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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)

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Abstract:- This study aims to determine the effect of green organizational culture, green innovation, and environmental performance on competitive advantage moderated by GSCM on SMEs in Solo Raya. SMEs are the most significant contributor to GDP in Indonesia, so they must be aware of taking advantage of environmental issues to achieve economic growth and competitiveness. The study method used is quantitative by distributing online questionnaires to SMEs in Solo Raya. Data were collected using convenience sampling with a sample of 250 SMEs in Solo Raya. The data obtained will be analyzed using the Structural Equation Model (SEM). Green organizational culture and green innovation applied in SMEs in Solo Raya achieve a tremendous competitive advantage. Green supply chain management contributes implicitly and explicitly to influencing green organizational culture and green innovation in improving environmental performance and competitive advantage. This study can improve innovation strategies in achieving competitive advantage creatively on SMEs by paying attention to the surrounding environment.

Keywords:- *green organizational culture, Green Innovation, Environmental Performance, Competitive Advantage, GSCM, SMEs.*

I. INTRODUCTION

Environmental issues have become the most discussed issue in recent years. This is evidenced by the level of public awareness of environmentally friendly products. The existence of a class of public awareness of environmentally friendly products then encourages industry players to apply the concept of caring for the environment into their business.

Industrial companies, large and small, have an essential role in building the country's economy. The development and growth of the current industry cause the rapid pace of the economy and increasing public demand for products to meet their needs. Currently, the increasingly competitive and open global competition creates many challenges that must be faced. Challenges of international competition, unemployment, population growth, social responsibility, and employment diversity.

In today's global competition, all resources can move freely. To face these challenges, quality resources are needed to create various advantages, both competitive advantage through creative and innovative processes. In competition in the business world, it is necessary to involve various parties to respond to a situation. Individual companies and other productive industrial sectors such as small and medium enterprises are expected to compete in global competition.

One of the most discussed issues related to SMEs is environmental pollution due to the disposal of production waste. One of the environmental damage is waste pollution. In Indonesia, waste pollution is mainly caused by companies, home industries, and SMEs. The next issue that becomes a problem for SMEs is how SMEs target consumers with their products. In other words, SMEs must compete and market their products appropriately. The Indonesian Retail Entrepreneurs Association (Aprindo) said that the obstacle faced by SME actors is inappropriate marketing that affects their income.

SMEs are one of the most significant contributors to the GDP of non-oil exports in Indonesia. Solo Raya is one of the areas where SMEs are increasing, helping local incomes, and reducing poverty and unemployment. In the Solo Raya areas, SMEs can contribute 31.18% lending.

Several MSMEs in various fields in Solo Raya are recommended to implement environmentally friendly products. This encourages MSMEs to survive and create new strategies to compete with other industries. Such as utilizing existing natural resources in the production process. Using natural resources is one proof to realize an environmentally friendly approach.

This study uses the concept of research development from several existing studies. Several variables include green organizational culture and green innovation as independent variables, environmental performance as a mediation, competitive advantage as the dependent variable, and GSCM as a moderating variable.

Based on the preliminary study results, Green organizational culture is a development of organizational

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culture. Green organizational culture includes shared beliefs, values created and norms built within the company to achieve the company's goals. Green organizational culture itself is the assumptions, values , and norms in organizations that make and reflect the obligation to be an environmentally friendly organization (Harris & Crane, 2002).

Green innovation is an effort made by several industries to improve their performance to maintain organizational sustainability by considering environmental aspects (Pradnyandana, I Made Septian ; Yasa, 2017). Green innovation is a new idea or idea in developing existing innovations by considering the existing environmental aspects. A company implements its strategy of green innovation to achieve sustainable success. The characteristics of green innovation, such as green products and environmentally friendly processes, are a new development for the industry.

