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## Effect of Sustainability Supply Chain Management on Company Performance: Mediating Role of Competitive Advantage

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### Abstract

This study aims to examine effect of sustainability supply chain management on competitive performance with mediating role of competitive advantage. The research was conducted on companies in the manufacturing sector East Java. The data in this study were collected using a questionnaire. Furthermore, 125 questionnaires were distributed in manufacturing company in East Java, but 100 were returned and could be analyzed. Hypothesis testing with Structural Equation Modeling using Smart PLS. The result of the partial analysis show that sustainability supply chain management has a positive and significant effect on competitive advantage, supply chain management has a positive and significant effect on company performance, the last one is competitive advantage has significant effect on company performance. The most important result of this study is competitive advantage has an important role as a mediating variable. Implementation of sustainability supply chain management can increase the company's competitive advantage so that there is an increase in the performance of manufacturing companies in the province of East Java. Competitive advantage can cause companies to have much higher and superior performance than competitors in the industry.

**Keywords:** *Sustainability Supply Chain Management, Competitive Advantage, Company Performance*

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## **INTRODUCTION**

Euromonitor International observes that Global GDP growth decreased by 200% from 3.0% to negative 3.1% in the first quarter of 2020 (Damilola et al., 2020). The Covid-19 pandemic caused the global economy to contract by 3% at the end of 2020 and much worse than the global financial crisis that occurred in 2008. Several developed countries experienced economic contractions, namely Spain (8.0%), Italy (9, 1%), France (7.2%), Germany (7.0%), United Kingdom (6.5%), Japan (5.4%), and United States (5.9%) (Asare et al., 2021). Bank Indonesia has also revised its economic growth projection from 5% to 2.5% (Susilawati et al., 2020). The manufacturing industry is one of the sectors that experienced a significant decline during the Covid-19 pandemic (Sparrow et al., 2020). Based on data from the Indonesian Ministry of Industry in 2020, it shows that GDP and the manufacturing industry experienced a significant and even negative decline in the second quarter of 2020. This decline was largely due to the Covid-19 pandemic which caused all sectors in economic activity to slump.

The Covid-19 pandemic caused company performance to decline and even bankruptcy for the company (Donthu & Gustafsson, 2020). This is due to a decline in sales and production, unstable raw material prices, delays in the distribution of raw materials and finished goods due to the Large-Scale Social Restrictions (PSBB) policy (Sulistiyani & Riyanto, 2020). Restrictions on economic activity and movement of people can hamper the supply of manufactured products and decrease consumer demand (Morgan et al., 2021). Manufacturing production operations that depend on physical proximity and fast-paced team work are disrupted due to social distancing policies in interactions between employees. Manufacturers are starting to rearrange their operational processes starting from reducing operating hours, reducing employees so that it has a negative impact on company performance (Harris et al., 2020).

Therefore, the Covid-19 pandemic is detrimental to industrial production, operations and sales. Company managers are expected to pay attention to changes in the external environment, make business adjustments, determine strategies for

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carrying out production, and carry out operational activities that meet consumption trends during the Covid-19 pandemic to help business recovery so as to improve company performance.

Company performance is related to overall productivity in an organization with the main goal of obtaining economic benefits (Olanipekun et al., 2015). Company performance describes the company's ability to earn profits and growth in achieving strategic goals (Onikoyi & Adegboyega, 2017). Previous empirical findings indicate that there are several factors that can affect company performance. The practice of sustainable supply chain management has contributed to the company's performance. As the findings of previous studies (Ince et al., 2020; Baah & Jin 2019). While different results are shown by other studies that sustainable supply chain management has no effect on company performance (Hastalona et al., 2020; Husnaeni & Retnoningsih, 2021).

The ability of organizations to incorporate sustainability into supply chain practices will attract environmentally conscious customers, so that the company has a good reputation and ultimately gains a competitive advantage (Baah & Jin, 2019). The adoption of sustainability practices not only improves an organization's environmental and social performance but also provides an opportunity for the organization to acquire a new set of competencies that can help achieve competitive advantage (Saeed & Kersten, 2019). Previous studies have shown that sustainable supply chain management practices have a significant effect on competitive advantage (Baah & Jin, 2019; Wainaina, 2021; Khaksar et al., 2015). However, different results were obtained from other studies which showed that sustainable supply chain management had no significant effect on competitive advantage (Manuela, 2019).

Competition is considered as one of the drivers of companies to incorporate sustainability into supply chains. Companies that are under competitive pressure, adopt sustainability practices to gain competitive advantage (Meixell & Luoma, 2015). The Covid-19 pandemic has had a negative impact on consumer demand and business revenues. Uncertain conditions that occur due to the Covid-19 pandemic require companies to have a competitive advantage for

business continuity. Competitive advantage describes an organization's ability to create a sustainable position above its competitors (Elijah & Millicent, 2018). Competitive advantage is related to the way companies choose and implement strategies into practice so that they have an advantage over competitors.

