

Uploaded : June 2024

Accepted : November 2024

Published : December 2024

GREEN INNOVATION, GREEN INTELLECTUAL CAPITAL, AND ORGANIZATIONAL GREEN CULTURE ON COMPETITIVE ADVANTAGE: EVIDENCE FROM HIGH-PROFILE SECTOR COMPANIES IN INDONESIA

Rosiyana Dewi^{1*}, Salwa Utami Ananda²¹rosiyana@trisakti.ac.id, ²salwautamia@gmail.com^{1,2}Universitas Trisakti

*Corresponding author

Abstract

This research aims to assess the effects of Green Innovation, Green Intellectual Capital, and Organizational Green Culture on Competitive Advantage. A quantitative approach is used, relying on secondary data. The sample consists of companies listed on the Indonesia Stock Exchange that have a high-profile status in sectors including energy, basic materials, industrials, consumer non-cyclical, consumer cyclical, and healthcare from 2020 to 2022. Purposive sampling was employed to select the sample. Over the last three years, 55 companies contributed to a total of 165 research samples. The study utilized panel data regression analysis with the help of Econometric Views (EViews) 12 software. The results show that Green Innovation, Green Relational Capital, and Organizational Green Culture have a positive impact on Competitive Advantage. Conversely, Green Human Capital and Green Structural Capital did not have an effect on the company's Competitive Advantage.

Keywords: Competitive Advantage, Green Innovation, Green Intellectual Capital, Organizational Green Culture.

Abstrak

Penelitian ini bertujuan untuk mengetahui pengaruh Green Innovation, Green Intellectual Capital, dan Organizational Green Culture terhadap Competitive Advantage. Metode yang digunakan dalam penelitian ini adalah kuantitatif dengan memanfaatkan data sekunder. Sampel penelitian diambil dari perusahaan-perusahaan yang terdaftar di Bursa Efek Indonesia (BEI) dan memiliki status high profile di sektor energi, bahan dasar, konsumen non-siklikal, konsumen siklikal, dan kesehatan antara tahun 2020 hingga 2022. Teknik pengambilan sampel yang digunakan adalah purposive sampling. Selama tiga tahun, 55 perusahaan memberikan total 165 sampel penelitian. Pengujian hipotesis dilakukan melalui analisis regresi data panel dengan menggunakan perangkat lunak Eviews 12. Berdasarkan hasil pengolahan ditemukan bukti bahwa Green Innovation, Green Relational Capital, dan Organizational Green Culture berpengaruh positif terhadap Competitive Advantage, sedangkan variabel Green Human Capital dan Green Structural Capital tidak berpengaruh terhadap Competitive Advantage.

Kata Kunci: Competitive Advantage, Green Innovation, Green Intellectual Capital, Organizational Green Culture.



Cited this as: Dewi, R., Ananda, S.U. 2024. Green Innovation, Green Intellectual Capital, and Organizational Green Culture on Competitive Advantage: Evidence From High-Profile Sector Companies in Indonesia. *Equity*, 27(1), 72-95. doi.org/10.34209/equ.v27i1.8116

INTRODUCTION

Every company must be able to compete with its current competitors as the era of globalization and industrial revolution 4.0 progress simultaneously. Therefore, more and more problems will be faced in increasingly tight business competition. Apart from the development of the era of globalization and industrial development, the issue that is becoming the focus in the world today is concern for the environment. This issue was also discussed at the 2022 G20 Summit in Bali. After the G20 Summit in Bali in November 2022, all countries are competing and vying to find and attract investors. This is due to economic uncertainty in 2023, forcing the government to collect funds from investors (national tempo, 2023). Apart from economic uncertainty, some companies in Indonesia commit violations related to environmental pollution. One example is the environmental pollution violation committed by PT Xingye Logam Indonesia (XLI) in Serang, Banten. B3 waste from the company's activities is also disposed of without exceptional management, thereby polluting the environment (Kompas, 2023).

Economic uncertainty, competition between countries, and competition between domestic companies encourage companies in Indonesia to survive, overcome challenges, take advantage of opportunities, and pay attention to environmental issues. This requires every leader and company management to manage, plan, and control company activities. Based on research conducted by Maharani and Lestari (2020), one strategy companies can implement to face challenges and take advantage of current opportunities is increasing competitive advantage. Environmentally friendly companies have been an innovation and opportunity in recent years. Companies that lead in environmental innovation can gain a competitive advantage. According to Wang (2020) in Irwanto and Alhazami (2023), green innovation is an improvement in technology that saves energy, prevents pollution, and involves environmentally friendly design. In the new economic era, intangible assets such as intellectual capital have become one of the critical factors for gaining a competitive advantage. Intellectual capital will always be greater than financial or financial capital (Chen, 2008). Intellectual capital that involves the natural environment is called green intellectual capital. According to Wang (2019), the outcome of competitive advantage depends on how willing a company is to engage in environmentally friendly cultural activities such as organizational green culture.

The target population in this research is high-profile companies. Because high profile companies are companies with a high level of sensitivity to the environment and have a strong level of competitiveness or companies that receive more attention from the public for company operational activities that have the potential to be related to the interests of the wider community (Pratama dan Risma, 2022). Energy sector companies are the first largest producers of carbon gas emissions. The use of non-renewable energy sources has caused the release of at least 17.5 billion tons of carbon dioxide emissions (majalahcsr, 2022). In addition, according to the Ministry of Environment and Forestry (KLHK), in 2021, Indonesia will produce around 60 million tons of hazardous and toxic waste (B3). Based on sources, most B3 waste is produced by manufacturing companies (databoks, 2022). Based on the phenomena that occur, and the data described above, the population

that will be used is manufacturing and mining companies, which are classified as high-profile industrial companies. The names of the high-profile company sectors used in this research follow the latest IDX classification, namely the energy sector, basic materials, industrials, consumer non-cyclical, consumer cyclical, and healthcare.

This research is a development of research by Barforoush et al. (2021), who examine the influence of green innovation on competitive advantage. This research is different from the research of Barforoush et al. (2021) by adding green intellectual capital and organizational green culture variables. The green intellectual capital variable is taken from research by Dewi et al. (2021), Susandya et al. (2019), and Yusoff et al. (2019), which examined the influence of green intellectual capital on competitive advantage. The organizational green culture variable was taken from research by Wang (2019), which examined the influence of organizational green culture on competitive advantage. This research uses control variables, namely firm size, and financial performance, which are proxied by Return on Assets.

There are other differences between this research and previous research. Previously, research adopted qualitative methods, while this research will use quantitative methods. The use of data is also different; previous research used primary data, while this research will use secondary data. In addition, the research period will cover 2020 to 2022, different from previous research that only involved 2020. The research object in the previous research was oil refining companies in Iran. In contrast, in this research, the samples are high-profile companies. This research will test two models. The difference between these two models is that the green intellectual capital variable is combined in the first model and separated into three variables namely green human capital, green structural capital, and green relational capital in the second model. This research reviews the theoretical and practical implications these variables can provide for interested parties. Based on the background described by the phenomena that have occurred, and the results of previous research with different results (research gap), the researcher is interested in conducting this research.

LITERATURE REVIEW

Resources-based view theory (RBV) is used as a reference in analyzing a company's competitive advantage based on intangible assets by emphasizing economic superiority and knowledge. RBV theory is a resource-based theory discovered by Penrose in 1959. Penrose said that companies generally have heterogeneous, not homogeneous, resources. Penrose also said that their productive services come from company resources, giving each company unique characteristics (Kor & Mahoney, 2004). According to RBV theory, companies gain a competitive advantage by owning, controlling, and utilizing important strategic assets. These advantages consist of rare resources that are difficult to imitate and irreplaceable, making them impossible to purchase or imitate (Wernerfelt, 1984).

The interaction between a company and its public is the focus of legitimacy theory. Legitimacy theory indirectly requires an organization to carry out its operational activities by continuously complying with the rules or norms that apply in the community environment where these activities occur, no matter what

(Deegan, 2009). According to (Deegan, 2009), from the legitimacy theory perspective, it should be fine if a company reports its operational activities if management feels that society or the surrounding community wants it. Legitimacy has a primary reference, namely, the "social contract" between the company and the local community. Some literature shows that companies often try to gain and maintain legitimacy by reporting corporate social and environmental information (Deegan et al., 2002; Kilian & Hennigs, 2014; Milne & Patten, 2002; Patten & Zhao, 2014).

