# The Effect of Risk Management, Intellectual Capital and Management Structure on Sustainability Performance

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**ABSTRACT:** This study aims to test and analyse the effect of Risk Management, Intellectual Capital and Management Structure on Sustainability Performance in industrial companies listed on the Indonesia Stock Exchange from 2017 to 2021. This type of research is quantitative, using secondary data. Data analysis method panel data regression test using Microsoft Excel and Eviews 9 applications. The population in this study were all industrial sectors. The data collection technique in this study was purposive sampling technique, from 50 research populations to 35 used as research samples. The results showed that Risk Management, Intellectual Capital and Management Structure simultaneously affect sustainability performance in industrial companies from 2017 to 2021. The research results obtained Risk Management affects Sustainability Performance, Intellectual Capital has no effect on Sustainability Performance, and Management Structure affects Sustainability Performance.

**KEYWORDS:** Risk Management, Intellectual Capital, Management Structure; Sustainability Performance

## INTRODUCTION

Integrated sustainability performance has not been an important concern in Indonesia. This can be seen from the many cases related to aspects of Integrated Sustainability Performance. In environmental and social aspects, such as cases related to hazardous and toxic waste (B3) including waste generated, B3 waste management licences that harm the community. Many cases of corruption, misuse of organisational assets, and fraudulent financial statements, which are cases in the governance aspect. In the aspect of Integrated Sustainability Performance (ISP) communication, the number of manufacturing companies in Indonesia is still limited in reporting Integrated Sustainability Performance (Zulaecha, 2021).

Sustainability performance can be defined as "a combination of economic, social and environmental performance" based on Kaplan and Norton's Balanced Scorecard, discussing three possible approaches to integrating the three dimensions of sustainability into one framework called the Sustainability Balanced Scorecard. The first approach is to integrate environmental and social aspects into four dimensions including; financial perspective, customer perspective, internal process and learning perspective, and growth perspective. The second approach suggests adding environmental and social aspects as a new perspective. The third approach is to formulate environmental and social aspects (Nguyen, 2018).

The environmental and social aspects of each specific business unit should be considered in the process of preparing the Sustainability Balanced Scorecard, (Genoulaz, Nguyen, 2018) proposed a framework and indicators to assess sustainability performance including the Economic dimension (Reliability, Responsiveness, Flexibility, Financial performance, and Quality), Environmental dimension (Environmental management, Resource use, Pollution, Hazards, and Natural environment), and Social dimension (Working conditions, Human rights, Social commitment, Customer issues, and Business practices).

The national Air Quality Index (AQI) in accordance with the results of the Ministry of Environment 2020 is calculated based on the results of ambient air quality measurements in districts / cities conducted at 4 locations representing industrial, residential, transportation and office areas using the manual passive sampler method. The methodology for calculating the Air Quality Index adopts the standards of the European Union Directives. This index is calculated for hourly, daily and annual average data, from the results in accordance with the index, the predicate is not good (71 < IKU < 71) 1 province, namely DKI Jakarta and the predicate is very poor (51 < IKU < 61) does not exist. (Table 5: 155 Statistics of the Ministry of Environment and Forests 2020).

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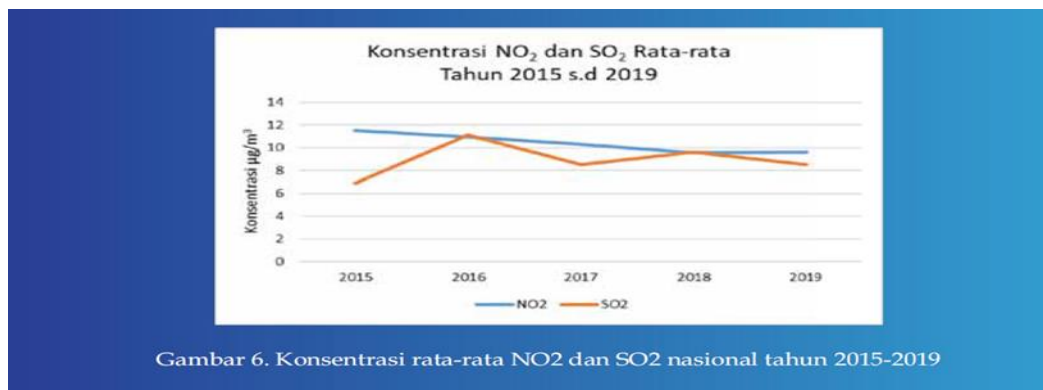


**Figure I.1 Air Quality**

From the ambient air quality monitoring results in 2015-2019, the average NO2 concentration ranged from 9.54-11.55 ug/m3 as presented in the figure below, while the average SO2 concentration ranged from 6.90-11.09 ug/m3. The average concentrations of NO2 and SO2 are each below the WHO annual threshold of 40 ug/m3 for NO2 and 20 ug/m3 for SO2. The Director General of Small, Medium and Miscellaneous Industries of the Ministry of Industry (Kemenperin) revealed that the performance of the non-oil and gas industry has decreased amid the coronavirus (COVID-19) pandemic. In the second quarter of 2020, the Ministry of Industry recorded non-oil and gas industry growth of minus 5.74%. only a few sectors experienced growth amid this pandemic, including the chemical, pharmaceutical and traditional medicine industries which grew 8.65% in the second quarter of 2020, the basic metal industry 2.76%, and the food and beverage industry 0.22%. In table I.1 Industry Growth:

| Import-export components | Volume (Migas-NonMigas) (Thousand Tonnes) | | | | | |
|---|---|---|---|---|---|---|
| | Export | | | Import | | |
| | 2019 | 2020 | 2021 | 2019 | 2020 | 2021 |
| Migas | 26.528,2 | 27.497,9 | 26.892, 2 | 40.926,4 | 37.654,1 | 42.126,3 |
| Non Migas | 627.946,2 | 552.180, 3 | 594.777,6 | 121.702,3 | 114.225, 9 | 135.633 |
| Total | 654.474,4 | 579.678, 2 | 621.667, 8 | 162.628,7 | 151, 880 | 177.759,3 |
| Processed from DG of Customs clearance documents (PEB and PIB) | | | | | | |