Competitive advantage is an important factor for companies to win the competition. Russel & Millar (2014) explain that companies create competitive advantages through competitive capabilities or priorities which are defined as preferences or strategic dimensions in which companies choose to compete in the targeted market. The stronger the company's competitive advantage, the better the performance of a company. Previous studies have shown that competitive advantage has an influence on company performance (Pono et al., 2020; Siahaan et al., 2020; Elijah & Millicent, 2018). While different results are shown by research conducted by Kamboj et al. (2015) that competitive advantage has no effect on company performance.

This research needs to be done considering the Covid-19 pandemic has caused most companies to face supply chain risks. In the early days of Covid-19 that occurred in China, the impact of disrupting supply chain activities had already occurred at the global level. Approximately 95% of Fortune 1000 companies with global supply chain operations in China experience direct product and inventory flow disruptions (Esper, 2020). Supply chain activities have an important role in the manufacturing industry because they can increase the competitiveness of companies (Palandeng, et al., 2018). The manufacturing sector is an industrial sector that consumes a lot of resources, because manufacturing activities utilize a large amount of energy and natural resources. The International Energy Agency states that 36% of global carbon dioxide (CO<sub>2</sub>) emissions are caused by the manufacturing sector (Qureshi et al., 2019), making sustainable supply chains a necessity. sustainable supply chain management can provide strategic integration of social, environmental, and economic aspects in the company's business activities. Wang & Sarkis (2013) that socially and environmentally sustainable practices can produce waste reduction benefits, build

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company image and reputation, and can improve short-term and long-term performance.

The study was structured to determine the effect of sustainability supply chain management on company performance by using competitive advantage as a mediating variable. The novelty in this study is research on the effect of sustainable supply chain management on company performance by using competitive advantage in the manufacturing sector in East Java Province during the Covid-19 pandemic just done this research. In addition, the findings from previous studies also show that there is still a gap in the relationship between the variables of sustainable supply chain management, competitive advantage, and company performance.

### **Relationship Between Sustainable Supply Chain Management and Company Performance**

The study of Zailani et al. (2012) that companies that pay attention to social, environmental, and economic goals can improve company performance. Wang & Sarkis (2013) confirmed that sustainable supply chain management activities are positively related to company performance. The application of sustainable supply chain management practices allows companies to maintain a leading position in the market, increase market share, and increase profits (Paulraj, 2011). Previous research conducted by Hong et al. (2017); Ince et al. (2020); Baah & Jin (2019) prove that sustainable supply chain management has a significant effect on company performance. In accordance with the description, the following hypothesis can be formulated:

H1: Sustainable supply chain management has a significant effect on company performance.

### **Relationship Between Sustainable Supply Chain Management and Competitive Advantage**

The creation of a sustainable supply chain is an effective strategy to achieve competitive advantage and corporate interests in the future (Markley &

Davis, 2007). Along with environmental damage as a result of the company's activities, it becomes a challenge for every company to gain a competitive advantage that stems from a series of capabilities to minimize waste, product design and use of environmentally friendly technology. Previous studies conducted by Khaksar et al. (2015) and Baah & Jin (2019) prove that sustainable supply chain management has a significant effect on competitive advantage. Based on the explanation, the following hypothesis is formulated:

H2: Sustainable supply chain management has a significant effect on competitive advantage

### **Relationship Between Competitive Advantage and Company Performance**

Competitive advantage refers to the results or activities of the organization so that it has an advantage over its competitors. Competitive advantage will create superior value that leads to increased work (Ferreira et al., 2018). The above opinion implies that competitive advantage has an influence on company performance. This is supported by research proposed by Pono et al. (2020), Siahaan et al. (2020). Based on the description put forward, the proposed hypothesis is:

H3: Competitive advantage has a significant effect on company performance

### **Relationship Between Sustainable Supply Chain Management, Competitive Advantage, and Company Performance**

Based on a study conducted by Vargas et al. (2018) shows that companies that implement sustainable supply chain management have a competitive advantage over competitors. This is because the resulting product is more environmentally friendly. Previous research findings from Ferreira et al. (2018), Siahaan et al. (2020) has proven that the company's competitive advantage can improve company performance. Based on this description, this research formulates the following hypothesis:

H4: Competitive advantage mediates the effect of sustainable supply chain management on company performance.

## **METHOD**

### **Population and Sample**

The population in this study consisted of large and medium-scale manufacturing companies in East Java, amounting to 5495 companies. The sample in this study was based on Hair et al. (2017) that in structural equation modeling research, the sample size can be determined by looking at the number of constructs in the research model. The constructs in this study consisted of three variables so that the number of samples obtained was at least 100 samples. Purposive sampling which is non-probability sampling method was employed in the study. Criteria in purposive sampling consist of medium and large scale manufacturing company in East Java, legal entity, have a minimum workforce of 20 people, have income Rp 2.5 billion in a year. The samples used as research targets are managers in companies who have knowledge and understanding related to the company's supply chain activities, as well as the company's production and product development activities.

