et al. 2021; Safitri 2022). One form of the company's openness to the environment is to follow the Company Performance Rating Assessment Program (PROPER) which is based on the company's performance in meeting various requirements stipulated in the applicable laws and regulations, as well as the company's performance in carrying out various environmental management activities that have not become requirements beyond compliance. When the company receives a PROPER rating, investor confidence in the company is formed, thusencouraging an increase in operating activities which also supports an increase in profits (Sara and Rajak 2022). Green accounting provides information about the extent to which the company spends costs on the environment. The application of green accounting is beneficial for companies to reduce the risk of future expenses such as costs due to public demands for environmental damage by the company, sanctions from the government, and so on that can increase the burden and reduce the company's financial performance (Riyadh et al. 2020; Lusiana et al. 2021). Green Intellectual Capital is an intangible asset of an enterprise in the field of environmental protection(Ullah et al., 2022). Some companies have realized the importance of environmental issues in each of their business processes, so that a green concept has emerged that can be incorporated into intellectual capital management, so that companies can apply green intellectual capital in their business strategies to improve financial performance (Augustine 2022).

Green product refers to the use of biodegradable materials or nontoxic compounds to modify or alter the design of energy-saving production and production and for the environmental protection of new products (Melander 2018). Companies that have green products can better attract people's attention to buy their products and can increase the legitimacy of companies related to government environmental regulations, and improve financial performance (Dzomonda 2021). In addition to the implementation of green business, risk management is an indispensable aspect for the success of a company in obtaining good financial performance (Kafidipe et al. 2021).The better the risk management, the less potential negative risks received by the company so that the company is able to obtain optimal financial performance (El-Chaarani et al. 2022).

There are several gaps in previous research, namely the research conducted by (Earnhart 2018; Nur Utomo et al. 2020) finding proper rating as a measure of environmental performance shows that the higher the rating obtained by the company, the better the management of the company's production activities by paying attention to the environmental side so as to increase the legitimacy of investors to improve company performance while according to Nguyen et al. (2021) although the company receives a good average rating does not guarantee an improvement in the company's financial performance. Kartika and Utami 2019 and Riyadh et al. (2020)found that green accounting degraded financial performance because the company recorded environmental costs as other expenses that could reduce the value of the company's profitability whereas according to Sara and Rajak (2022)companies that incur environmental costs are not a benchmark for companies in financial performance because they do not attract consumers and investors.

Chaudhry et al. (2017) and Ullah Khan et al. (2021)states that green intellectual capital using the VAIC™ indicatorcan improve financial performance because it is a source of competitive advantage that contributes to improving the company's financial performance otherwise according to Widyastuti et al. (2021)green intellectual capital has no relation to financial performance.Companies that have green products are considered safer or save consumer energy so that they tend to buy green products and can finally facilitate the improvement of the company's financial performance (Hu et al. 2021; Xie et al. 2022). On the other side, Sara and Rajak (2022)states that green products are not a factor in financial performance because consumers in the observation data tend not to have awareness of environmental issues. Ismanu et al. (2021) andMamari et al., (2022) found that the number of risk committee meetings to manage the risk management of a company can minimize the risk of deterioration in financial performance while according toEndah et al. (2018) company's risk management is not only measured using regular meetings of the risk committee so that it does not have a significant influence on the company's financial performance.

This study was conducted on manufacturing industry companies that listed on PROPER Ministry of Environment and Forestry. The motivation is to investigate whether environmental performance, green accounting, green intellectual capital, green product, and risk management affect financial performance.

2. Literature Review

Prior research is evaluated in the areas of Environmental Performance, Green Accounting, Green Intellectual Capital, Green Product, Risk Management, and Financial Performance in order to construct the study's framework and hypotheses.