**Source:** https://www.bps.go.id/indicator/8/204/1/volume-migas-nonmigas-html

The Ministry of Environment and Forestry recorded dozens of oil and gas and mining companies that polluted the environment during 2017-2018. The ministry's Director General of Law Enforcement said that in the oil and gas sector, there were five companies involved in pollution cases. First, PT Chevron Pasific Indonesia in the Rokan Block of the Kampar district operating area, referring to the results of supervision on 18 January 2018. Although it has been subject to administrative sanctions, Chevron has not carried out its obligations. Second, PT Pertamina EP in East Kalimantan's Sanga-Sanga Field, Tanjung, Tarakan, Bunyu, Cepu. However, only Sanga-Sanga, Tarakan, Bunyu have fulfilled the sanctions. Meanwhile, Tanjung and Cepu are still in the process of sanctioning. Third, Total E&P Indonesia/PT Pertamina Hulu Mahakam in the CPA, Senipah, CPU, SPU and NPU fields in East Kalimantan. The Ministry of Environment and Forestry has conducted supervision on 24 February 2017, and currently the company has been issued a written warning letter, Fourth, Exxon Mobil Indonesia in East Java, in this case the Ministry of Environment and Forestry has conducted supervision on 10 November 2018. The current process is in the stage of administrative sanctions. Fifth, PT Pertamina Hulu Energi NSB in Aceh and West Madura Offshore. In both blocks, Pertamina has fulfilled its obligations. (Ministry of Environment and Forestry Statistics 2020).

In detail, the growth and decline of industry groups based on three-month and semester periods, can be seen in the table below. Performance of Industry Groups in the Mining Sector, semester 1 2020 in table I.2 Industry Groups;

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| Industry Sector | Q2 2020 (Q to Q)* | Q2 2020 (Y to Y)** | Semester 1 2020 (C to C)*** |
|---|---|---|---|
| Oil and Gas Mining | -14,54% | -7,07% | -5,03% |
| Coal and Lignite Mining | -10,75% | -8,32% | -4,04% |
| Metal Ore Mining | 20,33% | 31,82% | 20,48% |
| Other Mining and Quarrying | -4,77% | 4,10% | -0,80% |

**Source :** https://indoanalisis.co.id/pertumbuhan-industri-pertambangan-semester-1-2020/

**LITERATURE REVIEW**

In the phenomenon that occurs, it can be concluded that the company's performance has problems in managerial, financial, technology, innovation, reputation. This proves that these companies cannot maintain the sustainability of the company. Disclosure of environmental performance is very important to show the existence and participation of the company in dealing with environmental problems. Disclosure of environmental performance can be used as a report on the company's moral responsibility to the environment, in environmental performance there are principles and commitments, environmental protection, biodiversity, energy consumption, consumed water discharge, waste, and emissions (Holiawati 2020).

The issue of sustainability does not yet exist in measuring sustainability performance, but is still limited to fulfilling obligations that have been regulated in law (Putri & Sari, 2019). This has led to conditions where the sector is still voluntary in reporting its sustainability conditions, there are still very few initiatives in compiling and publishing sustainability reports. In particular, the observations in the study (Putri & Sari, 2019) were in the Industrial sector in 2017, and only managed to find a few Industrial sector companies that published sustainability reports.

From the terminology, many think that sustainability reports are just summaries of annual reports, especially those that include corporate outreach programmes, philanthropic events, or community development activities. Contrary to annual reports that provide corporate governance, financial, and management performance, sustainability reports focus more on the impact of financial and non-financial performance. Sustainability reports are the same as corporate social responsibility reports, reducing the concept of sustainability to the company's community development activities (Putri & Sari, 2019).

This misunderstanding leads to a loss of sustainability contextualisation in the report. Such contextualisation can be in the form of a description of the company's commitments, management systems, policies and initiatives related to the company's sustainability strategy. This is necessary in order to create meaning in the report, such as efficiency, awareness, business resilience and competitiveness, and supporting the development of neighbouring communities and employees. Furthermore, misunderstandings make common mistakes inevitable in reporting practices. This will hinder companies from delivering a comprehensive and integrated sustainability message. In addition, companies will end up with claims of commitment while lacking supporting evidence. To avoid these mistakes, treating sustainability performance as a performance is critical. This helps the company in tracking its progress through designing a sustainability roadmap, but also in improving the quality of subsequent reporting (Putri & Sari, 2019).

Agency theory highlights the importance of effective monitoring and control to ensure that managers act in accordance with the interests of owners or principals. In the context of sustainability performance, agency theory can provide incentives for managers to manage risks well and pay attention to sustainability issues that affect the long-term interests of the company. With proper monitoring and control, managers can implement sustainable business practices, such as efficient use of resources, environmental protection, and social responsibility (Amartya, 2022).