Environmental performance as a mediating variable in the company is described as follows: reducing air emissions, reducing wastewater and solid waste produced that can worsen the environment, and decreasing consumption of hazardous materials. Companies that implement GSCM will deliver good environmental performance so that GSCM affects improving environmental performance (Purba Rao, 2018).

Competitive advantage is a company strategy that cooperates to compete more effectively than its competitors (Porter, 1993). The increasing competition of companies makes companies compete in improving their innovations and strategies. The success of strategy and innovation in a company can be measured by its competitiveness. Competitive advantage has several indicators, one of which is superior products.

Green supply chain management (GSCM) is an outgrowth of regular SCM with environmental awareness, emphasis on green productivity, and reducing environmental impact ((Wang, H.F. and Gupta, 2011). The GSCM variable as a moderator in this study has a role in determining whether GSCM strengthens or weakens the relationship between other variables.

This study uses the concept of research development from several existing studies. In this study, a model was built to explain the influence of green organizational culture and green innovation on competitive advantage, which then environmental performance as mediator and GSCM as a moderator.

II. LITERATURE REVIEW

A. Green organizational culture

Culture as a mindset and behavior from basic assumptions that have been determined or developed to learn ways to integrate, which function well and are considered new and therefore must be taught to new members as a great way to think about, perceive, and feel interested in the problem (Gibson, 2006). Green organizational culture is a process of organizational modification. The process becomes environmentally friendly, increasing efficiency in resource use, reducing pollution, and carrying out activities in a sustainable manner called reforestation (Francis *et al*., 2007).

H_1: Green organizational culture has a positive effect on competitive advantage

H_3: Green organizational culture has a positive effect on Environmental performance

B. Green Innovation

Green innovation is the same as reducing the environmental impact caused by consumption and production activities (Horbach *et al.*, 2012). (Chen *et al*., 2006)define green innovation as "hardware or software innovations related to green products or processes, including innovations in technologies involved in energy saving, pollution prevention, waste recycling, green product design, or the environment. management company"

H_2: Green innovation has a positive effect on competitive advantage

H_4: Green innovation has a positive effect on environmental performance

C. Environmental Performance

Environmental performance refers to environmental damage caused by activities carried out by the company or organization. In contrast, a low level of environmental damage refers to a high and better environmental performance. (Lankoski, 2000).The company's environmental performance is described as follows: reducing air emissions, reducing wastewater and solid waste produced that can worsen the environment, and decreasing consumption of hazardous materials. Companies that implement GSCM will deliver good environmental performance so that GSCM affects improving environmental performance (Purba Rao, 2018).

H_5: Environmental Performance has a positive effect on competitive advantage.

D. Competitive Advantage

According to (David, 2006), Competitive advantage is anything a company does very well compared to its competitors. When a company can do something, and another company can't do it, or has something that its competitors won't, it represents a competitive advantage. Having and maintaining a competitive advantage is critical to the long-term success of an organization. Generally, a company can maintain a competitive advantage only for a certain period due to being imitated by competitors and weakening that advantage.

E. Green Supply Chain Management

Supply chain management can integrate environmental management practices into the entire supply chain management to achieve green supply chain management, maintain a competitive advantage, and increase business profits and market share objectives. (Seman *et al*., 2012)Green supply chain management (GSCM) has continued to develop to build awareness of the environment and understand mechanism theory as a form of