2.1 Environmental Performance and Financial Performance

Environmental performance is the performance of a company that focuses on the company's activities in preserving the environment and reducing environmental impacts arising from the company's activities. Environmental performance can be a company's strategy to produce optimal financial performance (Kalash 2021).Companies with good environmental performance have an impact on improving financial performance because environmental management is in accordance with standards then it strengthens the legitimacy of investors and the public (Kalyar et al. 2020; Baah et al. 2021). Based on the description of the research reference, good environmental performance increases the company's financial profit.

H_1: Environmental performance affects financial performance positively

2.2 Green Accounting and Financial Performance

Green accounting is an accounting that identifies, measures, assesses, and discloses costs related to the company's environmental activities. Green or environmental accounting becomes a management communication tool with the community as relevant information to determine the costs incurred due to poor environmental quality of the manufacturing process (Rounaghi 2019). Government pressure in enacting environmental standards causes companies to spend environmental costs to meet these standards regardless of their financial condition so that they can reduce the company's financial performance (Riyadh et al. 2020; Sumiati et al. 2022). Therefore, the higher the expenditure of environmental costs in green accounting, the lower the performance of the enterprise.

H_2: Green accounting affects financial performance negatively

2.3 Green Intellectual Capital and Financial Performance

Green intellectual capital is the knowledge, experience, and information that can be possessed by companies to be developed in creating value so as to make it a source of competitive advantage (Liu, 2017).Xu and Wang, (2018)explains that green intellectual capital is comprised of three essential components: 1) human capital, which is the source of innovation and company development, 2) relation capital, which is a measure in assessing the company's relationship with its partners, and 3) structural capital, which is the company's ability to carry out activities that support employee performance.

Green intellectual capital management can generate value added with different advantages from competitors between companies Nirino et al. (2022). Companies that develop value added from green intellectual capital consistently with specific advantages are able to compete and survive in dynamic business development and improve financial performance (Wang et al. 2021). Therefore, green intellectual capital has the potential to improve financial performance.

H_3: Green intellectual capital affects financial performance positively

2.4 Green Product and Financial Performance

The concept of green products refers to producing of biodegradables that can add value to the environment. Green products are designed to eliminate inefficiencies from the source for environmental protection (Eneizan and Wahab 2016). Environmentally friendly product innovation is a business strategy to minimize environmental damage and attract consumers to increase sales that impact the company's financial performance (Acquah et al. 2021; Kim et al, 2022). Therefore, green product innovation has the potential to improve the company's financial performance.

H_4: Green product affects financial performance positively

2.5 Risk Management and Financial Performance

Risk management is a process to avoid or minimize risks from the company's activities to maintain its sustainability. The higher the company's operating activities, the company's risk committee needs to identify potential risks

continuously and systematically (Oluwaseyi Ebenezer et al. 2016). The level of risk committee meetings can minimize potential risks so as to produce optimal financial performance (Kafidipe et al. 2021; Mutamimah et al. 2022). Based on the results of the study, the frequency of the number of risk committee meetings as a measure of risk management can improve the company's financial performance (Figure 1).