Agency theory is also related to risk management because good risk management plays a key role in sustainability performance. By identifying, evaluating and managing risks that may affect the sustainability of the company, managers can reduce negative impacts and capitalise on opportunities related to sustainability aspects. Effective risk management helps companies avoid financial losses, poor reputation, and social conflicts that can hinder long-term sustainability (Putri, M. A. (2023).

Agency theory also relates to Intellectual capital, such as knowledge, expertise, and customer relationships owned by companies, can support sustainability performance. By utilising intellectual capital well, companies can create innovations, develop sustainable solutions and cope with rapid changes. Expertise and knowledge related to sustainability, such as green technology or sustainable business practices, can help companies improve their sustainability performance (Nedia, U. D. (2017).

Management structure is also relevant to agency theory. Good management structure also plays an important role in achieving sustainability performance. A management structure that supports and encourages sustainable decision-making can influence how risks are managed, how intellectual capital is utilised, and how sustainable business practices are implemented.

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When there is a transparent, accountable and sustainability-oriented management structure, companies can integrate sustainability aspects into all levels of the organisation more effectively (Mahazan, 2020).

Aspects that can affect sustainability performance include risk management, risk management as a support for company performance is a structured and systematic process in identifying, measuring, mapping, developing alternative risk management, monitoring and controlling risk management. The application of risk management will provide benefits, both to the company. improve systematic decision-making methods and processes based on the availability of information, used as a basis for measuring company performance, to assess the risks inherent in relatively complex business activities and create solid risk management in order to increase the company's competitiveness. The implementation of risk management will facilitate the assessment of possible losses faced by the company that can affect the company's profits and as one of the basis for assessment in setting the company's strategy and focus (Claudia, 2011).

Risk management is a new approach for companies to think of new ways that allow companies to identify and manage risks, even the goal of risk management is to create, protect, and increase shareholder value (Barton et al. 2002). Bertinetti et al, (2013) state that there is an effect of risk management on firm value. Other researchers say the implementation of risk management has a significant effect on company performance and can improve performance (Gordon et al, 2009; Hoyt & Liebenberg, 2009; COSO, 2004; Nocco & Stulz, 2006; Bartonnet al, 2002; Stulz, 1996, Ping & muthuvelo, 2015). The implementation of risk management needs to be maintained with certain principles, so that it goes hand in hand with the implementation of effective governance. When the implementation of risk management improves, the company will add risk control to core competencies and competitive advantages, the relationship between risk management and governance will be stronger which will affect the company's sustainability performance (Drew and Kendrick, 2005). Other research that is in line is research (Ping and Muthuvelo, 2015) that in order to implement risk management, good governance is also needed. (Holiawati 2020).

Another aspect that affects sustainability performance is intellectualcapital, which plays a role in developing sustainable competitive advantages. Thus, intellectualcapital provides a competitive advantage to the company. Intellectual capital is a very valuable asset in the modern business world, the main components of intellectual capital are human capital which reflects the ability of employees, structural capital which describes the information system, and customer capital which represents how the company establishes good relations with its customers (Bontis el al., 2000).

Intellectual Capital is an intangible, identifiable asset that is a source of information and knowledge that serves to improve competitive ability and can increase or maximise the value of the company. Intellectual capital is the combination of intangible resources and tangible assets in a business that can be used to create value from knowledge and technology. IC is generally identified as the difference between the market value of the company (business) and the book value of the company's assets or financial capital(Ulum, 2009). Attempts have been made to estimate the value of knowledge in order to obtain the true value of the firm (Ulum, 2009; Bontis, 2001). It is generally assumed that increased and better use of knowledge will lead to beneficial effects on firm performance. The elements of intellectual capital can be divided into three categories: knowledge related to employees(human capital); knowledge related to the firm's partners(customer capital) and knowledge related only to the firm(structural capital). These three categories form an intellectual capital for the company. Thus, intellectual capital can be defined as knowledge resources in the form of employees, customers, the company's relationship with external parties, and its technology.

As for the Management Structure can affectsustainability performance, the management structure has a wide span of control and relatively few levels of hierarchy, loose control, and ease of delegation. Decision-making is often slower, as it involves a high degree of integration across the company. Sustainability performance shows the company's engagement with the welfare of its stakeholders, stakeholders observe and evaluate the company's sustainability performance by aligning this company and the interests of its stakeholders, sustainability performance triggers stakeholder cooperation in return benefits the company in the realisation of its objectives (Jones, 1995).

The company board is one of the resources owned by the company because they are representatives of the interests of shareholders and other stakeholders , so that the identity of the board will determine what policies will be carried out by the company (Anggraeni and Djakman 2017). The board of directors is a human resource in the company that is responsible for managing the company, the board of directors is one of the most important internal factors that can affect the sustainability performance of a company because the board of directors is the main decision maker in the company (Hendry and Kiel, 2004). Therefore, determining the right composition of board members is very important because it is related to the sustainability of the company, (Wiryani, 2020).

