Model of Green Competitive Advantage Through Green Leadership, Green Intellectual Capital, and Environmental Ethics in Industrial Enterprises in Indonesia

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ABSTRACT

This study aims to analyse and empirically substantiate the theory of the relationship between green leadership, green intellectual capital, and environmental ethics on green competitive advantage in food and beverage companies in Indonesia. This study's population is companies in Indonesia's food and beverage industry. The sampling technique is conducted by summing the highest indicators of each variable multiplied by 5-10. The number of samples was calculated as many as 110 samples. The primary source of this research data is in the form of questionnaires, and secondary data is in the form of articles, books, and other supporting documents. Data collection techniques are used in Questionnaire instruments. Data analysis techniques include descriptive analysis and multiple linear regression analysis with the help of Smart PLS 4.0 software. The results of this study prove that green leadership, green intellectual capital, and environmental ethics have a positive and significant effect on green competitive advantage. The results of this study provide real implications for green leadership, green intellectual capital, and ecological ethics in determining environmentally friendly environmental policies to achieve a competitive advantage for food and beverage industry companies in Indonesia.

1. INTRODUCTION

The rapid development of industry worldwide leads to severe environmental damage, decreasing and improving ecological quality and global warming, respectively. The impact of environmental regulations worldwide is changing the view of global industry competition.

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These regulations include the Montreal Convention and the Kyoto Protocol, as well as restrictions on particular hazardous substances and improving consumer environmental awareness (Chen, 2011). Many companies argue that environmental management is an ineffective investment that is not essential due to a lack of understanding of the processes of important development mechanisms. The issue of environmental pollution emphasizes the inefficient use of resources. The company strives to implement environmental management to have significant benefits, which shows that more benefits are being given to improving and developing an environmentally friendly image and new markets (Chen, 2008). Environmental management outcomes are an important area for corporate administration in the 21st century (Chen & Chang, 2013). This emphasizes the company's willingness to have a competitive advantage in environmentally friendly and sustainable business in the future.

Achieving green competitive advantage by maintaining environmental management as an effort toward business sustainability (Chen, 2008). Environmental factors develop competitive advantages, such as product innovation and an eco-friendly reputation. This is then used to meet stakeholder expectations related to environmental issues (Barbieri, et, al. 2021). Green competitive advantage by exploring competitive advantage with green innovation or environmental management (Chen, 2011). Green Competitive Advantage is a condition where a company occupies several positions regarding environmental management or green innovation (Chen, 2011). The company's competitors are often unable to replicate the environmental strategies implemented, leading to the achievement of sustainable goals and benefits.

The phenomenon related to green competitive advantage is one of the growing concepts in the business world that highlights how companies can gain competitive advantage by adopting environmentally friendly or sustainable practices. In the context of the industry, this concept emphasizes that companies that are able to integrate good environmental practices into corporate strategies can create a significant competitive advantage. Some factors that can affect hijiau's competitive advantage include green leadership factors (Najib, et., al., 2022), green intellectual capital factors (Chang and Chen; 2012) and Environmental Ethics factors (Guo et al., 2020)

Green leadership has an important role in influencing green competitive advantage. Environmental leadership is a stage that involves environmental influences (Y. Chen & Chang, 2013). Environmental leadership's effectiveness can increase environmental awareness and treat the environment with more care. The better environmental leadership is applied, the better the green competitive advantage in terms of environmental sustainability.Research conducted by (Su, et.al, 2020) shows that Environmental Leadership positively and significantly affects company performance. Green Innovation Practices have a positive and significant effect on company performance.