Stakeholder theory explains that an organization does not only carry out activities to achieve planned goals; the organization carries out activities to embrace its stakeholders (as society, government, customers, investors, vendors, employees, and other parties who have influence) to provide a positive impact. Therefore, parties attached to a company are very influential on the success of an organization (Ghozali and Chariri, 2007). This theory emphasizes meeting stakeholders' needs and expectations as well as effectively managing potentially conflicting interests between different stakeholders (Ngatia, 2014).

Competitive advantage, as defined by Porter (1985), shows a company's ability to achieve more significant financial benefits than its competitors in the same market and industry. According to Li et al. (2006), competitive advantage refers to a company's ability to create unique value or advantages that other companies cannot imitate. The essence of competitive advantage, as emphasized in Maharani and Lestari's (2020) research, lies in implementing this general strategy effectively. The core elements of competitive advantage include resource diversity, value, rarity, and inimitability.

Green innovation is a technical procedure, system, and technological practice used by a company to reduce the negative impact of its operations on the environment (Dewi and Rahmianingsih, 2020). This effort aims to reduce environmental damage arising from company activities and positively contributes to business sustainability. Companies that adopt green innovation are considered to have strong environmental responsibility and the ability to use resources efficiently, increasing investor confidence and company value. It gives a positive signal to the capital market from the company side (Xie et al., 2022). Green innovation can help companies become more competitive and reduce negative environmental impacts. This attracts the attention of investors concerned about environmental issues, improves the company's reputation, and provides significant added value that differentiates it from competitors.

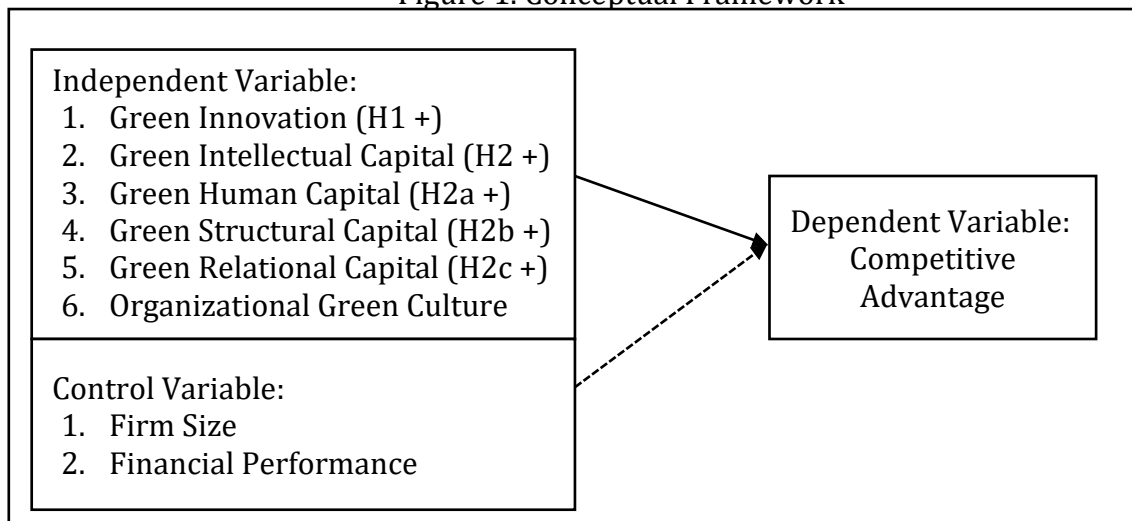
Intellectual capital that involves the natural environment is called green intellectual capital (Yusoff, Omar, & Kamarudin, 2019). The concept of green intellectual capital incorporates environmental elements into intellectual capital to overcome previous limitations in overcoming environmental problems. According to Chen (2008), the classification of green intellectual capital consists of green human capital, green structural capital, and green relational capital. According to Chen (2008), green human capital is employee knowledge of green innovation supported by their abilities, skills, behavior, wisdom, creativity, experience, and commitment. The definition of green structural capital is A company with capabilities related to green innovation or environmental protection with several supporting components, namely management philosophy and knowledge,

databases, information technology, operational processes, managerial strategies, culture, image, copyright, trademarks, patents, and commitment Chen (2008). Green relational capital includes all two-way relationships concerning green innovation and corporate environmental management between a company and its customers, suppliers, network members, and business partners Chen (2008).

Organizational culture can be defined as a collection of beliefs that direct attitudes to be appropriate in various situations when an organization/company acts (Ravasi & Schultz, 2006). Apart from that, there is a culture that pays attention to environmental preservation as its focus and priority, which can be called an environmentally oriented organizational culture (organizational green culture). An environmentally oriented organizational culture (organizational green culture) is a crucial component and can become an identity when a company achieves its goals of improving environmental performance (Egri & Herman, 2000; Fernández et al., 2003; Sharma, 2000) in Firmansyah (2017).

A conceptual framework in Figure 1, describes the relationship between green innovation, green intellectual capital, and organizational green culture as independent variable, and the dependent variable is competitive advantage and also control variable in this reasearch are firm size and financial performance

Figure 1. Conceptual Framework



Source: Processed by researches, 2023

The Influence of Green Innovation on Competitive Advantage

Environmentally friendly innovation practices significantly influence a company's competitiveness in an industry as a whole (Shafique et al., 2017). Companies that implement green innovation are considered environmentally responsible and know how to use their resources efficiently, which increases investor confidence and company value. This is a positive sign transmitted to the capital market by the company (Xie et al., 2022). Green innovation is related to legitimacy theory as a company's steps to increase public trust with strategic steps to produce environmentally friendly products and reduce negative environmental impacts. Apart from legitimacy theory, green innovation is also related to stakeholder theory because companies must provide benefits to stakeholders. One-

way companies must innovate by focusing on environmentally friendly innovation to achieve these benefits. This aligns with research by Barforoush et al. (2021), which states that managers need to understand that they can create better environmentally friendly innovation by effectively formulating and implementing environmentally friendly innovation strategies, creating an environmentally friendly organizational identity, and gaining legitimacy from society.

H1: Green Innovation has a positive effect on Competitive Advantage

The Influence of Green Intellectual Capital on Competitive Advantage

The concept of green intellectual capital incorporates environmental elements into intellectual capital to overcome previous limitations in dealing with environmental problems. Knowledge, wisdom, experience, and innovation are the intangible components companies possess in terms of environmental protection, enabling companies to comply with strict environmental regulations worldwide, respond to increasing environmental awareness among customers, and generate added value for the company (Chen, 2008).

According to Chen (2008), Huang & Kung (2011), and C. Chang & Chen (2012), green intellectual capital is defined as the accumulation of all intangible assets, knowledge, skills, and relationships related to innovation and environmental protection, both at the individual and organizational levels within the company. Green Intellectual Capital is related to the RBV theory, which explains that unique resources will be complex for competitors to imitate. Besides the RBV theory, green Intellectual capital is also related to stakeholder theory because when a company achieves its goals and increases its competitive advantage, it will satisfy stakeholders from the perspective of environmental preservation. In line with research by Dewi et al. (2021), investment in intangible assets helps the business world increase its environmentally friendly competitive advantage. Companies with invested resources and efforts in green intellectual capital can meet stringent international trends with environmental regulations and widespread consumer awareness and ultimately achieve corporate competitive advantage.

H2: Green Intellectual Capital has a positive effect on Competitive Advantage.

The Influence of Green Human Capital on Competitive Advantage

Green human capital reflects employee uniqueness, knowledge, skills, and experience used to increase employee environmentally friendly innovation and creativity (Yusoff et al., 2019). This helps build a company's competitive advantage because environmentally friendly innovation and company capabilities are often rooted in environmentally friendly human resources (Yusliza et al., 2020). Green human capital is related to the RBV theory, which explains that unique resources will be complex for competitors to imitate. Besides the RBV theory, green human capital is also related to stakeholder theory because when a company achieves its goals and increases its competitive advantage, it will satisfy stakeholders from the perspective of environmental preservation. In line with research by Solihin et al. (2023) trained employees, timely service, competence, reliable teamwork, and support from company management are critical factors for carrying out activities with their abilities and intellectual abilities to maintain sustainable competitiveness.