Huong, Fahad (2021) in his research The regression results show that there is a significant positive relationship between the implementation of Enterprise Risk Management and Sustainability Reporting and the business performance of issuers on the

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Vietnam stock exchange for the 2016-2019 period. Business Performance in the study suggests that the higher the level of implementation of enterprise risk management, the higher the level of possible risks that will be detected faced so that the chances of sustainability (Corporate Sustainability) become greater, with the implementation of Enterprise Risk Management the company's performance must continue to be improved companies with more sustainability disclosures and more efficient implementation of Enterprise Risk Management tend to be better in terms of financial performance and market performance. Enterprise risk management poses a threat to the organisation's ability to complete business processes and create value. In addition, companies will improve their performance by implementing Enterprise Risk Management concepts and increasing sustainability transparency to stakeholders. By reducing risks that can hinder sustainability performance, companies can fulfil the interests of owners by maintaining long-term value and producing sustainable results. Based on the description above, the second hypothesis can be concluded:

H1 : It is suspected that there is Risk Management on Sustainability Performance

Intellectual Capital on Sustainability Performance using a practitioner perspective. This study fills the gaps in previous research where in previous studies the assessment of company sustainability is more inclined to disclose sustainability reports, while this study discusses sustainability from a practitioner's point of view. From a practitioner's point of view, Intellectual Capital sustainability performance affects each other, One of the roles of intellectual capital is to assist companies in the value creation process. Companies that have high intellectual capital will be responded positively by investors by investing. This will have a good effect and increase the value of the company shows the ratio between the share price and the book value of its shares. If the company is able to manage intellectual capital optimally, then the value of the company will increase this will affect the sustainability performance of a company.

H2 : It is suspected that there is an influence of Intellectual Capital on Sustainability Performance.

By increasing the percentage of ownership, managers are motivated to improve performance and are responsible for increasing shareholder prosperity. This causes the power of shareholders to cede to managers. As a consequence, managers demand high compensation, thus increasing agency costs. Under these conditions, agency conflicts are overcome by increasing managerial ownership. In centralised ownership there are two groups of shareholders, namely controlling majority stockholders and minority stockholders, with Management Structure the leaders are considered to be able to do a good job and successfully evaluate current and future conditions this will affect sustainability performance.

H3: It is suspected that there is an influence of Management Structure on Sustainability Performance
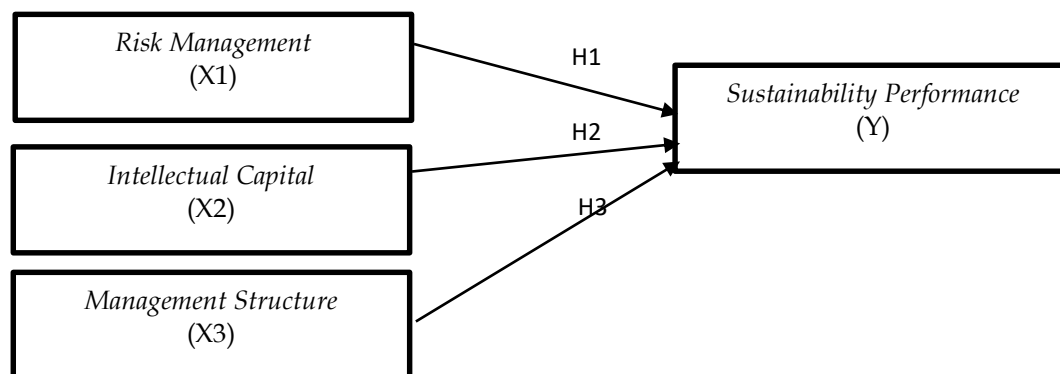


**Figure 1. Research model**
*Source: Research Data, 2023*

**RESEARCH METHOD**

This research uses an associative quantitative approach, which involves hypothesis testing that the associative method is a method that intends to explain the causal relationship and influence between variables through hypothesis testing. This study will examine the effect of Risk Management, Intellectual Capital and Management Structure on Sustainability Performance in the Industrial Sector. Data analysis is carried out after data collection and data processing is complete using the company's financial statements. The data used comes from the financial statements and annual reports of industrial sector companies listed on the Indonesia Stock Exchange (IDX). according to Sugiyono (2017: 232) "Data analysis is an activity after data from all respondents or other data sources are collected. Data analysis activities are grouping data based on variables and types of respondents, tabulating data based on variables from all respondents, presenting data for each variable studied, performing calculations to answer problem formulations and performing calculations to test hypotheses that have been proposed.

The dependent or bound variable is the variable that is influenced or becomes the result, due to the independent variable

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(Sugiyono, 2019). The dependent variable in this study isSustainability Performance. The measurement used in research (Holiawati, 2020) Company's sustainability performance using:

SBSC index = (Σ in / m) x 100%

Where in this study using 6 perspectives including:

1. Financial Perspective
2. Customer Perspective
3. Internal Business Process Perspective
4. Learning and Growth Perspective
5. Social Perspective
6. Environmental Perspective:

Independent or independent variables are variables that affect or cause changes or the emergence of dependent variables (Sugiyono, 2019). In this study, the independent variables are Risk Management, Intellectual Capital and Management Structure.

1. Risk Management

Risk management is one of the tasks of the board and top management to determine an integrated and future-oriented risk management concept. In the case of governance, the board is responsible for determining risk strategy objectives and for ensuring that operational risk management is carried out at the managerial level. According to the Financial Services Authority Regulation No. 18/POJK.03/2016 concerning the implementation of risk management for commercial banks.