Green intellectual capital reflects a company's intangible assets, including knowledge, wisdom, experience, and innovation in environmental protection areas (Chen, 2008). The green intellectual capital factor also has a vital role in increasing the company's green competitive advantage. Green intellectual capital positively relates to company performance (Chandra & Augustine, 2019). Research conducted by (Jiao, et al, 2022) The results of this study show that Intellectual Capital has a positive and significant effect on competitive finance

Applying business environment ethics can also provide long-term benefits for the company. In the long run, using materials that are harmful to the environment can damage the environment and negatively impact public health. By applying business environmental ethics, companies can reduce the negative impacts of production and create sustainability in business. Business environmental ethical factors have a positive relationship with a green competitive advantage. Research conducted by (Bahri, 2022) and (Chang, 2011) states that Environmental Ethics Have a Positive and Significant Effect on Competitive Advantage.

The novelty of this research is designing a business industry model to create a competitive green advantage through green leadership approaches, green intellectual capital, and environmental ethics as influencing factors. This model is believed to be able to provide an overview of companies in facing environmentally friendly competition. This research focuses

on the relationship between green leadership, green intellectual capital, and environmental ethics towards green competitive advantage in food and beverage industry companies in Indonesia.

2. LITERATURE REVIEW AND HYPOTHESES DEVELOPMENT

Resource-Based View (RBV) Theory

An enterprise tends to have a competitive advantage concerning the performance of different strategies and the possession of superior competitive resources. These resources need to be used for sustainable profit because they are valuable, scarce, irreplaceable, and cannot be replicated competitively (Barney, 1991). They are also divided into three categories, namely tangible and intangible resources and human resource capabilities (Fahy & Smithee, 1999). In this context, capability emphasizes the choice of performance of an enterprise using the organization's available resources. In addition, the RBV approach states that firms achieve sustainable competitive advantage and obtain superior profits by controlling tangible and intangible strategic assets (Fahy & Smithee, 1999).

Green Leadership

Green leadership is a person who prioritizes environmental concern, where leaders show pro-green behavior in daily activities and evaluate workers based on environmental concern and performance (Roscoe et al., 2019). Leaders typically implement rational stimulation to encourage workers' involvement in environmental issues and motivate them to make extra efforts when addressing environmental issues (Graves & Sarkis, 2018). In addition, pro-green leaders tend to show concern and support for the company's business activities, which can benefit the company in addressing environmental issues (Roscoe et al., 2019). Green Leaders are measured in two dimensions, namely (2) environmental management and (2) environmental operations and evaluation (Najib, et., al., 2022)

Green Intellectual Capital

Intellectual capital is the overall amount of knowledge, information, technology, intellectual property rights, team communication systems, customer relations, and trademarks capable of creating value for the company (Bakhsha et al., 2018). Intellectual capital includes all intangible assets considered in modern accounting (Ivashchenko et. al. 2017). Intellectual capital is said to be a concept that refers to intangible assets related to human resources and technology used. Gogan et al. (2016) and (Hashima et al., 2015) suggest that Intellectual capital becomes essential because the influence of fixed and financial assets decreases compared to that of intangible assets. The idea of green intellectual capital was first promoted by Chen (2008) due to the increasing trend of green politics. Chen (2008) defines green intellectual capital as the total of all intangible assets owned by a company, knowledge, capabilities, and relationships associated with environmental protection and green innovation both at the individual and organizational levels of a company. Green intellectual capital enables companies to adhere to strict international environmental regulations, meet increased environmental awareness by consumers, and create value for the company. The variables, dimensions, and indicators that will be used in this study are (1) Green Humanitarian Capital, (2) Green Structural Capital, and (3) Green Relation Capital.

Environmental Ethics

Business environmental ethics is a philosophical discipline that speaks about The moral relationship between humans and the environment or the universe and how human behavior should be towards the environment, so the focus of attention of environmental ethics according to this understanding, how humans should act, how human behavior should be towards the environment (Keraf, 2002). Business is understood as a critical reflection on what humans should do in the face of moral choices related to environmental issues, including what

humans must decide in making moral choices in meeting their needs that have an impact on the environment, as well as what the government must decide in its economic and political policies that have an impact on the environment (Keraf, 2002). The point is that environmental ethics does not only discuss human behavior towards nature. Environmental ethics also talks about the relationship between all life in the universe, namely between humans and humans who impact nature and between humans and other living things or with nature as a whole. This includes political and economic policies that directly or indirectly impact nature. The measurement of environmental ethical variables consists of the following: The Company has a clear and concrete environmental policy, the company's budget planning includes attention to environmental investment or procurement; the Company has integrated its environmental plan, vision, or mission into its marketing activities and the Company has integrated its environmental plan, vision, or mission into the corporate culture (Guo et al., 2020)