H2a: Green Human Capital has a positive effect on Competitive Advantage.

The Influence of Green Structural Capital on Competitive Advantage

Green structural capital refers to specific specifications, empowerment, and supporting infrastructure related to environmental protection or the development of sustainable strategies. A company's well-designed and well-managed environmental management system will reduce unnecessary energy and material consumption and help increase productivity (Solihin et al., 2023). Green structural capital is related to RBV theory and stakeholder theory because strategic resources will encourage companies to increase their competitive advantage and provide stakeholders with benefits from aspects of environmental preservation. In line with research by Solihin et al. (2023), the emergence of a trend in consumer awareness and the existence of strict international regulations regarding environmental protection means that all components included in green structural capital are required to increase environmental awareness.

H2b: Green Structural Capital has a positive effect on Competitive Advantage.

The Influence of Green Relational Capital on Competitive Advantage

Green relational capital is a type of strategic resource that can create value and competitive advantage for companies (Chen, 2008; Yong et al., 2019). According to RBV theory, green relational capital is often unique and valuable because it is obtained and built from unique relationships between companies and different partners (Yong et al., 2019; Yusliza et al., 2020). Green relational capital is related to the RBV theory. Apart from that, green relational capital is related to stakeholder theory. When the company's relationship with partners and customers is well established, it will be closer to achieving its goals. In line with research by Solihin et al. (2023), companies will gain a sustainable competitive advantage if they can build relationships with stakeholders based on mutual trust and good cooperation in increasing awareness to preserve the environment.

H2c: Green Relational Capital has a positive effect on Competitive Advantage.

The Influence of Organizational Green Culture on Competitive Advantage

According to research by Wang (2019) from a practical point of view, so that a company looks different from its competitors, implementing a green environmental culture for all people involved in the company is something a manager can do. Environmental organizational culture is a first step that can be taken to reference environmental problems and how to manage them (Hung Chen, 2011). Organizational green culture is related to the resource-based view theory because it focuses on unique resources, making them difficult for competitors to imitate. In line with research by Wang (2019), the RBV theory is the basis for understanding the impact of organizational green culture on achieving a company's competitive advantage. Apart from that, implementing an organizational green culture well will increase public trust and benefit stakeholders according to stakeholder theory.

H3: Organizational Green Culture has a positive effect on Competitive Advantage.

RESEARCH METHODOLOGY

In testing and knowing the influence of the independent variables, namely green innovation (X1), green intellectual capital (X2) divided into green human capital (X3), green structural capital (X4), green relational capital (X5), and organizational green culture (X6) with the dependent variable, namely competitive advantage. This research will test two models. The first model was tested with three independent variables: green innovation, green intellectual capital, and organizational green culture on the dependent variable, competitive advantage. The second model was tested with five independent variables, green innovation, green human capital, green structural capital, green relational capital, and organizational green culture, on the dependent variable, competitive advantage. The difference between these two models is in the green intellectual capital variable combined in the first model and separated into three variables in the second model.

The type of quantitative research that was chosen for this research. Control variables are also used in this research, namely by testing financial performance, which is proxied by Return on Assets (ROA), and testing company size, which is proxied by Firm Size. Researchers use types of data that researchers obtain indirectly but through intermediaries or secondary data in this research. The secondary data is contained in annual reports and sustainability reports published by the company. In this study, samples were chosen using the purposive sampling method, with selection criteria aligned with the specific requirements of the research.

The data analysis method will be carried out as panel data regression analysis. This is because this research uses a combination of data between cross-section data and time series data. Hypothesis testing with multiple regression of panel data processed using the Eviews (Econometric Views) Version 12.

Variable Measurement

The dependent variable used in this study is a competitive advantage. Competitive advantage is the dependent variable in this research. A quality that the company has planned to achieve through the company's efforts to improve its performance so that it exceeds its competitors in providing benefits in the long term is the definition of Competitive Advantage (Sanjaya & Magaline, 2021). The competitive advantage measurement used in this research uses a combination of ratios that describe the source of competitive advantage to form a new ratio called ROIC. The ROIC used in this research follows the research of Tang and Liou (2010) in Widyaningdyah and Aryani (2013). The ROIC formulation can be calculated as follows:

$ROIC = \frac{NOPLAT}{S} \times \frac{S}{IC}$
Or
$ROIC = \frac{(S - COGS - Adv - R\&D - Dep - SG\&A - Tax) / S}{(FA + AR + Inv - AP + Cash) / S}$

Source: Widyaningdyah and Aryani (2013)

The independent variables in this research are green innovation, green human capital, green structural capital, green relational capital, and green

organizational culture. Green innovation, according to C. H. Wang (2020) in research by Irwanto & Alhazami (2023), is technological progress that can reduce energy use, stop pollution, and include environmentally friendly designs. The indicators used to measure green innovation follow indicators from research Chen (2008); Chen et al. (2006); Roper & Tapinos (2016), presented in research by C.H. Wang (2019), and Awaliyah (2022), with a total of nine indicators used.

According to (Solihin et al., 2023), trained employees, timely service, competence, reliable teamwork, and support from company management are key factors that must be attached to green human capital to carry out activities with their abilities and intellectual abilities to maintain sustainable solid competitiveness. The indicators used to measure green structural capital follow the indicators from Huang & Kung's (2011) research presented in the research of Yusoff et al. (2019) with five indicators, and follow the indicators developed in the research of Dewi et al. (2021) research with one indicator. This means that the total number of indicators used is six indicators. Green structural capital refers to specific specifications, empowerment, and supporting infrastructure related to environmental protection or the development of sustainable strategies (Solihin et al., 2023). The indicators used to measure green structural capital follow the indicators from Huang & Kung's (2011) research presented in the research of Yusoff et al. (2019) with eight indicators, and follow the indicators developed in the research of Dewi et al. (2021) research with one indicator. This means that the total number of indicators used is nine indicators. According to Solihin et al. (2023), companies will gain a sustainable competitive advantage if they can build relationships with stakeholders based on mutual trust and good cooperation; therefore, environmental awareness regarding stakeholders can be used to achieve this goal. The indicators used to measure green relational capital follow the indicators from Huang & Kung's (2011) research presented in the research of Yusoff et al. (2019) with five indicators, and follow the indicators developed in the research of Dewi et al. (2021) research with one indicator. This means that the total number of indicators used is six indicators.

Organizational green culture involves symbols, social stereotypes, shared values, beliefs, and norms related to environmental management. It establishes the standards of behavior expected of every individual within the company. Therefore, in the view of organizational culture as a strategic tool, companies can gain a competitive advantage from their weaknesses, uniqueness, and organizational culture that can be imitated (Fiol, 1991) in Firmansyah (2017). The indicators used to measure organizational green culture follow the indicators from Banerjee (2002) and Fraj et al. (2011) research, which is presented in the research of C.H. Wang (2019), with a total of 6 (six) indicators used.

After knowing the indicator items that must be disclosed for each independent variable, they will be measured using content analysis with indices from research by Chandra & Augustine (2019). The subsequent measurement involves conducting a content analysis, where items disclosed by the company are assigned a score of 1, while undisclosed items receive a score of 0. The total number of disclosures is then divided by the overall number of criteria that should be reported.

Firm size and financial performance are the control variables chosen for

this research. Firm size refers to how much or how little a company owns or shows based on the number of assets, sales, profits earned, tax burden, and so on (Brigham & Houston, 2020). Firm Size uses measurements from Sari & Widodo (2022), namely LN (total assets). Financial performance is the financial position of an organization or issuer that has been analyzed using a financial analysis tool to determine whether the issuer's financial performance is good or bad, as reflected in a specific period (Gani et al., 2020). Financial performance uses measurements from Fabiola & Khusnah (2022), proxied by Return on Assets (ROA).

This test consists of four tests, namely normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test. According to Gujarati (2003); Verbeek (2014), multicollinearity tests need to be carried out on the selected Fixed Effect Model (FEM). If the model chosen in this research is the Random Effect Model (REM), which uses Generalized Least Square (GLS), it is considered free from classical assumption test problems.