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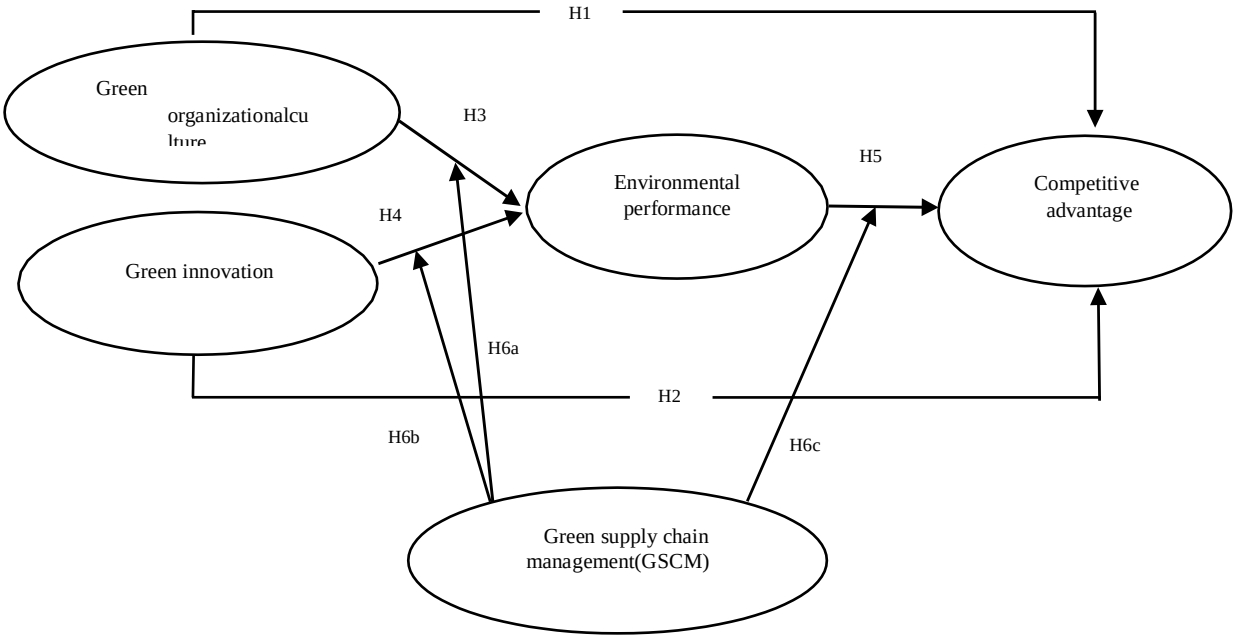
environmental improvement. GSCM is a supply chain management widely used to reduce the impact of industrial supply chain activities on the environment (Sarkis & Dijkshoorn, 2007).

H6a: Green supply chain management moderates the relationship between green organizational culture and environmental performance

H6b: Green supply chain management moderates the relationship between green innovation and environmental performance

H6c: Green supply chain management moderates the relationship between environmental performance and competitive advantage

F. Conceptual Framework



III. METHODOLOGY

A. Sampling and Data Collection

The population in this study are the owners of Micro, Small, and Medium Enterprises (MSMEs) in Solo Raya, which are engaged in packaged food that are willing to achieve competitive advantage through green organizational culture and green innovation. Because the city of Solo Raya is very large, the data collection is divided into 7 regions, namely, Surakarta, Sukoharjo, Karanganyar, Sragen, Wonogiri, Boyolali and Klaten. It is recorded in the Welfare Department of the government in Solo Raya that there are 712 MSME owners engaged in packaged food.

Data collection was carried out through an online questionnaire method to 250 MSMEs. The sampling method in this study used Convenience Sampling by searching for a list of Solo Raya SMEs engaged in the packaged food industry on the Solo Raya SME website, then recording data in the form of cellphone numbers and contacting via WhatsApp for availability in the questionnaire.

Then the sampling that will be used in this study will be adjusted based on the theory of Hair *et al*, in the second point for the number of samples can be obtained from the number of variable indicators multiplied by 5 to 10, where there are 28 variable indicators multiplied by 5 with a total of 140 for the minimum value, and 280 for the maximum value. So that this study uses a sample of 250 samples. This method using the Partial Least Squares Structural Equation Modeling (PLS-SEM)

Individuals selected as samples can be described as presented in Table 1. The research results that have been processed show that the majority of the respondents' last education was at the Senior High School (SMA) level with a total of 144 or 57.6%. While the minority of respondents' education level is at the Postgraduate level, as evidenced by the number of respondents as much as 4 or 1.6%.