H_5: Risk management affects financial performance positively

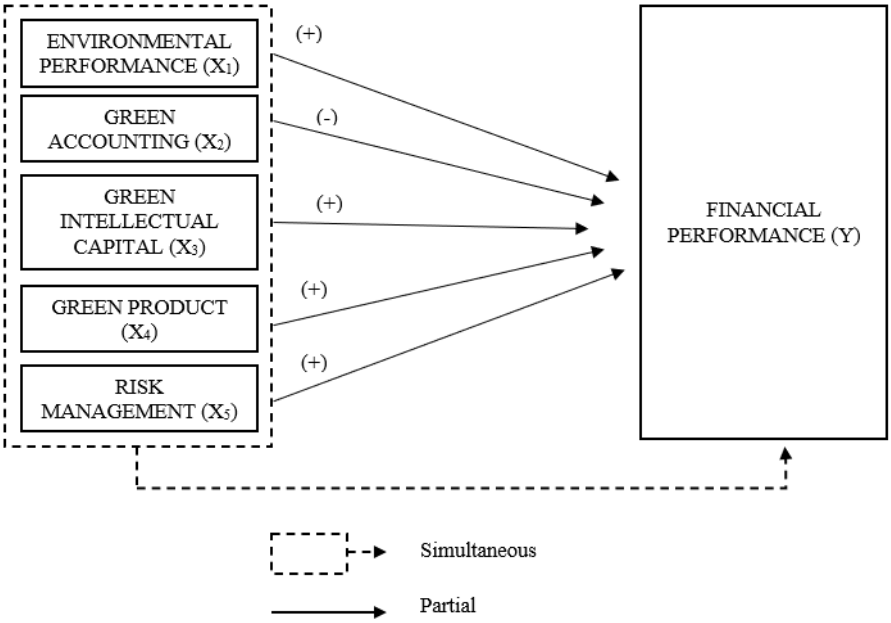

Figure 1. Research Model

3. Methods

The population used is a manufacturing company listed on the Indonesia Stock Exchange in 2019-2020. The sampling technique was a purposive sampling method with certain criteria. With the aim of getting a representative sample in accordance with the specified criteria. The sampling criteria in this study were (1) manufacturing industry companies listed on the Indonesia Stock Exchange (IDX) 2019-2020, (2) manufacturing industry companies that took part in the 2019–2020 PROPER in sequence, (3) manufacturing industry companies that publish financial reports and annual reports with data that meet the needs of this research variable and (4) use the IDR currency in the financial statements. The research sample was 53 companies, or 106 research data based on the sample criteria is included in the panel data spanning the period 2019–2020 using Descriptive statistics. Panel data estimation methodologies such as pooled regression, fixed effect, and random effect regression analysis are applied to evaluate the existence of relationships between variables. Consequently, below is the regression model; The model is expressed in its implicit form first:

$$FP = \alpha + \beta_1 EP + \beta_2 GA + \beta_3 GIC + \beta_4 GP + \beta_5 RM + \varepsilon$$

Explanation:

FP : Financial performance
α : Constant
β_1 : Environment performance variable regression coefficient
EP : Environment performance
β_2 : Regression coefficient of green accounting variable
GA : Chief financial officer Characteristic (proxied by dummy scale gender)
β_3 : Green intellectual capital variable regression coefficient
GIC : Green intellectual capital
β_4 : Green product variable regression coefficient

GP : Green product
β_5 : Risk management variable regression coefficient
RM : Risk management
ε : Standard error

Table 1. Variable Measurement

Variables	Measurements	Reference
Financial Performance	$ROA = \frac{\text{Earning after Tax}}{\text{Total Assets}}$	Kafidipe et al. (2021)
Environmental Performance	PROPER color rating 5 = Gold 4 = Green 3 = Blue 2 = Red 1 = Black	Sara and Rajak (2022)
Green Accounting	0 = Company has not CSR Fee on annual report 1 = Company has CSR Fee on annual report	Sumiati et al., (2022)
Green Intellectual Capital	VAIC™ = VACA + VAHU + STVA VAIC™: Value Added Green Intellectual Coefficient. VACA: Green Capital employed efficiency. VAHU: Green Human Capital Coefficient. STVA: Green Structural Capital Coefficient.	Nr and Yurniwati (2018)
Green Product	Total item of these green product that company provide 1. Eco design 2. Green packaging 3. Eco labelling $GA = \frac{\text{Green Product Item}}{\text{Total Green Product Item}} \text{ x } 100\%$	Dzomonda (2021)
Risk Management	Number of meetings holding by the Risk Committee	Kafidipe et al., (2021)

Table 1 represents the variable measurement.