The method used in this research is panel data regression analysis with equations for the regression model, accounting for one dependent variable, six independent variables, and two control variables. In this research, the panel data regression model by testing two models will be described as follows with the first model:

$$CA = \alpha + \beta_1 GI + \beta_2 GIC + \beta_3 OGC + \beta_4 SIZE + \beta_5 ROA + \varepsilon_{it}$$

And the second model:

$$CA = \alpha + \beta_1 GI + \beta_2 GHC + \beta_3 GSC + \beta_4 GRC + \beta_5 OGC + \beta_6 SIZE + \beta_7 ROA + \varepsilon_{it}$$

RESULT AND DISCUSSIONS

This research uses secondary data from company financial report data in annual reports and other data besides financial data from sustainability reports in high-profile companies in the energy, basic materials, industrials, and consumer non-cyclical sectors, consumer cyclical, and healthcare listed on the Indonesia Stock Exchange for 2020–2022. Sample selection used a purposive sampling technique. The following results of sampling using the purposive sampling technique are presented in Table 6.

The rationale for selecting high-profile companies as the target population in this study is based on their high sensitivity to environmental issues and strong competitive positioning. These companies tend to attract significant public attention regarding their operational activities, which may have substantial implications for broader societal interests (Pratama and Risma, 2022). Therefore, high-profile companies must consider environmental factors to engage investor interest and enhance their competitive advantages. Companies classified as high profile include those in the oil and gas sector, other mining industries, basic and chemical industries, forestry, paper, automotive, aviation, tobacco, culinary products, media and communications, energy (electricity), engineering, agribusiness, healthcare, as well as transportation and tourism (Suryanto, 2013, in Diansari & Ervina, 2022).

Table 6. Research Sample

Information	Number of Companies
Population:	
High-profile companies in the energy, basic materials, consumer non-cyclical, and consumer and healthcare sectors registered for the 2022 period.	406
Sample selection is based on purposive sampling:	
1. High-profile companies in the energy, basic materials, industrials, consumer non-cyclical, consumer cyclical, and healthcare sectors, which are not listed on the Indonesia Stock Exchange (IDX) respectively during the 2020-2022 period.	(91)
2. Those companies whose annual and sustainability reports are inaccessible and unavailable.	(241)
3. The company needs complete data and outlier data for the 2020-2022 period.	(19)
Number of companies that meet the criteria.	55
Number of research years from the 2020-2022 period.	3
Total research sample for the 2020-2022 period. (55 companies X 3 years).	165

Source: Data processed by researchers, 2023.

Table 7. Results of Descriptive Statistical Analysis

Variable	N	Minimum	Maximum	Mean	Std. Dev.
Competitive Advantage (Y)	165	0.027316	1.825844	0.455548	0.379228
Green Innovation (X1)	165	0.222222	0.888889	0.556229	0.172873
Green Intellectual Capital (X2)	165	0.238095	0.761905	0.523521	0.106825
Green Human Capital (X3)	165	0.166667	0.666667	0.404040	0.153053
Green Structural Capital (X4)	165	0.222222	0.888889	0.591919	0.142653
Green Relational Capital (X5)	165	0.166667	0.833333	0.540404	0.146263
Organizational Green Culture (X6)	165	0.166667	1.000000	0.513131	0.161493
Firm Size (C1)	165	719,726,855,599	413,297,000,000	34,079,437,989,491.9	57,256,536,537,580.7
Financial Performance (C2)	165	-0.045622	0.599025	0.080683	0.095810

Source: Data processed by researchers in 2023 with Eviews 12 output.

The results of descriptive statistical analysis for the first and second models are presented in table 7. The general description of the descriptive statistical analysis regarding the first and second models is that the standard deviation in both models does not exceed the mean. This means that the green intellectual capital variable as a whole or separated into three variables both have data that is not heterogeneous or has little deviation.

In this research, researchers will create two models for conducting research. The difference between the two models is in the green intellectual capital variable. In the first model, the green intellectual capital variable is not separated into three variables, as explained by Chen (2008); these three variables are examined in one variable. In the second model, green intellectual capital is separated into three variables, namely green human capital, green structural capital, and green relational capital. After conducting research, the first and second models were selected as a Random Effect Model (REM) regression model. So, it does not test classical assumptions.

Panel Data Regression Model Testing

The Chow Test

The Chow test was carried out to determine the appropriate panel data regression model between the Common Effect Model (CEM) and the Fixed Effect Model (FEM) to be used in this research.

The first and second models (1st model and 2nd model)

Based on the results of the Chow test in Table 8, it can be seen that the cross-section probability (prob) value is 0.0000 or < 0.05 , so CEM is rejected, and FEM is accepted. Therefore, the model chosen is the Fixed Effect Model (FEM) and continues the Hausman test.

The Hausman Test

The Hausman test was carried out to determine the appropriate panel data regression model between the Fixed Effect Model (FEM) and the Random Effect Model (REM) to be used in this research.

The First Model (1st model):

Based on the results of the Hausman test in Table 9, it can be seen that the cross-section random probability (prob) value is 0.0666 or > 0.05 , then FEM is rejected, and REM is accepted so that the model chosen is the Random Effect Model (REM). This test proves that the REM model is the most appropriate in this research. However, the researcher will continue the Lagrange multiplier test to obtain other considerations regarding the appropriate panel data regression model for this research.

The Second Model (2nd model):

Based on the results of the Hausman test in Table 9, the cross-section random probability (prob) value is 0.2226 or > 0.05 , then FEM is rejected, and REM is accepted so that the model chosen is the Random Effect Model (REM). This test proves that the REM model is the most appropriate in this research. However, the researcher will continue the Lagrange multiplier test to obtain other considerations regarding the appropriate panel data regression model for this research.

The Lagrange Multiplier Test

The Lagrange multiplier test is used to test whether the best model to use

is the Common Effect Model (CEM) or the Random Effect Model (REM).

The First and Second Models (1st model and 2nd model):

Based on the results of the Lagrange multiplier test in Table 10, the probability value (prob) or both Breusch-pagan is 0.0000 or < 0.05, then CEM is rejected, and REM is accepted so that the model chosen is the Random Effect Model (REM).

Conclusion of Three Selection Tests:

The First and Second Models (1st model and 2nd model):

Based on the results of selecting the panel data regression model, it shows the same results, namely the Chow test shows that the best model is the fixed effect model (FEM) compared to the Common Effect Model (CEM). Furthermore, based on the results of the Hausman test, it shows that the best model is the Random Effect Model (REM), which is better than the Fixed Effect Model (FEM). Finally, based on the results of the Lagrange multiplier test show that the best model is the Random Effect Model (REM) compared to the Common Effect Model (CEM). So, the best panel data regression model chosen in this research is the Random Effect Model (REM).

Table 8. Chow Test Results

Model	Redundant Fixed Effect Tests	Alpha	Chi-Square (Prob.)	Conclusion
1st and 2nd Models	Fixed Effect Tests	< 0.05	0.0000	Fixed Effect Model

Source: data processed by researchers in 2023 with EViews 12 output.

Table 9. Hausman Test Results

Model	Test Summary	Alpha	Chi-Square Statistic (Prob.)	Conclusion
1st	Cross-section random	> 0.05	0.0666	Random Effect Model
2nd	Cross-section random	> 0.05	0.2666	Random Effect Model

Source: data processed by researchers in 2023 with EViews 12 output.

Table 10. Lagrange Multiplier Test Results

Model	Test Hypothesis	Alpha	Breusch-Pagan (Prob.)	Conclusion
1st and 2nd Models	Breusch-Pagan	< 0.05	0.0000	Random Effect Model

Source: data processed by researchers in 2023 with EViews 12 output.

Test of Coefficient Determination (R²)

The determination coefficient test was carried out to measure the ability of the regression model to explain the dependent variable.

The First Model (1st Model):

Based on the results in Table 11, the coefficient of determination (Adjusted

R-Square) is 0.409412 or 40.94%, which can be interpreted as the variables green innovation, green intellectual capital, organizational green culture, size, and return on assets together or simultaneously can influence competitive advantage by 40.94%. Other variables or factors explain the remaining 59.06%.