The company's age, the majority are in the number 5 to 10 years with a total of 100 or 40%. The number of employees, the majority of companies have 6 to 20 employees, as evidenced by the number of respondents as many as 150 or 60% of the amount of annual income generated by the company. The majority of the company's yearly income is in the range of more than IDR 50,000,000 to less than IDR 200,000,000, as evidenced by the number of respondents as many as 148 or 59.2%.The last characteristic of respondents is based on the number of agents or distributors owned by the company. The majority of companies have 5 to 15 agents or distributors, amounting to 167 or 66.8%.

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	Category	n	%
Education	High School	144	57.6%
	Diploma	33	13.2%
	Bachelor	69	27.6%
	Master	4	1.6%
The age of the company	< 5 years	56	22.4%
	5-10 years	100	40%
	11-15 years	63	25.2%
	16-20 years	28	11.2%
	> 20 years	3	1.2%
The number of employees	< 5 employees	61	24.4%
	6-20 employees	150	60%
	21-50 employees	35	14%
	> 51 employees	4	1.6%
The company's annual income	< 50.000.000	43	17.2%
	>50.000.000 – <200.000.000	148	59.2%
	>200.000.000 – < 500.000.000	35	14%
	> 500.000.000	24	9.6%
The number of agents or distributors	< 5 agents/distributors	62	24.8%
	5-15 agents/distributors	167	66.8%
	15-30 agents/distributors	12	4.8%
	> 30 agents/distributors	9	3.6%

Table 1: Respondents' Profile

B. Questionnaire Design and Measurement

The process of determining the score in the questionnaire uses an interval scale with a 5-point Likert scale approach. Green organizational culture is defined as a way of thinking, values, and norms that exist within the organization to support organizational processes and goals that are more environmentally oriented, which is then measured using the following five items; Don't litter, Emphasis on using natural ingredients, Sort the trash properly, Energy saving (electricity and water), Socialization of healthy life (Banerjee, 2002) and (Fraj *et al*., 2011). Green Innovation is defined as a new idea to continue adapting without damaging the surrounding environment and maintaining environmental balance. Green innovation has two dimensions: green product and green process (Chen *et al*., 2006). which is then measured using the following ten items; Products made from nature, Environmentally friendly product packaging, Product materials can be recycled, The product is free from chemicals, The product does not contain coloring agents, Use of environmentally friendly technology, Production waste is not dangerous, Production process with recyclable materials, Environmentally friendly production process materials, Energy-saving production process (Chen, 2008)(Chen *et al*., 2006); (Roper & Tapinos, 2016). Environmental performance is defined as the company's ability to reduce air emissions, waste, and consumption of hazardous and toxic materials to the surrounding environment (Menguc & Ozanne, 2005), which is then measured using the following four items; Management of production waste pollution, Management of pollution due to production, Recovery of environmental pollution due to production waste, Reduction of hazardous materials (Larrán Jorge *et al*., 2015). Competitive advantage is defined as a collection of different and/or better strategies to achieve an advantage over competitors (David, 2006). which is then measured using the following four items; Product quality, Product-market fit, Product prices can be competitive, Long life cycle (expired) (Bharadwaj *et al*., 2015). Green supply chain management (GSCM) is defined as distribution management/agent support for product distribution to customers by taking into account the surrounding environment. which is then measured using the following five items; Appeal for preservatives, Call for environmentally friendly packaging, Notice of expiration date, Rejection of dyes, Support natural-based products ((Chiou *et al*., 2011).