Gordon (2009) measurement. The internal structure and components of the ERM Index (Gordon et al. 2009) and the measurements used (Holiawati, 2020) are as follows

**Risk management**

*Risk Management Index (RMI) = Σ Strategy + Operations + Reporting + Compliance*

*Strategy 1 = Sales - Average industrial sales / Standard deviation of industrial sales*

*Strategy 2 = - (Beta i –Beta i-1) - average Δ of the industry beta / Standard deviation Δ industry beta*

*Operation 1 = Sales / Total Assets*

*Operation2 = Sales / Number of employees*

*Reporting 1 = auditor's opinion*

*Reporting 2 = Normal Accrual / Normal accrual + abnormal accrual*

*Compliance 1 = Tax Expense / Total Profit*

*Compliance 2 = Company given sanctions by IDX*

*Risk management* namun dalam penelitian ini hanya menggunalan satu tahapan saja, berikut pengukuran yang digunakan:

*Risk Management Index (RMI) = Σ Strategy + Operations + Reporting + Compliance*

*Strategy 1 = Sales - Average industrial sales / Standard deviation of industrial sales*

Explanation;

Average industrial sales uses the total sales of each industrial subsector divided by the total number of companies in the subsector. Standard deviation of industrial sales uses the total sales of all subsectors and then standard deviation in excel.

Operation 1 = Sales / Total Assets

Reporting 1 = auditor's opinion

Explanation of the auditor's opinion in accordance with the disclosure requirements of the five opinions used, in accordance with the disclosure. For example, the third opinion is a  qualified opinion , so it is given a value of 3.

Compliance 1 = Tax Expense / Total Profit

2. Intellectual Capital

One of the calculation models used in calculating Intellectual capital in monetary terms is using the VAIC™ Model. The Value Added Intellectual Capital model was first developed by (Pulic, 1997). This design is to measure the performance of Intellectual Capital owned by the company. Calculation using VAIC™ developed by Pulic is relatively easier, because it is built from accounts in the financial statements (Ulum, 2009).

Value Added Intellectual Coefficient (VAIC™) is a method to help present and calculate information about value creation fromtangible assets andintangible assets of the company. This model is relatively easy and very possible to do because it is compiled from the accounts in the financial statements (balance sheet, income statement).

Pulic states that the two key resources that create added value in the company are human capital and structural capital. This model starts with the company's ability to create Value Added (VA). VA is obtained from the difference between output and input (Utama, 2018).  In calculating the VAIC™ method, the VAIC™ model starts with the company's ability to create Value Added (VA).

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Value Added is the term for the company's ability to create Value Creation.VA is influenced by the Value Added formula which is as follows:

VA = OUT - IN

> Where:
> OUT= Total Sales and Revenue
> IN= Selling Expenses and other expenses other than employee expenses

The important thing about this formula is that employee expenses are not included in selling expenses and other expenses other than employee expenses IN. Because of its active role in the value creation process , Intellectual potential (proxied by labour expense) is not counted as a cost. Therefore, the most important aspect of Pulic's model is to treat labour as avalue creating entity.

After calculating VA, the next step is to calculate Value Added Capital Employed (VACA). VACA is a ratio that shows the contribution of CE to the organisation's Value Added, where the formula is as follows:

> VACA = VA/CE
> Where:
> VACA: Value Added Capital Employed
> VA = Value Added

CE= Capital Employed, available funds. In the form of Equity, net income Then calculate Value Added Human Capital (VAHU). VAHU is a ratio that shows the contribution of HC to the organisation's Value Added. Where the formula is as follows:

> VAHU = VA/HC
> Where:
> VAHU= Value Added / Human Capital
> VA= Value Added
> HC = Human Capital, in the form of employee salary expenses

Then calculate Structural Capital Value Added (STVA). STVA is a ratio used to measure the amount of SC needed to produce VA. Where the formula is as follows:

> STVA = SC/VA
> Where:
> STVA = Structural Capital Value Added
> SC = Structural Capital, (VA-HC)
> VA = Value Added.
> After calculating the three formulas, VACA; VAHU; STVA, the next step is to add up these components, namely:
> VAICtm = VACA+VAHU+STVA

So that the final result of the whole method can be concluded VAICtm can describe the intellectual ability of the organisation.

3.  Management Structure

Managerial ownership is share ownership by company management as measured by the percentage of the number of shares owned by management. According to Munisi et al. (2014), the size of the amount of managerial share ownership in the company can indicate the existence of a common interest(congruance) between management and shareholders. Managers who have share ownership in the company will tend to act in accordance with the interests of shareholders because there is a common interest between the two and a sense of ownership of the company. This can minimise the occurrence of agency problems (Ella Budiarti, Chorry Sulistyowati, 2014).

$$ANAGERIAL_{it} = \frac{\text{Number of shares by manager it}}{\text{Number of shares outstanding it}} \times 100\%$$

The population used is industrial sector companies listed on the Indonesia Stock Exchange for the 2017-2021 period which are listed on the Indonesia Stock Exchange there are 50 companies in 2021. The sample is part of the number and characteristics possessed by the population (Sugiyono, 2019). The method used in selecting samples is purposive sampling method. The data analysis technique in this study uses statistical calculations. The data analysis technique used uses the Eviews Serie 9 application. The data analysis technique used in this study uses panel data regression. Panel or poll data is a combination of cross-section and time series type data, where a number of variables are observed over a number of categories and collected within a certain period of time. A special feature of time series data is a numeric sequence where the interval between observations or a number of variables is constant and fixed, while cross section data is a unit of analysis at a certain point with observations of a number of variables. In the panel data model, the model equation using cross section data can be written as follows:

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$Y_i = \alpha + \beta X_i + \varepsilon_i$, i= 1,2,...N

Where N is the number of cross section data. While the model equation with time series can be written as follows

$Y_i = \alpha + \beta X_i + \varepsilon_i$, i = 1,2,...T

With T is the number of time series data. So that the panel data equation which is a combination of cross section and time series equations can be written as follows:

$Y_{it} = \alpha + \beta X_i + \varepsilon_i$, i = 1,2,...N;t = 1,2,...T

Where Y is the dependent variable, X is the independent variable, N is the number of observations, T is the amount of time, and N x T is the amount of panel data. So that the equation in this study becomes as follows:

$SP_{it} = a + \beta_1 RM_{(it)} + \beta_2 IC_{(it)} + \beta_3 MS_{(it)} + \varepsilon_{(it)}$

Description::

SP = *Sustainability Performance*

RM = *Risk management*

IC = *Intellectual Capital*

MS = *Management Structure*

α = Constant

β1,β2……βn = Regression Coefficient

i = Observed company (cross section)

t = Research period (*time series*)

ε = *Error term*


**RESULTS**

This industrial sector includes Building Products & Supplies, Electrical Components & Equipment, Construction Machinery & Heavy Vehicles, Industrial Machinery & Components, Commercial Printing, Office Supplies, Business Support Services, Research & Consulting, Multisector Holding Services The data that will be used in this study are Annual report data, sustainability reports, and financial reports from industrial companies listed on the Indonesia Stock Exchange (IDX) for the period 2017-2021. Table 1. Sample Selection Process and Results Based on Criteria;


**Table 1. Process and Results of Sample Selection Based on Criteria**

| No. | Information | Total |
|---|---|---|
| 1. | Industrial companies listed on the Indonesia Stock Exchange during the period 2017 - 2021. | 50 |
| 2. | Industrial companies that publish financial reports consecutively for the period 2017 - 2021. | (13) |
| 3. | Industrial companies that use rupiah currency in financial statements during the 2017-2021 period. | (2) |
| 4. | Industrial companies on the Indonesia Stock Exchange that have complete data relating to the required variables for the period 2017 - 2021. | 35 |
| | Samples used | 35 |
| | Number of years of observation (2017-2021) | 5 |
| | Number of samples during the study period | 175 |

*Source: Research Data, 2023*


An overview of the variables in this study can be presented in table 2 below:

**Table 2. Descriptive Statistical Results**

| | SP | RM | IC | MS |
|---|---|---|---|---|
| Mean | 3.387249 | 2.224945 | 2.732165 | 0.044727 |
| Median | 2.545000 | 1.997400 | 2.600200 | 0.000500 |
| Maximum | 51.19710 | 16.39430 | 9.935600 | 0.397700 |
| Minimum | -16.23360 | -5.332500 | 0.092200 | 0.000000 |
| Std. Dev. | 5.429531 | 1.808910 | 1.366218 | 0.093919 |
| Skewness | 5.968833 | 3.820460 | 2.518015 | 2.552432 |

| Kurtosis | 50.02930 | 29.81426 | 12.78921 | 8.594264 |
|---|---|---|---|---|
| Jarque-Bera | 17166.50 | 5668.457 | 883.6781 | 418.2167 |
| Probability | 0.000000 | 0.000000 | 0.000000 | 0.000000 |
| Sum | 592.7686 | 389.3653 | 478.1288 | 7.827300 |
| Sum Sq. Dev. | 5129.487 | 569.3553 | 324.7801 | 1.534816 |
| Observations | 175 | 175 | 175 | 175 |

*Source: Research Data, 2023*

Shows that the number of observations (obs = observations) in the research of industrial sector companies is 175 from 35 companies with a period of 2017-2021. Sustainability performance in this study has a mean value of 3.387249, a median value of 2.545000, a maximum value of 51.19710 at PT Perdana Bangun Pusaka Tbk in 2020, a minimum value of -16.23360 at Perdana Bangun Pusaka Tbk in 2017, a standard deviation of 5.429531, a sum value of 592.7686, a swekness of 5.968833 and a kurtosis of 50.02930. This means that if the mean (average) value of a data set is smaller than the standard deviation, this indicates that the data distribution tends to lean towards lower values. This implies that the data tends to have low values overall and has significant variation around its mean.

In the Risk Management variable, this study has a mean value of 2.224945, a median value of 1.997400, a maximum value of 16.39430 in Cahayaputra Asa Keramik Tbk. 2021, minimum value of -5.332500 in Tira Austenite Tbk in 2019, standard deviation of 1.808910, sum value of 389.3653, swekness of 3.820460 and kurtosis of 29.81426. The descriptive analysis results show a mean value that is smaller than the standard deviation value. This means that if the mean (average) value of a data set is greater than the standard deviation, this indicates that the data distribution tends to lean towards lower values. This implies that the data tends to have low values overall and has significant variation around its mean.

In the Intellectual Capital variable, this study has a mean value of 2.732165, a median value of 2.600200, a maximum value of 9.935600 at Shield On Service Tbk in 2019, a minimum value of 0.092200 at Mark Dynamics Indonesia Tbk in 2017, a standard deviation of 1.366218, a sum value of 478.1288, a swekness of 2.518015 and a kurtosis of 12.78921. The descriptive analysis results show a mean value that is greater than the standard deviation value. This means that if the mean (average) value of a data set is greater than the standard deviation, this indicates that the data distribution tends to lean towards higher values, this implies that the data tends to have high values overall and has significant variation around its average.