Green Competitive Advantage

Market offers are also called competitive advantages (Kotler, 2012), where companies have an advantage over competitors by offering greater value to consumers than competitors' offers. Companies need to understand competitors and customers through analysis to achieve this competitive advantage. According to (Hajar & Suka Atmadja, 2016), Competitive advantage is a strategy to be superior to competitors. Opinion (Sanusi & Connell, 2018) Competitive advantage is a firm's ability to create value that competitors cannot have and imitate or a firm's ability to create a superior position over its competitors. Competitive advantage provides business value that motivates its customers (or end users) to purchase its products or services over its competitors' products or services, and that poses barriers to emulation by actual or potential direct competitors (Christensen, 2010). The measurement of green competitive advantage in this study consists of Innovation differentiation and Market differentiation (Wang, 2019).

Research Framework

Based on references to previous research as support for connecting between the variables of this study, a framework can be made as follows:
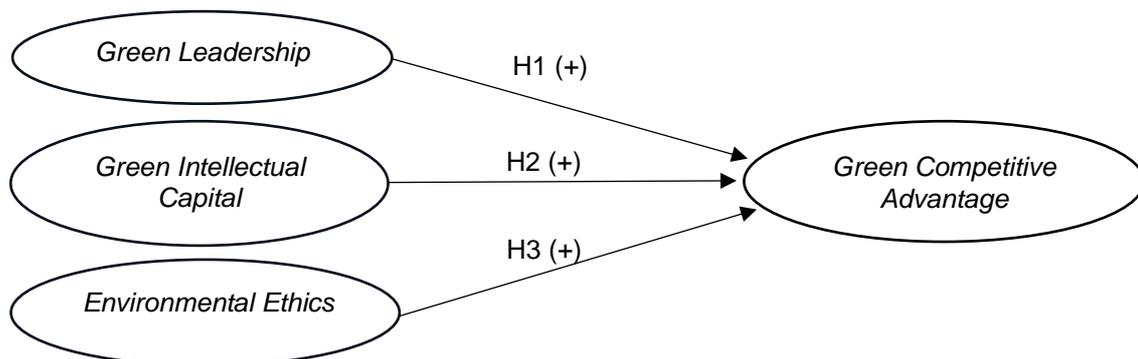

Figure 1. Research Framework

Based on the research framework, a hypothesis of this research was made as follows:
H1: Green Leadership has a positive effect on green competitive advantage
H2: Green Intellectual Capital Affects Green Competitive Advantage
H3: Corporate Environmental Ethics Effect on green competitive advantage

3. RESEARCH METHOD

Research requires a research design because with the research design, a researcher will easily and more quickly complete his research. Based on the title that has been compiled,

the type of research used is quantitative research. According to (Sekaran, 2017) said that quantitative research is defined as a scientific method whose data is in the form of numbers or numbers that can be processed and analyzed using mathematical and statistical calculations. This study examines the effect of green leadership, green intellectual capital and Environmental ethics on green competitive advantage. This research uses the object of research of industrial companies spread across Indonesia.