C. Data Analysis

Data obtained through the survey were analyzed with Partial Least Squares Structural Equation Modeling (PLS-SEM) using Smart-PLS 3. The analysis comprised of validity, reliability, model, and hypotheses testing. Test The analysis results begin by testing the validity and reliability of research instruments. Items are declared valid if they have a factor loading value greater than 0.5. (Hair *et al*., 2010). This assumption must be met because it is one of the requirements to analyze the model with Structural Equation Modeling (SEM). Table 1 indicates that all variables have convergent validity > 0.50. The reliability test was carried out with the Alpha Cronbach reliability technique. An instrument is considered reliable if it has a reliability coefficient greater than 0.7. (Hair *et al*., 2010).

Model testing was performed to test the quality of the model used in this study and see whether it could represent the data obtained through surveys empirically (Tenenhaus *et al*., 2005). This test was accomplished by calculating the average AVE and R square (R^2) values of the model used in this study. The resulting value is called the Goodness of Fit (GoF) index. A model should have a minimum value of .36 to be considered valid (Tenenhaus *et al*., 2005).

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IV. RESULT AND DISCUSSION

A. *Validity and Reliability*

Test The analysis results begin by testing the validity and reliability of research instruments. Items are declared valid if they have a factor loading value greater than 0.5. (Hair *et al*., 2010). The recommended minimum AVE value is 0.5, but 0.4 is acceptable because if the AVE is less than 0.5, but composite reliability is higher than 0.6, and convergent validity meets the requirements (Huang *et al.*, 2013).

All indicators can be considered reliable since they meet the following requirements. This assumption must be completed because it is one of the requirements to analyze the model with Structural Equation Modeling (SEM). Table II shows the outer loading, Composite Reliability (CR), and Average Variance Extracted (AVE) values of each indicator.

Variable / Indicator	Outer loading	CR	AVE
Green Organizational Culture		.824	.487
GOC1: Don't litter	.607		
GOC2: Emphasis on using natural ingredients, Energy saving (electricity and water),	.594		
GOC3:Sort the trash properly			
GOC4: Energy saving (electricity and water)	.756		
GOC5: Socialization of healthy life	.774		
	.737		
Green Innovation		.875	.413
Green Product			
GPD1:Products made from nature	.714		
GPD2:Environmentally friendly product packagingGPD3: Product materials can be	.799		
recycled,	.783		
GPD4:The product is free from chemicals	.820		
GPD5: The product does not contain coloring agents	.686		
Green Process			
GPS1: Use of environmentally friendly technology	.636		
GPS2:Production waste is not dangerous,	.704		
GPS3:Production process with recyclable materials,	.833		
GPS4:Environmentally friendly production process materials	.740		
GPS5:Energy-saving production process	.733		
Environmental Performance		.891	.672
EP1:Management of production waste pollution	.823		
EP2: Management of pollution due to production	.839		
EP3:Recovery of environmental pollution due to production waste	.821		
EP4:Reduction of hazardous materials			
	.795		
Competitive Advantage		.864	.615
CA1: Product quality	.847		
CA2: Product-market fit	.793		
CA3: Product prices can be competitive,	.826		
CA4: Long life cycle (expired)	.659		
Green Supply Chain Management		.885	.607
GSCM1: Appeal for preservatives	.793		
GSCM2: Call for environmentally friendly packaging GSCM3: Notice of expiration	.766		
date	.792		
GSCM4: Rejection of dyes	.746		
GSCM5: Support natural-based products	.798		

Table 2: Convergent Validity and Reliability Tests

Discriminant validity indicates the extent to which a given construct differs from other constructs (Hulland *et al*., 1996). This follows the rule that indicators have a higher correlation with latent variables and should be measured with other latent variables in the model (Chin, 1998). Discriminant validity was assessed through cross-loading analysis. Overall, the results of the discriminant validity testing of this study can be seen in the following Table 3.