In the Management Structure variable, this study has a mean value of 0.044727, a median value of 0.000500, a maximum value of 0.397700 in Impack Pratama Industri Tbk in 2019, a minimum value of 0.000000 in Voksel Electric Tbk in 2017, a standard deviation of 0.093919, a sum value of 7.827300, a swekness of 2.552432 and a kurtosis of 8.594264. The descriptive analysis results show a mean value that is smaller than the standard deviation value. This means that if the mean (average) value of a data set is greater than the standard deviation, this indicates that the data distribution tends to lean towards lower values. This implies that the data tends to have low values overall and has significant variation around its mean.

After conducting descriptive statistical analysis, a panel data model selection test is then carried out where data is collected from the same observation unit repeatedly within a certain period of time.

**Table 3. Chow Test Results**

| Effects Test | Statistic | d.f. | Prob. |
|---|---|---|---|
| Cross-section F | 1.876932 | (34,137) | **0.0060** |
| Cross-section Chi-square | 66.921144 | 34 | 0.0006 |

The chow test results can be seen that the chow test results show the cross sections F value of 0.0060 and based on the hypothesis if the cross-section probability <0.05 then H0 is rejected and Ha is accepted, meaning this study uses a fixed effect approach.

**Table 4. Hausman Test Results**

| Test Summary | Chi-Sq. Statistic | Chi-Sq. d.f. | Prob. |
|---|---|---|---|
| Cross-section random | 10.681391 | 3 | 0.0136 |

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The results of the hausman test table above, it can be seen that the hausman test results show a random cross section value of 0.0136. and based on the condition that the value of 0.0136 <0.05, then H0 is rejected, with the conclusion that the right model is fixed effect.

After conducting the model selection test, the next stage is to carry out a classical assumption test, which shows that the regression model has met the classical assumption test which includes normality test, autocorrelation test, heteroscedasticity test, and multicollinearity test. In this study no classical assumption symptoms were found. Panel data regression analysis test with fixed effect model which obtained the following results

**Table 5. Panel Data Regression Analysis Test Results (Fixed Effect)**

Cross-sections included: 35
Total panel (balanced) observations: 175

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|---|---|---|---|---|
| C | -2.534070 | 1.580577 | -1.603257 | **0.1112** |
| RM | 2.839399 | 0.142566 | 19.91636 | **0.0000** |
| IC | -0.319420 | 0.543616 | -0.587584 | **0.5578** |
| SM | 10.65391 | 4.805511 | 2.217018 | **0.0283** |

| | Effects Specification | | | |
|---|---|---|---|---|
| Cross-section fixed (dummy variables) | | | | |

| | | | | |
|---|---|---|---|---|
| R-squared | 0.790221 | Mean dependent var | 3.387249 | |
| Adjusted R-squared | **0.733565** | S.D. dependent var | 5.429531 | |
| S.E. of regression | 2.802579 | Akaike info criterion | 5.088438 | |
| Sum squared resid | 1076.059 | Schwarz criterion | 5.775648 | |
| Log likelihood | -407.2383 | Hannan-Quinn criter. | 5.367190 | |
| F-statistic | **13.04660** | Durbin-Watson stat | **1.946451** | |
| Prob(F-statistic) | **0.000000** | | | |

**Source:** Research Data, 2023

Based on the results of the coefficient of determination test (R2 test) presented in Table 5, above, shows the Adjusted R-squared value of 0.733565. it means that the independent variables in this study, namely the Risk Management, Intellectual Capital and Management Structure variables affect Sustainability Performance by 73% and 27% are influenced by other variables outside this research model.

Based on the results of the regression equation presented in Table 5, the calculated F value is 13.94778 and the prob value (F-statistic) shows 0.000000 which means that the value is smaller than the significant level or 0.000000 <0.05, it can be concluded that Risk Management, Intellectual Capital and Management Structure simultaneously affect Sustainability Performance. This shows that the regression equation used to predict Sustainability Performance is feasible to use in this study. Sustainability performance indicators have a role in helping companies and their stakeholders, especially financial institutions, to assess or assess how their production activities contribute by not reducing and disrupting sustainable development goals (Warhurst, 2002) in KA Maulida (2011).

The Sustainability Accounting Standards Board (SASB) refers to corporate activities that maintain or enhance the company's ability to create value for corporate sustainability elements used performance indicators from the GRI G3 guidelines, Sustainable Performance Indicators based on economic, environmental, and social categories. Social indicators are further categorized into Labor, Human Rights, Community, and Product Responsibility. So with the role of Risk Management, Intellectual Capital and Management Structure the company can improve the company's sustainability performance. Then several conclusions were obtained regarding the partial test (t test) between the independent variable and the dependent variable, by determining the amount of t table using the formula df = (n-k), namely 175-4 = 171, then the t table value was obtained at 1.65381 with the results obtained including:

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1. Risk Management

The t value of the Risk Management variable is 19.91636 and the t table value is 1.65381... Then the calculated t value> t table value or 19.91636> 1.65381. or the probability value on Risk Management Risk Management is 0.0000, this value is smaller than the specified significant level or 0.0000 <0.05. Based on this, it can be concluded that Risk management (Risk Management) affects Sustainability Performance. Good risk management plays an important role in strategy formulation and corporate decision making. Agency theory emphasizes the importance of decision making that is oriented towards the long-term interests of the company and the owner. In the context of sustainability performance, risk management helps identify sustainable risks and opportunities that need to be taken into account in strategic decision-making. By considering sustainability risks and opportunities, companies can develop more sustainable strategies and improve sustainability performance. Overall, agency theory views risk management as a tool to protect the interests of owners or principals, protect company assets, and create long-term value. In the context of sustainability performance, good risk management plays an important role in identifying, managing and capitalizing on sustainability risks and opportunities.