4. Results of Statistical Analysis and Discussion

The research variables are described using the mean, standard deviation, maximum value, minimum value (ratio scale) and categorical (ordinal and nominal scales). The initial observation data amounted to 106 data however, after the panel data regression analysis was performed there was some data that caused the regression model to be abnormal. After detecting the causal factors using the Studenttized and Cook tests, there were 10 outlier data so that they were removed from the model and 96 observation data remained.

Table 2. Descriptive Statistics Ratio Scale Variables

	Green Intellectual Capital	Green Product	Risk Management	Financial Performance
Mean	24.29	0.32	14.54	0.05
Minimum	-0.66	0.00	3.00	-0.07
Maksimum	46.64	1.00	60.00	0.24
Std. Deviation	21.91	0.39	9.41	0.06
Observation	96	96	96	96

Table 2 shows the outcome of a descriptive statistical analysis of the factors listed below.

The mean of green intellectual capital is 24.29 greater than its standard deviation value of 21.91 indicating the distribution of group data.57 of the 96 observational data have belowmean green intellectual capital values, indicating the majority of companies are undermanagedby their green intellectual capital.

Green products have mean of 0.32 is smaller than its standard deviation of 0.39 shows that the mean green product in the observation data is 32 percent meaning that the observation data is lacking in producing green products.

Risk management has a group data distribution with mean of 14.54 greater than the standard deviation value of 9.41. 75 of the 96-observation data had a risk committee meeting frequency below mean, indicating that companies were unable to take advantage of risk committee meetings to improve financial performance.

The mean of financial performance is 0.05 smaller than the standard deviation value indicating the spread of group data. Return on Asset which is an indicator of financial performance of 5 percent meaning that the observation data in this study is unable to utilize assets to generate profits.

Table 3. Descriptive Statistics Environmental Performance

	Environmental Performance					
	Gold	Green	Blue	Red	Black	TOTAL
Data	1	4	78	13	0	96
Percent	1%	4%	81%	14%	0%	100%

Table 3 shows that 86 percent of observation data ranked above red in PROPER although the majority were ranked in blue at 81 percent. These results show that the majority of manufacturing industry companies carry out good environmental management.

Table 4. Descriptive Statistics Green Accounting

	Green Accounting		
	CSR FEE	NO CSR FEE	TOTAL
Data	36	60	96
Percent	38%	63%	100%

Table 4 shows that 38 percent of companies issue CSR fees, while 63 percent do not explicitly list CSR costs in the comprehensive income statement. This shows that the majority of manufacturing industry companies in the research year do not have green accounting.

The observational data in this study have passed the classical assumption test, so that the regression interpretation of panel data can be carried out. Before choosing the right model for regression, the observation data passed the chow test, hausman test, and lagrange multiplier test to find the right regression model.

Table 5. Chow Test

Redundant Fixed Effects Tests
Equation: FEM
Test cross-section fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	2.132628	(47,43)	0.0066
Cross-section Chi-square	115.514522	47	0.0000

Table 5 shows the probability value of F below the α (0.05) so that the fixed effect model is selected.

Table 6. Hausman Test

Correlated Random Effects - Hausman Test
Equation: REM
Test cross-section random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	1.528810	5	0.9097

Table 6 shows the cross-section probability value above the α (0.05), then the random effect model is selected. The difference in the results of the model shows that the observation data needs to pass one more test, namely the lagrange multiplier test.

Table 7. Lagrange Multiplier

Lagrange Multiplier Tests for Random Effects
Null hypotheses: No effects
Alternative hypotheses: Two-sided (Breusch-Pagan) and one-sided (all others) alternatives

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	6.853226	0.115891	6.969117
	(0.0088)	(0.7335)	(0.0083)

Table 7 shows the second value of Breusch-Pagan below α (0.05), so the random effect model was chosen as the right regression model in this study.