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	1	2	3	4	5	6	7
Green organizational culture	0.698						
GSCM	0.469	0.779					
Green innovation	0.726	0.585	0.643				
Green product	0.746	0.474	0.880	0.762			
Green process	0.491	0.536	0.842	0.486	0.732		
Competitive advantage	0.571	0.594	0.750	0.654	0.638	0.784	
Environmental performance	0.654	0.526	0.656	0.595	0.530	0.633	0.820

Table 3: Discriminant validity

B. Hypothesis Testing and Discussions

a) The goodness of Fit Model Testing

The purpose of GoF is to measure the performance of the PLS model both on measurement and on the structural model with a focus on predicting the overall performance of the model (Chin, 2010). The recommended minimum AVE value is 0.5, but 0.4 is acceptable because if the AVE is less than 0.5, but composite reliability is higher than 0.6, and convergent validity meets the requirements (Huang *et al*., 2013).The GoF index can be calculated using the following formula: GoF = $\sqrt{AVE} \times R^2$. The AVE and R^2 values of each indicator and their averages are shown in the following table.The initial step is testing the goodness-of-fit model; the results indicate the GoF value = .405. The minimum GoF Value that needs to be met is 0.36.Table 4 describes that the model is a good fit.

	AVE	R Square	GoF[1]
Green organizational culture	.487		
Green innovation	.413		
Environmental performance	.672		
Green supply chain management	.607		
Competitive advantage	.615	.622	
Model Fit			.405

Table 4: The Goodness of Fit

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b) Hypothesis testing and interpretation

a. Main Effect Testing

A variable has a significant effect with a p-value below 0.05 (Hair *et al*., 2010). The direction of the effect is shown in positive or negative values in the Original Sample column. Table V indicates that the relationship between green organizational culture and competitive advantage does not significantly influence SMEs, so hypothesis 1 is not supported (St. Coeff. = -.048; SD. = .067; p = .494). This insignificant relationship does not confirm the results obtained in previous studies (Chao, 2019).

The relationship between Green innovation and competitive advantage was significant and positive (St. Coeff. = .530; SD. = .075; p = .000), so hypothesis 2 is supported. This finding confirms the results of research obtained from several previous studies that explain a significant and positive relationship(Chiou *et al*., 2011).

The relationship between Green organizational culture and environmental performance was significant and positive (St. Coeff. = .323; SD. = .070; p = .000), so hypothesis 3 is supported. This finding confirms the results of research obtained from several previous studies that explain a significant and positive relationship (Fergusson & Langford, 2006).

Green innovation was found to have a significant and positive relationship to environmental performance (St. Coeff. = .301; SD. = .073; p = .000), so hypothesis 4 is supported. This finding confirms the results of research obtained from several previous studies that explain a significant and positive relationship (Seman *et al*., 2012).

Environmental performance was found to have a significant and positive relationship to competitive advantage (St. Coeff. = .200; SD. = .067; p = .003), so hypothesis 5 is supported. This finding confirms the results of research obtained from several previous studies that explain a significant and positive relationship (Larrán Jorge *et al*., 2015).

	Standardized Coefficient	Std. Dev.	T-Stat	P-Value
GOC->Competitive Advantage	-.048	.067	.684	.494
Green Innovation ->Competitive Advantage	.530	.075	7.040	***
GOC->Environmental Performance	.323	.070	4.543	***
Green Innovation -> Environmental Performance	.301	.073	4.148	***
Environmental Performance ->Competitive Advantage	.200	.067	2.972	.003
GOC*GSCM->Environmental Performance	-.236	.070	3.393	.001
Green Innovation*GSCM->Environmental Performance	.095	.074	1.316	.189
Environmental Performance*GSCM ->Competitive Advantage	-.023	.035	.756	.450

Table 5: Results of Hypothesis Testing

* Note: ***< 0.001

b. Interaction Effect Testing

The test results on the relationship green organizational culture*green supply chain management and Environmental performance indicated asignificant relationship (St. Coeff. = -.236; SD. = .070; p = .001). The results of this test indicate that green supply chain management is a variable that moderates the relationship between green organizational culture and environmental performance. It indicates that the conceptualized hypothesis 6a is supported in this study.