The population in this study is industrial companies in the food and beverage sector in Indonesia. The number of samples will be determined based on the results of the minimum sample calculation. The determination of the minimum number of samples for the analysis model is the sum of the indicators multiplied by 5-10 (Hair, 2019). So the number of samples of this study can be calculated for each of the highest indicators of a variable, namely green leadership there are two indicators; Green intellectual six indicators, Environmental Ethics there are three indicators and green Competitive advantage there are two indicators. So the total number of all the highest indicators of each variable of this study is 11 indicators. Then, the sample can be determined 11 highest indicators x 10 = 110 samples. This research instrument will be filled by food and beverage industry companies or represented by top-level managers, middle-to-middle-level managers and lower-level managers. The results of this research testing are the results of the development of indicators that are used as instruments to collect research data. The variables of this study consist of green competitive advantage variables as dependent variables. The variables of green leadership, green intellectual capital and evironmental ethics as independent variables. Independent variables function as variables that can affect dependent variables. The Measurement Scale in this study used an interval scale of 1 = strongly disagree to 6 = strongly agree. The operational variables of this study can be presented in table 1 below:

Table 1. Operational Variables

Construct	Dimensions/Indicators	Source
Green Leadership (X1)	Environmental Management 1. Encourage subordinates to study green information. 2. Communicate environmental policies with subordinates Environmental Operations and Evaluation 1. Review green operations for progress 2. Evaluate subordinates on the importance of environmentally friendly practices	(Najib, et., al.,2022)
Green Intelectual Capital (X2)	Green Humanity Capital 1. The productivity and contribution of employees to environmental protection in the company is better than that of its main competitors 2. The competence of employees in environmental protection in the company is better than its main competitors 3. The level of teamwork related to environmental protection in the company is more than its main competitors 4. Managers in the company can fully support their employees to achieve environmental protection goals 5. Managers in the company can fully support their employees to achieve environmental protection goals Green Structural Capital 1. The environmental protection management system in the enterprise is better than its main competitors; 2. The company's profits derived from environmental protection activities are greater than those of its main competitors	(Chang and Chen; 2012)

Construct	Dimensions/Indicators	Source
	3. Compared the company's environmental protection investment in research and development to its sales is more than its main competitors	
	4. Innovations on environmental protection in the company are more than its main competitors	
	5. investments in environmental protection facilities in the company more than its main competitors;	
	6. The environmental knowledge management system in the enterprise is advantageous for the accumulation and sharing of environmental management knowledge	
	Green Relation Capital	
	1. The company designs its products or services in accordance with the environmental wishes of its customers;	
	2. The company's cooperative relationship on environmental protection with upstream suppliers and downstream clients is stable;	
	3. The company has a stable and cooperative relationship on environmental protection with its strategic partners	
Environmental Ethics (X3)	The company has a clear and concrete environmental policy	(Guo et al., 2020)
	1. Waste management	
	2. Emission reduction	
	3. Regulatory compliance	
	Corporate budget planning includes attention to environmental investment or procurement	
	1. Use of environmentally friendly raw materials	
	2. The use of environmentally friendly packaging	
	3. Waste reduction	
	The company has integrated its environmental plan, vision, or mission into its marketing activities	
	1. Use of environmental labels or logos	
	2. Marketing promotion that focuses on environmental issues	
	The company has integrated its environmental plan, vision, or mission into the corporate culture	
	1. Internal policies and guidelines	
	2. Employee training and education	
Green Competitive Advantage (Y)	Innovation differentiation	(Wang, 2019)
	1. Companies are constantly investing to generate new capabilities to give them an edge over competitors' capabilities	
	2. The company uses a new way of serving customers	
	Market differentiation	
	1. The company has a product that is difficult to replicate	
	2. Unable to replicate company routines, processes, and culture	

The data sources used in this study are (1) Primary Data, namely taking data through questionnaires on companies represented by company management; (2) Secondary Data, namely collecting data in the form of the number of companies listed on the Indonesia Stock Exchange and journals related to this research variable. The data analysis used in this study was quantitative descriptive analysis and multiple linear regression using Smart PLS software software. Multiple linear regression analysis serves to examine the effect of the independent variable on the dependent variable. To analyze research data includes, there are steps passed as follows: (a). Descriptive analysis in the form of respondent profiles and analysis of respondents' responses to variables. (b). Data due diligence analysis (validity and reliability). Validity tests are used to test the feasibility of an instrument as a measuring instrument. While

the reliability test measures the consistency of measuring instruments / research instruments. (c). Analysis of multicolinearity test data that aims to ascertain the presence or absence of relationships between variables. In this test, there is no multicolinearity of data. (d). Multiple linear regression test analysis aims to test models of either positive or negative influence between dependent variables on dependent variables. (e). Hypothesis test analysis aims to examine the significant effect between the independent variable and the dependent variable.