The Second Model (2nd Model):

Based on the results in Table 11, the coefficient of determination (Adjusted R-Square) is 0.425151 or 42.51%, which can be interpreted as the variables green innovation, green human capital, green structural capital, green relational capital, organizational green culture, size, and return on assets together or simultaneously can influence competitive advantage by 42.51%. Other variables or factors explain the remaining 57.49%.

Test of Simultaneous Significance (F-Test)

The F statistical test is carried out to identify whether the regression model used is appropriate or not in explaining the influence of the independent variable on the dependent variable.

The First Model (1st Model):

Based on the results in Table 12, it can be seen from the F_{count} value is 23.73784 with a probability value of 0.000000, where this value is smaller than 0.05 (0.000000 < 0.05), so it can be concluded that the independent variable is green innovation, green intellectual capital, organizational green culture, and the control variables of firm size and financial performance together (simultaneously) influence competitive advantage.

The Second Model (2nd Model):

Based on the results in Table 12, it can be seen from the F_{count} value is 18.32746 with a probability value of 0.000000, where this value is smaller than 0.05 (0.000000 < 0.05), so it can be concluded that the independent variable is green innovation, green human capital, green structural capital, green relational capital, organizational green culture, and the control variables of firm size and financial performance together (simultaneously) influence competitive advantage.

Table 11. Result of Coefficient Determination Test

Model	Predictors	Adjusted R-Square
1st	(Constants), Green Innovation (X1), Green Intellectual Capital (X2), Organizational Green Culture (X3), Size (C1), ROA (C2).	0.409412
2nd	(Constants), Green Innovation (X1), Green Human Capital (X2), Green Structural Capital (X3), Green Relational Capital (X4), Organizational Green Culture (X5), Size (C1), ROA (C2).	0.425151

Source: Data processed by researchers in 2023 with Eviews 12 SV output.

Test of Partial Significance (T-Test)

The T statistical test is carried out to explain the behavior of the independent variable in influencing the dependent variable. As previously

explained, two testing models were carried out in this research. There are few differences between the first and second models, only in the green intellectual capital variable. In the first model, the green intellectual capital variable is not separated into three variables, and the data used is the total disclosure of green human capital, green structural capital, and green relational capital indicators and then divided by the total that the company should disclose. In the second model, the green intellectual capital variable is separated into three variables: green human capital, green structural capital, and green relational capital.

Table 12. Result of Simultaneous Significance Test (F-Test)

Model	F-Statistic	Prob (F-statistic)	Conclusion
1st	23.73784	0.000000	Simultaneous Influence
2nd	18.32746	0.000000	Simultaneous Influence

Source: Data processed by researchers in 2023 with Eviews 12 SV output.

Based on the results of the statistical T-Test of the first model in Table 13, the results of the panel data regression analysis can be described as follows:
 $CA = -0.977003 + (0.353373) GI + (0.538632) GIC + (-0.503920) OGC + (0.017625) SIZE + (1.998352) ROA + \varepsilon$

Based on the results of the panel data regression analysis in the table above, it can be interpreted as follows: firstly, the constant value of the competitive advantage is -0.977003, indicating that if the five independent variables have a value of 0 (zero), then the competitive advantage will decrease by 0.977003. The coefficient value on the green innovation variable is 0.353373. It is positive, meaning that if the green innovation variable increases by 1 unit, the competitive advantage variable will increase by 0.353373. The significance obtained is 0.0190, which is smaller than alpha 5% or (0.0190 < 0.05), so it can be interpreted that H1 is accepted. The coefficient value of the green intellectual capital variable is 0.538632. It is positive, meaning that if the green human capital variable increases by 1 unit, the competitive advantage variable will increase by 0.538632. The significance value obtained is 0.4810, which is smaller than 0.05 (0.0205 < 0.05), so it can be interpreted that H2 is accepted. The coefficient value of the organizational green culture variable is 0.538632. It is positive, meaning that if the organizational green culture variable increases by 1 unit, the competitive advantage variable will increase by 0.538632. The significance obtained is 0.0067, which is smaller than 0.05 (0.0067 < 0.05), so it can be interpreted that H3 is accepted.

The coefficient value of the company size variable is 0.017625. It is positive, meaning that if the company size variable increases by 1 unit, the competitive advantage variable will increase by 0.017625. The significance obtained is 0.2491, greater than 0.05 (0.2491 > 0.05), so it can be partially interpreted that the company size variable does not affect competitive advantage. Lastly, the coefficient value of the financial performance variable is 1.998352. It is positive, which means that if the organizational green culture variable increases by 1 unit, the competitive advantage variable will increase by 1.998352. The significance value obtained is 0.0000, which is smaller than 0.05 (0.0000 < 0.05), so it can be interpreted that the financial performance variable partially influences competitive advantage.

Table 13. Results of Partial Significance Test (T-Test) in 1st Model

Variable	β	T-Statistic	Sig (one-tailed)	Conclusion
1st Model:				
Constanta	-0.977003	-1.321481	0.0941	
Green innovation	0.353373	2.091181	0.0190	H1 is Accepted
Green Intellectual Capital	0.538632	2.061155	0.0205	H2 is Accepted
Organizational Green Culture	0.538632	2.502269	0.0067	H3 is Accepted
Firm Size	0.017625	0.679104	0.2491	
Financial Performance	1.998352	9.871978	0,0000	

Source: Data processed by researchers in 2023 with Eviews 12 SV output.

Based on the results of the statistical T-Test, the second model in Table 14, the results of the panel data regression analysis can be described as follows:

$$CA = -0.922415 + (0.299494) GI + (0.008624) GHC + (-0.044796) GSC + (0.635152) GRC + (0.504807) OGC + (0.015516) SIZE + (2.006281) ROA + \varepsilon$$

Based on the results of the panel data regression analysis in the table above, it can be interpreted as follows: firstly, the constant value of the competitive advantage is -0.922415, indicating that if the five independent variables have a value of 0 (zero), then the competitive advantage will decrease by 0.922415. The coefficient value on the green innovation variable is 0.299494. It is positive, meaning that if the green innovation variable increases by 1 unit, the competitive advantage variable will increase by 0.299494. The significance obtained is 0.0391, which is smaller than alpha 5% or (0.0391 < 0.05), so it can be interpreted that H1 is accepted. The coefficient value of the green human capital variable is 0.008624. It is positive, meaning that if the green human capital variable increases by 1 unit, the competitive advantage variable will increase by 0.008624. The significance value obtained is 0.4810, which is greater than 0.05 (0.4810 > 0.05), so it can be interpreted that H2a is rejected. The coefficient value of the green structural capital variable is -0.044796. It is negative, meaning that if the green structural capital variable decreases by 1 unit, the competitive advantage variable will decrease by 0.044796. The significance obtained is 0.4203, which is greater than 0.05 (0.4203 > 0.05), so it can be interpreted that H2b is rejected. The coefficient value of the green relational capital variable is 0.635152. It is positive, meaning that if the green relational capital variable increases by 1 unit, the competitive advantage variable will increase by 0.635152. The significance value obtained is 0.4810, which is smaller than 0.05 (0.0012 > 0.05), so it can be interpreted that H2c is accepted. The coefficient value of the organizational green culture variable is 0.504807. It is positive, meaning that if the organizational green culture variable increases by 1 unit, the competitive advantage variable will increase by 0.504807. The significance obtained is 0.0062, which is smaller than 0.05 (0.0062 < 0.05), so it can be interpreted that H3 is accepted.

The coefficient value of the company size variable is 0.015516. It is positive, meaning that if the company size variable increases by 1 unit, the competitive advantage variable will increase by 0.015516. The significance obtained is 0.2766, greater than 0.05 (0.2766 > 0.05), so it can be partially interpreted that the company

size variable does not affect competitive advantage. Lastly, the coefficient value of the financial performance variable is 2.006281. It is positive, which means that if the organizational green culture variable increases by 1 unit, the competitive advantage variable will increase by 2.006281. The significance value obtained is 0.0000, which is smaller than 0.05 ($0.0000 < 0.05$), so it can be interpreted that the financial performance variable partially influences competitive advantage.