Furthermore, the relationship between green innovation*green supply chain management and environmental performance was found to be insignificant (St. Coeff. = .095; SD. = .074; p = .189). The results of this test indicate that green supply chain management is not a variable that moderates the relationship between green innovation and environmental performance. It indicates that conceptualized hypothesis 6b is not supported in this study.

The relationship between Environmental performance*green supply chain management and competitive advantage was also found to be insignificant (St. Coeff. = -.023; SD. = .035; p = .450). The results of this test indicate that green supply chain management is not a variable that moderates the relationship between environmental performance and competitive advantage.It indicates that the conceptualized hypothesis 6c is not supported in this study.

c. Mediation effect Testing

The test results on the mediating effect indicate that environmental performance was found to mediate directly or partially. The relationship between green organizational culture and competitive advantage (St. Coeff. = .064; p = .015) is displayed in Table V. This means that green organizational is an effective stimulus to form competitive advantage.

Furthermore, it was found that environmental performance partially mediates the relationship between green innovation and competitive advantage (St. Coeff. = .060; p = .016). The relationship between green innovation and competitive advantage is significant.

Path	Standardized coefficient	P -Values
GOC ->environmental performance→competitive advantage	.064	.015
Green Innovation ->environmental performance→competitive advantage	.060	.016

Table 6: Results of Mediation effect

V. CONCLUSION AND DISCUSSION

This research aims to determine the effect of green organizational culture and green innovation on competitive advantage by mediating environmental performance and moderated by green supply chain management. Hypothesis test results indicate that the green organizational culture does not positively affect competitive advantage. The results of this test do not support previous research (Wang, 2019). This explains that managers or organizational structures in companies who understand the values of an environmentally friendly organizational culture will support and be fully aware of environmental strategies. This includes decisions on how to compete with competitors for achieving a clear competitive advantage.

Green innovation on competitive advantage has a significant and positive effect. The results of this test support previous research (Chiou *et al*., 2011), which explains that a high concentration on environmentally friendly product innovation will benefit organizations through increased costs, increased environmental efficiency and increased productivity and product quality, which directly contributes to increasing competitive advantage. This supports existing research where the higher the innovation carried out by the company, the higher the competitive advantage obtained.

This study also showed that a green organizational culture positively affects environmental performance. The results of this test support previous research (Fergusson & Langford, 2006). This explains that managers or organizational structures in companies that support environmentally-friendly direct managers and organizational structures become aware of the resources used, waste generated, and energy consumed to improve the company's green performance and support better environmental performance.

The same research results are found in the relationship between green innovation that directly influences environmental performance. The results of this test support previous research (Seman *et al*., 2012). This explains that green innovation in a company that supports environmental performance reduces harmful toxins and production waste costs.

Green supply chain management, in this case, is a moderating quasi. The moderating variable is a moderating quasi when the variable has no significant effect, and the moderating effect has no significant impact. However, when green organizational culture and green innovation are mediated with environmental performance, a significant effect on the competitive advantage (Table VI) occurs.

In contrast, the relationship between green innovation and competitive advantage mediated by environmental performance variables and moderated by green supply chain management has no significant effect. This shows that green supply chain management is a moderating predictor that significantly affects environmental performance and competitive advantage. The moderating variable is a moderating predictor when the variable has a significant effect, but the moderating effect has no significant effect. This means that the green supply chain management variable only acts as a predictor (independent) in this path and cannot strengthen or weaken the relationship. Likewise, green supply chain management moderates the relationship between environmental performance and competitive advantage.

- LIMITATIONS

The limitation of this research is using a sample of 250 SME entrepreneurs in Solo Raya. They are engaged in the packaged food industry to achieve competitive advantage through environmentally friendly industrial processes. Suggestions for further research, choose a sample with a broader range and more specifically within certain limits business criteria.

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