4. RESEARCH RESULTS

The results of the analysis of the respondent profile of this study are as follows:

Table 2. Respondent Profile

	Respondent Profile	Frequency	Percentage (%)
Gender	Man	49	44.50
	Woman	61	55.50
	less than 30 years old	28	25.50
	30-35 Years	13	11.80
Age	36-40 Years	32	29.10
	40-45 Years	24	21.80
	46-50 Years	8	7.30
	Over 50 years old	5	4.50
Education	Starata One (S1)	80	72.70
	Strata Two (S2)	23	20.90
	Strata Three (S3)	7	6.40
	Top Manager	21	19.10
Position	Low Manager	26	23.60
	Middle Manager	46	41.80
	Other	17	15.50
	11-15 Years	17	15.50
Company Age	5 - 10 Years	13	11.80
	Over 15 years old	71	64.50
	less than 5 years old	9	8.20
	Bali	1	0.90
	Banten	5	4.50
	Jakarta	31	28.20
	West Java	19	17.30
Province	Central Java	2	2.70
	East Java	5	4.50
	Riau	39	35.50
	South Sumatra	1	0.90
	North Sumatra	6	5.40
	Less than 50 employees	17	15.50
Number of employees	50-100 Employees	12	10.90
	Over 100 Employees	81	73.60

Source : Processed Data, 2024

Based on table 3 shows that the most dominant respondent profiles are 55.50% female gender, 29.10% aged 36-40 years, 72.70% undergraduate education level (S1), 41.80% Middle Manager positions, 64.50% company age over 15 years, 35.50% Riau province and

73.60% number of employees above 100 employees. Based on this profile, industrial companies engaged in food and beverages are spread throughout Indonesia.

The feasibility test of this research questionnaire was conducted using Smart PLS 4.0 software. The results of the feasibility test of this research questionnaire are as follows:

Table 3. Contruct Reliability and Validity

Construct	Cronbach's alpha	Composite reliability (rho_a)	Composite reliability (rho_c)	Average variance extracted (AVE)
GCA	0.786	0.808	0.902	0.822
GL	0.904	0.921	0.954	0.912
GIC	0.929	0.929	0.955	0.876
CEE	0.917	0.917	0.941	0.800

Source : Processed Data, 2024

Based on the results of the feasibility test, the questionnaire shows that the construct is declared reliable if the cronbach alpha value is greater than 0.60. The model shows the cronbach alpha value for all constructs to be above the value of 0.60. Thus it can be concluded that all constructs have good reliability in accordance with the required drinking value limit. The model shows the composite reliability value for all constructs is above the value of 0.70. Thus it can be concluded that all constructs have good reliability in accordance with the required minimum value limit. From the Table it can be seen that the AVE value of each construct is above 0.5. Therefore, there is no problem of convergent validity in the tested model so that the construct in this research model can be said to have good discriminant validity. So the value of the coefficient in Smart PLS testing can be said to be reliable against changes that occur in other variables in this research model.

Based on the results of the tests carried out, it shows that the results of the multicolonicity test of this research data are as follows:

Table 4. Colinearity Statistics Test

No	Construct	VIF	Information
1	GL -> GCA	2.730	No Multicolinearity
2	GIC -> GCA	4.461	No Multicolinearity
3	CEE -> GCA	4.286	No Multicolinearity

Source : Processed Data, 2024

Based on the test results, it can be concluded that there is no multicollinearity problem based on several indicators, especially the VIF value is smaller than the value of 10. So that the test results are said to have no relationship between independent variables.