Table 14. Result of Partial Significance Test (T-Test) in 2nd Model

Variable	β	T-Statistic	Sig (one-tailed)	Conclusion
2nd Model:				
Constanta	-0.922415	-1.243975	0.1077	
Green innovation	0.299494	1.773653	0.0391	H1 is Accepted
Green Human Capital	0.008624	0.180239	0.4810	H2a is Rejected
Green Structural Capital	-0.044796	-0.201639	0.4203	H2b is Rejected
Green Relational Capital	0.635152	3.083978	0.0012	H2c is Accepted
Organizational Green Culture	0.504807	2.528708	0.0062	H3 is Accepted
Firm Size	0.015516	0.594279	0.2766	
Financial Performance	2.006281	9.925728	0.0000	

Source: Data processed by researchers in 2023 with Eviews 12 SV output.

The Influence of Green Innovation on Competitive Advantage

Based on the test results from panel data regression analysis and hypothesis testing, the green innovation variable has a positive and significant effect on competitive advantage, so the first hypothesis in this research is accepted. The test results on both models produce the same results, that green innovation have a significant positive influence on competitive advantage. According to the results of previous research conducted by Barforoush et al. (2021), Awaliyah and Haryanto (2022), green innovation has a positive and significant effect on competitive advantage. This research is in line with Barforoush et al. (2021), who stated that green innovation can encourage companies to achieve various goals, one is increasing market share through increasing public interest to increase the company's competitive advantage. In legitimacy theory, companies have demonstrated commitment to environmental protection, preservation, and management. The company has also carried out its social responsibilities, which are considered to gain community support and recognition. By managing waste well, using environmentally friendly packaging, reducing energy consumption, and using cleaner technology to prevent pollution, companies can reduce the environmental's negative impact due to their operational activities.

The Influence of Green Intellectual Capital on Competitive Advantage.

Based on the first model test results from panel data regression analysis and hypothesis testing carried out in this research, it shows that green intellectual

capital has a positive and significant effect on competitive advantage, so this research accepted the second hypothesis. This statement is not by previous research conducted by Dewi et al. (2021); and Chen (2008), which shows that green intellectual capital influences competitive advantage. In line with previous research by Dewi et al. (2021), investment in intangible assets helps the business world increase its environmentally friendly competitive advantage. Companies with invested resources and efforts in green intellectual capital can meet stringent international trends with environmental regulations and widespread consumer awareness and ultimately achieve corporate competitive advantage. In RBV theory, companies have demonstrated ownership of unique and valuable intangible assets because they are obtained and built from unique relationships between the company and different partners. Apart from that, in stakeholder theory, the company has demonstrated that its relationship with partners and customers is well established so that it can provide benefits to its stakeholders.

The following hypothesis test is the influence of green intellectual capital, divided into green human capital, green structural capital, and green relational capital, on competitive advantage. These three dimensions have different responses, which are reflected in competitive advantage.

The Influence of Green Human Capital on Competitive Advantage

Based on the second model test results from panel data regression analysis and hypothesis testing carried out in this research, it shows that green human capital does not affect competitive advantage, so this research rejects the second hypothesis part a. This statement is not by previous research conducted by Dang and Wang (2022); Solihin et al. (2023); and Susandya et al. (2019), which shows that green human capital influences competitive advantage. However, this statement is based on previous research by Augustine (2019), and Firmansyah (2017), which shows that green human capital does not affect competitive advantage. In line with what Firmansyah (2017) said, the application of environmental knowledge, management, and environmental protection by organizations or company/organization leaders still needs to be considered a priority in company/organization business. These results are different from RBV theory and stakeholder theory because green human capital has not been able to influence competitive advantage.

The Influence of Green Structural Capital on Competitive Advantage

Based on the second model test results from panel data regression analysis and hypothesis testing carried out in this research, it shows that green structural capital does not affect competitive advantage, so this research rejects the second hypothesis part b. This statement is not by previous research conducted by Dang and Wang (2022); Solihin et al. (2023); Susandya et al. (2019); and Firmansyah (2017), which shows that green structural capital influences competitive advantage. However, this statement is consistent with previous research conducted by Augustine (2019), which shows that green structural capital does not affect competitive advantage. According to Yusoff et al. (2019), the company is still in the early stages of developing an introduction to the application of green structural capital; in other words, it still has a long way to go to change the company structure

to one that is more attached to environmental management, even though a high commitment to environmental protection is believed to improve the company's image. These results are different from RBV theory and stakeholder theory because green structural capital has not been able to influence competitive advantage.

The Influence of Green Relational Capital on Competitive Advantage

Based on the second model test results from panel data regression analysis and hypothesis testing carried out in this research, it shows that green relational capital has a positive and significant effect on competitive advantage, so the second hypothesis part c in this research is accepted. This statement is by previous research conducted by Dang and Wang (2022); Solihin et al. (2023); and Firmansyah (2017) show that green relational capital influences competitive advantage. In line with research by Solihin et al. (2023), companies will gain a sustainable competitive advantage if they can build relationships with stakeholders based on mutual trust and good cooperation; therefore, environmental awareness regarding stakeholders can be used to achieve this goal. In RBV theory, companies have demonstrated ownership of unique and valuable intangible assets because they are obtained and built from unique relationships between the company and different partners. Apart from that, in stakeholder theory, the company has demonstrated that its relationship with partners and customers is well established so that it can provide benefits to its stakeholders.

The Influence of Organizational Green Culture on Competitive Advantage

Based on the test results from panel data regression analysis and hypothesis testing carried out in this research, it shows that organizational green culture has a positive and significant effect on competitive advantage, so the third hypothesis in this research is accepted. The test results on both models produce the same results, that organizational green culture has a significant positive influence on competitive advantage. This statement is by previous research conducted by Gürlek and Tuna (2018), and Wang (2019) shows that organizational green culture influences competitive advantage. This is in line with research conducted by Wang (2019), the results of competitive advantage depend on how high a company intends to engage in environmentally friendly cultural activities. In RBV theory, the company has demonstrated that its culture is unique and challenging for competitors to imitate. In addition, stakeholder theory has shown that companies with an environmentally oriented organizational culture can increase public trust, attract the interest of people concerned about environmental preservation, and benefit stakeholders.

CONCLUSION

Based on the tests conducted and the findings discussed in this research, the researcher concludes that Green Innovation, Green Intellectual Capital, Green Relational Capital and Organizational Green Culture has a positive effect on Competitive Advantage. Green Human Capital, Green Structural Capital are found to has not effect on Competitive Advantage.

The practical implications of this research are relevant for both investors

and the government. For investors, it is essential to continuously assess a company's competitive advantage by evaluating its capacity to implement innovative strategies that consider environmental impacts and promote a culture of environmental preservation. For the government, the findings can serve as a foundational concept in policy formulation or as a basis for revisiting issues related to environmental concerns, thereby enabling the government to take decisive action against companies. The theoretical implications of this research indicate that the concepts within legitimacy theory and stakeholder theory can be demonstrated in the impact of the independent variable, green innovation, on competitive advantage. Furthermore, the concepts derived from the resource-based view and stakeholder theory employed in this study can strengthen the influence of independent variables, green relational capital and organizational green culture, on competitive advantage.

This research has several limitations. However, if it is handled well by future researchers, it will improve the results of this research and have the potential for better results. There are several limitations. Firstly, the data obtained by researchers in conducting content analysis is produced based on the researcher's subjectivity, so it has the potential to have biased results. This happens because the keywords in each company are different, so it is not easy to be sure. Second, several companies do not fully disclose in their sustainability reports regarding the green innovations implemented, environmentally oriented intangible assets, and the company culture in preserving the environment.

Based on the research results, this research still has limitations. So, the researcher provides suggestions for further research, namely that further researchers can add independent variables to expand the discussion that influences competitive advantage, such as eco-efficiency variables and collaboration variables from Putri et al. (2023), environmental performance variables from Awaliyah (2022), and green supply management variables from research by Al-khawaldah et al., (2022); further researchers can measure green human capital and green structural capital variables from Solihin et al. (2023). Future researchers can also increase the research period and add company sectors on the Indonesian Stock Exchange for a more comprehensive research sample.