Table 8. Random Effect Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-0.083212	0.044381	-1.874949	0.0640
X1	0.039785	0.014035	2.834776	0.0057
X2	-0.007364	0.014924	-0.493461	0.6229
X3	0.000484	0.000323	1.497727	0.1377
X4	0.010942	0.005694	1.921799	0.0578
X5	0.000139	0.000813	0.171043	0.8646

Effects Specification	S.D.	Rho
Cross-section random	0.038063	0.4016
Idiosyncratic random	0.046465	0.5984

Weighted Statistics

R-squared	0.175210	Mean dependent var	0.035840
Adjusted R-squared	0.129388	S.D. dependent var	0.048829
S.E. of regression	0.045560	Sum squared resid	0.186818
F-statistic	3.823729	Durbin-Watson stat	1.994779
Prob(F-statistic)	0.003464		

Unweighted Statistics

R-squared	0.176727	Mean dependent var	0.054849
Sum squared resid	0.309902	Durbin-Watson stat	1.202510

Table 8 shows an adjusted R-squared value of 12.9 percent with probability (F-statistics) below α (0.05), so that the variables of environmental performance, green accounting, green intellectual capital, green products, and risk management are simultaneously factors of financial performance and are able to explain by 12.9 percent.

The coefficient of financial performance is 0.0039 with a probability of 0.0057 smaller than the α (0.05) indicates that environmental performance has a positive influence on financial performance in accordance with the hypothesis of this study.86 percent of the observation data of this study has a PROPER rating above the red with the majority at the blue rating of 83 percent so that environmental management is carried out properly. Those results support the research by Shakil et al., (2019) and Vu & Dang, (2021)which shows the company's PROPER rating can increase the value of financial performance because it can increase investors' legitimacy towards the company.

The value of the green accounting coefficient is -0.0079 with a probability of 0.6229 more than α (0.05) shows that green accounting has no influence but has a negative value on financial performance and does not match the hypothesis of this study.The results support the research Sumiati et al., (2022)because CSR fee which is a proxy of green accounting is not a financial performance factor, especially in the observation data of this study, the majority of companies do not disclose CSR fees explicitly in the comprehensive income statement.

Green intellectual capital has a coefficient value of 0.0001 with a probability of 0.1377 more than α (0.05) shows that green intellectual capital has no influence but has a positive value on financial performance and does not match the research hypothesis. Such results do not support the study by Nr & Yurniwati, (2018)due to the low value of green capital employed efficiency and green structural capital coefficient in the observation data which means that the company is unable to manage employee capital efficiency and structural capital to obtain optimal profits.

The green product coefficient of 0.0109 with a probability of 0.0578 more than α (0.05) indicates that green products have no influence but have a positive value on financial performance and do not match the research hypothesis.Such results do not support the study byOkafor, (2018)because the majority of the company's observation data in this study has green products, but it is not a factor in financial performance.

Risk management has a coefficient value of 0.0001 with a probability of 0.8646 more than α (0.05) shows that risk management has no influence on financial performance and is not in accordance with the research hypothesis.Those results do not support the study byMamari et al., (2022)which indicates that the number of risk committee meetings is not effective in minimizing potential risks to financial performance, especially in the observational data of this study, the frequency of risk committee meetings is still low so that it does not contribute to risk minimization.

5. Conclusion

The results of this study show that only environmental performance partially has a positive influence on financial performance while other independent variables in this study do not have a partial influence. The positive influence of environmental performance because the better the PROPER rating received by the company, the legitimacy of investors towards the company will also increase so that it can add value to the company's financial performance.

The limitation of this research is that the research year is relatively low, which is only in 2019-2020 and is limited to the manufacturing industry. This research has several implications, namely; (1) Companies need to improve environmental management in order to rank above red on PROPER to maintain the sustainability of the company and look for other factors that are performance driven for financial performance, (2) for regulators; the need for regulations to require companies to follow proper programs so that the potential for environmental damage can be minimized, (3) for investors; the high PROPER rating received by the company may increase the value of the stock portfolio due to improved financial performance, (4) for subsequent researchers; retesting variables in this study especially those that still have no effect is recommended to be done with different industries.

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