This coefficient of determination measures the percentage of total variance of endogenous variables described by exogenous variables in the research model. The results of the Coefficient Determination (R^2) test using the help of Smart PLS Software in this study can be presented in the following table:

Table 5. Coefficient of Determination R2

Construct	R-square	R-square adjusted
The Effect of Green Leadership, Green Intelligence Capital and Environmental Ethics on Green Competitive Advantage	0.691	0.681 (68,10%)

Source : Processed Data, 2023

Based on the results of the coefficient of determination test, it can be explained that the Adjusted *R Square value* of 0.681 or 68.10% of the green competitive advantage variable is

influenced by green leadership, green intellectual capital and environmental ethics. While the remaining 31.90% was influenced by other factors that were not studied by this study.

Hypothesis Test Analysis

Research testing aims to see the influence between independent variables on dependent variables. The results of testing this research hypothesis are as follows:

Table 6. Test the hypothesis

Construct	Hypothesis	Original sample (O)	T statistics (|O/STDEV|)	P values	Information
GL -> GCA	Positive	0.320	3.204	0.001	Accepted
GIC -> GCA	Positive	0.207	1.610	0.048	Accepted
CEE -> GCA	Positive	0.366	2.598	0.009	Accepted

Source: Processed Data, 2024

Based on the results of table 5, a multiple regression equation can be made as follows:

$$Y = 0.320GL + 0.207GIC + 0.366CEE + e$$

Based on table 5 shows that (1) the effect of green leadership on green competitive advantage gets an original sample value with a positive sign of 0.320 and a p-value of 0.001 or less than 0.05. The results of this analysis can be explained that green leadership has a positive and significant influence on green competitive advantage. Then the hypothesis is acceptable. The better the green leaders carried out by a company, the more it can increase green competitive advantage. The results of this study are in line with research conducted by (Su, et., all, 2020) showing that Environmental Leadership has a positive and significant effect on company performance. (2) The effect of green intellectual capital on green competitive advantage gets the original sample value with a positive sign of 0.207 and a p-value of 0.048 or less than 0.05. The results of this analysis can be explained that green intellectual capital has a positive and significant influence on green competitive advantage. Then the hypothesis is acceptable. The better the company has green intellectual capital, the more it can increase green competitive advantage. The results of this study are supported by the results of research conducted by (Chandra and Augustine, 2019) and (Jiao, et., all, 2022) The results of this study show that Intellectual Capital has a positive and significant effect on competitive money. (3) Environmental Ethics Influence on Green Competitive Advantage gets the original value of the sample with a positive sign of 0.366 and a PVALUE of 0.009 or less than 0.05. The results of this analysis can be explained that environmental ethics has a positive and significant influence on green competitive advantage. Then the hypothesis is acceptable. The better the company does environmental ethics, it can increase green competitive advantage. This result is in line with research conducted by (Bahri, 2022) and (Chang, 2011) states that Business Environmental Ethics Has a Positive and Significant Effect on Competitive Advantage.

5. CONCLUSION

Based on the results of the research described in the previous description, conclusions can be drawn in this study, namely (1) Green leadership has a positive and significant influence on green competitive advantage. Hypothesis 1 is accepted. (2) Green intellectual capital has a positive and significant influence on green competitive advantage. Hypothesis 2 is accepted. (3) Environmental ethics has a positive and significant influence on green competitive advantage. Hypothesis 3 accepted. The suggestions that can be given in this study are the application of green competitive advantage for food and beverage industry companies in Indonesia is expected to consider the factors of Green leadership, Green intellectual capital and Environmental ethics as factors improving environmental performance.

The results of this study prove that green leadership, green intellectual capital and environmental ethics factors have been able to increase green competitive advantage. while for researchers then add other variables as an effort to improve the performance of green competitive advantage such as Green innovation, green market oriented, organization green culture and other green variables. In addition, further research can use quantitative approaches, such as bibliometrics or meta-analysis, to gain knowledge about green competitive advantage with different method approaches.

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