REFERENCES

- Al-khawaldah, R. A., Al-zoubi, W. K., Alshaer, S. A., Almarshad, M. N., ALShalabi, F. S., Altahrawi, M. H., & Al-hawary, S. I. (2022). Green supply chain management and competitive advantage: The mediating role of organizational ambidexterity. *Uncertain Supply Chain Management*, 10(3), 961–972. <https://doi.org/10.5267/j.uscm.2022.2.017>
- Augustine, Y. (2019). The Adoption of Environmental Consciousness and Environmental Leadership as driver of Competitive Advantage. *OIDA International Journal of Sustainable Development*, 12(9), 25–34. www.oidajsd.com Also available at <http://www.ssrn.com/>
- Awaliyah, H. (2022). The Influence of Green Organizational Culture, Green Innovation, and Environmental Performance on Competitive Advantage Moderated by Green Supply Chain Management (Case Study on SME in Solo Raya). *International*

- Journal of Innovative Science and Research Technology*.
<https://api.semanticscholar.org/CorpusID:252691544>
- Banerjee, S. B. (2002). Corporate Environmentalism: The Construct and Its Measurement. *Journal of Business Research*, 55(3), 177–191.
[https://doi.org/10.1016/S0148-2963\(00\)00135-1](https://doi.org/10.1016/S0148-2963(00)00135-1)
- Barforoush, N., Etebarian, A., Naghsh, A., & Shahin, A. (2021). Green Innovation a Strategic Resource to Attain Competitive Advantage. *International Journal of Innovation Science*, 13(5), 645–663. <https://doi.org/10.1108/IJIS-10-2020-0180>
- Brigham, E. F., & Houston, J. F. (2020). Dasar-Dasar Manajemen Keuangan. In A. A. Yulianto (Ed.), *Buku 1* (14th ed.). Salemba Empat.
<https://api.semanticscholar.org/CorpusID:201530189>
- Chandra, M., & Augustine, Y. (2019). Pengaruh Green Intellectual Capital Index dan Pengungkapan Keberlanjutan terhadap Kinerja Keuangan dan Non Keuangan Perusahaan dengan Transparansi sebagai Variabel Moderasi. *Jurnal Magister Akuntansi Trisakti*, 6(1), 45–70. <https://doi.org/10.25105/jmat.v6i1.5066>
- Chang, C., & Chen, Y. (2012). The Determinants of Green Intellectual Capital. *Management Decision*, 50(1), 74–94. <https://doi.org/10.1108/00251741211194886>
- Chen, Y.-S. (2008). The Positive Effect of Green Intellectual Capital on Competitive Advantages of Firms. *Journal of Business Ethics*, 77(3), 271–286.
<https://doi.org/10.1007/s10551-006-9349-1>
- Chen, Y.-S., Lai, S.-B., & Wen, C.-T. (2006). The Influence of Green Innovation Performance on Corporate Advantage in Taiwan. *Journal of Business Ethics*, 67(4), 331–339. <https://doi.org/10.1007/s10551-006-9025-5>
- Dang, V. T., & Wang, J. (2022). Building Competitive Advantage for Hospitality Companies: The Roles of Green Innovation Strategic Orientation and Green Intellectual Capital. *International Journal of Hospitality Management*, 102, 103161. <https://doi.org/10.1016/j.ijhm.2022.103161>
- Deegan, C. (2009). *Financial Accounting Theory*. McGraw-Hill.
- Deegan, C., Rankin, M., & Tobin, J. (2002). An Examination of The Corporate Social and Environmental Disclosures of BHP from 1983-1997. *Accounting, Auditing & Accountability Journal*, 15(3), 312–343.
<https://doi.org/10.1108/09513570210435861>
- Dewi, R. R., Murwaningsari, E., & Mayangsari, S. (2021). Green Intellectual Capital on Value Relevance in Indonesia's Manufacturing Companies. *GATR Accounting and Finance Review*, 6(3), 120–136. [https://doi.org/10.35609/afr.2021.6.3\(2\)](https://doi.org/10.35609/afr.2021.6.3(2))
- Dewi, R., & Rahmianingsih, A. (2020). Meningkatkan Nilai Perusahaan Melalui Green Innovation dan Eco-Effisiensi. *Ekspansi: Jurnal Ekonomi, Keuangan, Perbankan Dan Akuntansi*, 12(2), 225–243. <https://doi.org/10.35313/ekspansi.v12i2.2241>
- Dihni, V. A. (2022, February 9). *Indonesia Hasilkan 60 Juta Ton Limbah B3 pada 2021*. Databoks. <https://databoks.katadata.co.id/datapublish/2022/02/09/indonesia-hasilkan-60-juta-ton-limbah-b3-pada-2021>
- Egri, C. P., & Herman, S. (2000). Leadership in the North American Environmental Sector: Values, Leadership Styles, and Contexts of Environmental Leaders and Their Organizations. *Academy of Management Journal*, 43(4), 571–604.
<https://doi.org/10.2307/1556356>
- Fabiola, V. P., & Khusnah, H. (2022). Pengaruh Green Innovation dan Kinerja Keuangan pada Competitive Advantage dan Nilai Perusahaan Tahun 2015-2020. *Media Mahardhika*, 20(2), 295–303. <https://doi.org/10.29062/mahardhika.v20i2.346>

- Fernández, E., Junquera, B., & Ordiz, M. (2003). Organizational Culture and Human Resources in The Environmental Issue: A Review of The Literature. *The International Journal of Human Resource Management*, 14(4), 634–656. <https://doi.org/10.1080/0958519032000057628>
- Fiol, C. M. (1991). Managing Culture as a Competitive Resource: An Identity-Based View of Sustainable Competitive Advantage. *Journal of Management*, 17(1), 191–211. <https://doi.org/10.1177/014920639101700112>
- Firmansyah, A. (2017). Pengaruh Green Intellectual Capital dan Manajemen Lingkungan Organisasi Terhadap Green Organizational Identity dan Dampaknya Terhadap Green Competitive Advantage. *Substansi*, 1(1), 183–219. <https://doi.org/10.35837/subs.v1i1.215>
- Firmansyah, M. J. (2023, January 25). *Pasca KTT G20, Jokowi Ungkap Persaingan Semua Negara Rebutan Investor*. Tempo.Co. https://nasional.tempo.co/read/1683685/pasca-ktt-g20-jokowi-ungkap-persaingan-semua-negara-rebutan-investor#google_vignette
- Fraj, E., Martínez, E., & Matute, J. (2011). Green Marketing Strategy and the Firm's Performance: The Moderating Role of Environmental Culture. *Journal of Strategic Marketing*, 19(4), 339–355. <https://doi.org/10.1080/0965254X.2011.581382>
- Gani, A., Syukri, M., Khairunnisak, K., Nazar, M., & Sari, R. P. (2020). Improving Concept Understanding and Motivation of Learners Through Phet Simulation Word. *Journal of Physics: Conference Series*, 1567(4), 042013. <https://doi.org/10.1088/1742-6596/1567/4/042013>
- Ghozali, I., & Chariri, A. (2007). *Teori Akuntansi Edisi 3*. Badan Penerbit Universitas Diponegoro.
- Gujarati, D. (2003). *Ekonometri Dasar* (S. Zain, Ed.). Erlangga.
- Gürlek, M., & Tuna, M. (2018). Reinforcing Competitive Advantage Through Green Organizational Culture and Green Innovation. *The Service Industries Journal*, 38(7–8), 467–491. <https://doi.org/10.1080/02642069.2017.1402889>
- Huang, C., & Kung, F. (2011). Environmental Consciousness and Intellectual Capital Management. *Management Decision*, 49(9), 1405–1425. <https://doi.org/10.1108/00251741111173916>
- Hung Chen, C. (2011). The Major Components of Corporate Social Responsibility. *Journal of Global Responsibility*, 2(1), 85–99. <https://doi.org/10.1108/20412561111128546>
- Irwanto, & Alhazami, L. (2023). Pengaruh Green Innovation, Green Intellectual Capital, dan Organizational Environmental Management Terhadap Green Competitive Advantage (Studi Pada PT Batik Danar Hadi Surakarta). *Jurnal Manajemen Dan Bisnis Madani*, 5(2), 83–101.
- Kilian, T., & Hennigs, N. (2014). Corporate Social Responsibility and Environmental Reporting in Controversial Industries. *European Business Review*, 26(1), 79–101. <https://doi.org/10.1108/EBR-04-2013-0080>
- Kor, Y. Y., & Mahoney, J. T. (2004). Edith Penrose's (1959) Contributions to the Resource-based View of Strategic Management. *Journal of Management Studies*, 41(1), 183–191. <https://doi.org/10.1111/j.1467-6486.2004.00427.x>
- Maharani, N., & Lestari, R. (2020). Pengaruh Pengukuran Modal Intelektual terhadap Keunggulan Kompetitif. *Prosiding Akuntansi*. <https://api.semanticscholar.org/CorpusID:214633939>
- Majalahcsr. (2022, October 28). *Inilah Tujuh Sektor Industri yang Disebut Paling Polutif*