2. Intellektual Capital

The calculated t value of the Intellectual Capital variable is 0.587584 and the t table value is 1.65381.. Then the t value is < nilai t tabel atau 0.587584 < 1.65381.atau nilai probabilitas Modal Intellektual (Intellectual Capital sebesar 0.9983, nilai tersebut lebih besar dari tingkat signifikasi atau 0.5578 > 0.05. Based on this, it can be concluded that Intellectual Capital has no effect on Sustainability Performance. In this case, companies are more likely to consider external interests such as society, the environment, or the government rather than focus on developing and utilizing internal intellectual capital. This can result in a lack of attention to the management and utilization of intellectual capital to improve sustainability performance. Stakeholder theory emphasizes the influence and interaction with external stakeholder groups in achieving sustainability performance. External factors such as consumer demands, government regulations, or social pressure may be more dominant in influencing a company's sustainability performance than internal factors such as intellectual capital. This may cause the management and utilization of intellectual capital to receive less attention than it should. Stakeholder theory and intellectual capital can actually complement each other in the context of corporate sustainability performance. However, there are several reasons why stakeholder theory may not align directly with intellectual capital in its influence on sustainability performance. Stakeholder theory emphasizes the importance of considering the interests and needs of various stakeholder groups in corporate decision-making.

3. Management Structure

The calculated t value of the Management Structure variable (Management Structur) amounting to 2.217018, and the t table value is 1.65381. Then the t value is < nilai t tabel atau 2.217018 < 1.65381.atau nilai probabilitas variabel Struktur Manajemen (Management Structur) sebesar 0.0283, nilai tersebut lebih kecil dari tingkat signifikasi 0.05 atau 0.0283> 0.05. Based on this, it can be concluded that Management Structure affects Sustainability Performance. An effective management structure can ensure that sustainability considerations become an integral part of the strategic decision-making process. This allows companies to adopt sustainable strategies that are relevant to the business environment and achieve better sustainability performance. A good management structure provides a framework for coordinating and controlling company operations. In the context of sustainability performance, an effective management structure can ensure that sustainability-related responsibilities and tasks are clearly defined and well coordinated throughout the organization. As such, companies can better manage environmental and social risks, implement sustainable practices, and measure and report sustainability performance. Thus, agency theory and the influence of management structure play an important role in a company's sustainability performance. In practice, the implementation of an effective management structure, good communication between owners and managers, and strategic thinking related to sustainability in decision-making can contribute to improving the overall sustainability performance of the company. The results of this study also support agency theory, where owners expect managers to make decisions that are in the long-term interest of the company.

**CONCLUSION**

This study aims to measure the effect of risk management, intellectual capital and management structure on sustainability performance conducted in industrial companies listed on the Indonesia Stock Exchange (IDX) in 2017-2022. Based on the results of the coefficient of determination test (R2 test) presented in Table 5, above, shows the Adjusted R-squared value of 0.733565. that means the independent variables in this study, namely the Risk Management, Intellectual Capital and Management Structure variables, affect Sustainability Performance by 73% and 27% are influenced by other variables outside this research model. Based on the results of the F-statistic value, it shows that risk management, intellectual capital and management structure affect sustainability performance. Companies that apply the principles of agency theory, in managing risks effectively to protect the

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interests of owners or principals. which can affect sustainability performance. Highlighting the importance of managing intellectual resources or intellectual capital seeks to optimize the use and management of intellectual capital By utilizing and managing intellectual capital effectively, companies can improve sustainability performance. In the context of sustainability performance, an effective management structure can facilitate good risk management, development and utilization of intellectual capital, and integration of sustainable business practices throughout the organization with an appropriate management structure, companies can improve sustainability performance.

Risk Management affects Sustainability Performance. Good risk management plays an important role in strategy formulation and corporate decision making. Agency theory emphasizes the importance of decision making oriented towards the long-term interests of the company and owners, risk management helps identify sustainable risks and opportunities that need to be taken into account in strategic decision making to develop a more sustainable strategy and improve sustainability performance. Intellectual Capital has no effect on Sustainability Performance. Stakeholder theory emphasizes the influence and interaction with external stakeholder groups in achieving sustainability performance. External factors such as consumer demands, government regulations, or social pressure are more dominant in influencing the company's sustainability performance than internal factors such as intellectual capital. With the utilization of intellectual capital, it does not get the attention it should. Stakeholder theory and intellectual capital can actually complement each other in the context of corporate sustainability performance. Management Structure affects Sustainability Performance. An effective management structure can ensure that sustainability considerations become an integral part of the strategic decision-making process to achieve better sustainability performance. A good management structure provides a framework for coordinating and controlling company operations. Thus, companies can manage environmental and social risks, implement sustainable practices.

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