- di 2022 (2). MajalahCSR.Id. <https://majalahcsr.id/inilah-tujuh-sektor-industri-yang-disebut-paling-polutif-di-2022-2/>
- Milne, M. J., & Patten, D. M. (2002). Securing Organizational Legitimacy. *Accounting, Auditing & Accountability Journal*, 15(3), 372–405. <https://doi.org/10.1108/09513570210435889>
- Ngatia, C. N. (2014). Exploring Sustainability Reporting for Financial Performance of Selected Companies Listed at The Nairobi Securities Exchange in Kenya. *International Academic Journal of Economics and Finance*, 1(4), 32–48. http://www.iajournals.org/articles/iajef_v1_i4_32_48.pdf
- Pandu, P. (2023, August 14). *Kelola dan Buang Limbah B3 Ilegal, Direktur Perusahaan Peleburan Logam Ditahan*. Kompas. <https://www.kompas.id/baca/humaniora/2023/08/14/kelola-dan-buang-limbah-b3-ilegal-direktur-perusahaan-peleburan-logam-ditahan>
- Patten, D. M., & Zhao, N. (2014). Standalone CSR reporting by U.S. Retail Companies. *Accounting Forum*, 38(2), 132–144. <https://doi.org/10.1016/j.accfor.2014.01.002>
- Porter, M. E. (1985). *Competitive Advantage: Creating and Sustaining Superior Performance*. The Free Press. <https://api.semanticscholar.org/CorpusID:102339835>
- Pratama, I. S., & Risma, D. D. (2022). Pengaruh Pengungkapan Corporate Social Responsibility terhadap Institutional Ownership pada Perusahaan High-Profile yang Listing di Bursa Efek Indonesia. *Jurnal Ekonomi, Keuangan Dan Manajemen*, 18(3), 540. <https://doi.org/10.29264/jinv.v18i3.11701>
- Putri, N., Rosiliana, A., & Dewi, R. R. (2023). The Effect of Green Innovation, Green Organizational Culture, Eco-Efficiency and Collaboration on Competitive Advantage. *AKUMULASI: Indonesian Journal of Applied Accounting and Finance*, 2(2), 85–102. <https://doi.org/10.20961/akumulasi.v2i2.870>
- Ravasi, D., & Schultz, M. (2006). Responding to Organizational Identity Threats: Exploring the Role of Organizational Culture. *The Academy of Management Journal*, 49(3), 433–458. <http://www.jstor.org/stable/20159775>
- Roper, S., & Tapinos, E. (2016). Taking Risks in The Face of Uncertainty: An Exploratory Analysis of Green Innovation. *Technological Forecasting and Social Change*, 112, 357–363. <https://doi.org/10.1016/j.techfore.2016.07.037>
- Sanjaya, N. A., & Magaline, A. R. (2021). Pengaruh Organizational Culture Terhadap Competitive Advantage Melalui Intellectual Capital Pada UMKM di E-Commerce. *Business Accounting Review*, 9(2), 227–235.
- Sari, D. P., & Widodo, W. (2022). Pengaruh Good Corporate Governance dan Pengungkapan Corporate Social Responsibility Terhadap Kualitas Laba dan Dampaknya pada Return Saham dengan Leverage dan Firm Size sebagai Control Variable. *Jurnal Bina Bangsa Ekonomika*, 15(2), 628–647. <https://doi.org/10.46306/jbbe.v15i2.206>
- Shafique, M., Asghar, M., & Rahman, H. (2017). The Impact of Green Supply Chain Management Practices on Performance: Moderating Role of Institutional Pressure with Mediating Effect of Green Innovation. *Business, Management and Education*, 15(1), 91–108. <https://doi.org/10.3846/bme.2017.354>
- Sharma, S. (2000). Managerial Interpretations and Organizational Context as Predictors of Corporate Choice of Environmental Strategy. *Academy of Management Journal*, 43(4), 681–697. <https://doi.org/10.2307/1556361>
- Solihin, Harnovinsah, Tugiantoro, & Karsam. (2023). Green Intellectual Capital And

- Sustained Competitive Advantages In The Industrial Sector Of Indonesia. *Jurnal Reviu Akuntansi Dan Keuangan*, 13(1), 134–156. <https://doi.org/10.22219/jrak.v13i1.23865>
- Sugiyono. (2019). *Statistika untuk Penelitian* (28th ed.). Alfabeta.
- Susandya, A. A. P. G. B. A., Kumalasari, P. D., & Manuari, I. A. R. (2019). The Role of Green Intellectual Capital on Competitive Advantage: Evidence from Balinese Financial Institution. *Sriwijaya International Journal of Dynamic Economics and Business*, 227–242. <https://doi.org/10.29259/sijdeb.v3i3.227-242>
- Tang, Y., & Liou, F. (2010). Does Firm Performance Reveal Its Own Causes? The Role of Bayesian Inference. *Strategic Management Journal*, 31(1), 39–57. <https://doi.org/10.1002/smj.799>
- Verbeek, M. (2014). A Guide to Modern Econometrics. *Applied Econometrics*, 8, 125–132.
- Wang, C. H. (2020). An Environmental Perspective Extends Market Orientation: Green Innovation Sustainability. *Business Strategy and the Environment*, 29(8), 3123–3134. <https://doi.org/10.1002/bse.2561>
- Wang, C.-H. (2019). How Organizational Green Culture Influences Green Performance and Competitive Advantage. *Journal of Manufacturing Technology Management*, 30(4), 666–683. <https://doi.org/10.1108/JMTM-09-2018-0314>
- Wernerfelt, B. (1984). A Resource-Based View of the Firm. *Strategic Management Journal*, 5(2), 171–180. <http://www.jstor.org/stable/2486175>
- Widyaningdyah, A. U., & Aryani, Y. A. (2013). Intellectual Capital dan Keunggulan Kompetitif (Studi Empiris Perusahaan Manufaktur versi Jakarta Stock Industrial Classification-JASICA). *Jurnal Akuntansi Dan Keuangan*, 15(1). <https://doi.org/10.9744/jak.15.1.1-14>
- Xie, Z., Wang, J., & Zhao, G. (2022). Impact of Green Innovation on Firm Value: Evidence From Listed Companies in China’s Heavy Pollution Industries. *Frontiers in Energy Research*, 9. <https://doi.org/10.3389/fenrg.2021.806926>
- Yong, J. Y., Yusliza, M.-Y., Ramayah, T., & Fawehinmi, O. (2019). Nexus Between Green Intellectual Capital and Green Human Resource Management. *Journal of Cleaner Production*, 215, 364–374. <https://doi.org/10.1016/j.jclepro.2018.12.306>
- Yusliza, M.-Y., Yong, J. Y., Tanveer, M. I., Ramayah, T., Noor Faezah, J., & Muhammad, Z. (2020). A Structural Model of The Impact of Green Intellectual Capital on Sustainable Performance. *Journal of Cleaner Production*, 249, 119334. <https://doi.org/10.1016/j.jclepro.2019.119334>
- Yusoff, Y. M., Omar, M. K., & Kamarudin, M. D. (2019). Practice of Green Intellectual Capital. Evidence from Malaysian Manufacturing Sector. *IOP Conference Series: Materials Science and Engineering*, 469, 012008. <https://doi.org/10.1088/1757-899X/469/1/012008>
- Yusoff, Y. M., Omar, M. K., Kamarul Zaman, M. D., & Samad, S. (2019). Do All Elements of Green Intellectual Capital Contribute Toward Business Sustainability? Evidence from the Malaysian Context Using the Partial Least Squares Method. *Journal of Cleaner Production*, 234, 626–637. <https://doi.org/10.1016/j.jclepro.2019.06.153>