### **Measurement**

Sustainable supply chain management variable is measured based on five indicators that is sustainable design and packaging, sustainable production, sustainable marketing, sustainable transportation, and sustainable purchasing (Al-Odeh & Smallwood, 2012). Competitive advantage variable is measured based on five indicators that is cost, quality, delivery time, flexibility, and creativity (Khaddam et al., 2020). Company performance variable is measured based on Balanced Scorecard perspective that is financial, customer, internal business, growth and learning (Chimtengo et al., 2017). All statements were evaluated on a five-point Likert scale, ranging from “strongly disagree” (1) to “strongly agree” (5).

## Data Analysis

Data analysis in this study using *Partial Least Square - Structural Equation Modeling* (PLS-SEM). Chang et al. (2016) mentioned that PLS-SEM is a statistical technique which has obtained huge acceptance among academic researchers. PLS-SEM has been preferred over CB-SEM as it is more advantageous for exploratory research and theory development (Cocosila & Trabelsi, 2016).

## RESULTS AND DISCUSSION

### Results

The measurement model is carried out using composite reliability, convergent validity, and discriminant validity. Convergent validity is an indicator of the relationship between assessment measures and other related measures. According to Fornell and Larcker (1981), the Cronbach value and composite reliability derived from the model are superior to 0.7 and 0.8, respectively, which undoubtedly signifies a high degree of internal consistency in the model. Furthermore, the value of the convergent validity test which is the resultant of the AVE or the average variance extracted has a value of more than 0.6.

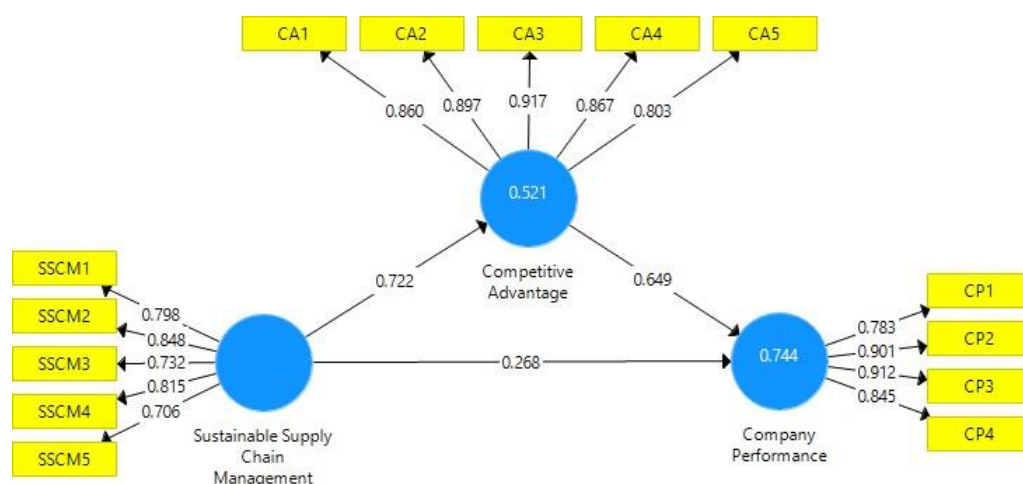


Figure 1. Measurement Model Analysis

Source: Questionnaire Results, 2022



Table 1. Convergent Validity and Reliability

Construct	Item	Factor Loading	AVE	Composite Reliability	Cronbach's Alpha	R <sup>2</sup>
Sustainable supply chain management	SSCM1	0.798	0.611	0.887	0.840	
	SSCM2	0.848				
	SSCM3	0.732				
	SSCM4	0.815				
	SSCM5	0.706				
Competitive Advantage	CA1	0.860	0.756	0.939	0.919	0.521
	CA2	0.897				
	CA3	0.917				
	CA4	0.867				
	CA5	0.803				
Company Performance	CP1	0.783	0.742	0.920	0.883	0.744
	CP2	0.901				
	CP3	0.912				
	CP4	0.845				

Source: Questionnaire Results, 2022

The value of the convergent validity test based on the AVE has a value of more than 0.6 (see Table 1) which indicates that the value obtained is appropriate (Bagozzi & Yi, 1988). The proposed value of composite reliability is superior to 0.70 which will be calculated for each construct (Gefen et al., 2011). In Table 1, all constructs have a composite reliability value higher than 0.7. The Cronbach value for all constructs is more than 0.7 which indicates a high level of reliability for the model.

As suggested by Thong (2001), discriminant validity means the degree to which a statement distinguishes between constructs; calculated by comparing the correlation between two variables with the square root of the explained mean variable or AVE.

Table 2. Discriminant Validity

	Company Performance	Competitive Advantage	Sustainable Supply Chain Management
Company Performance	0.862		
Competitive Advantage	0.842	0.870	
Sustainable Supply Chain Management	0.736	0.722	0.782

Source: Questionnaire Results, 2022

In Table 2, the square root of the explained mean variance is higher than the correlation coefficient with other factors, which confirms that the discriminant validity of the model has been reached. Furthermore, testing the structural model to prove the hypothesis using PLS-SEM bootstrapping approach. The standard value of t-statistics to validate the hypothesis must be greater than or equal to 1.96.

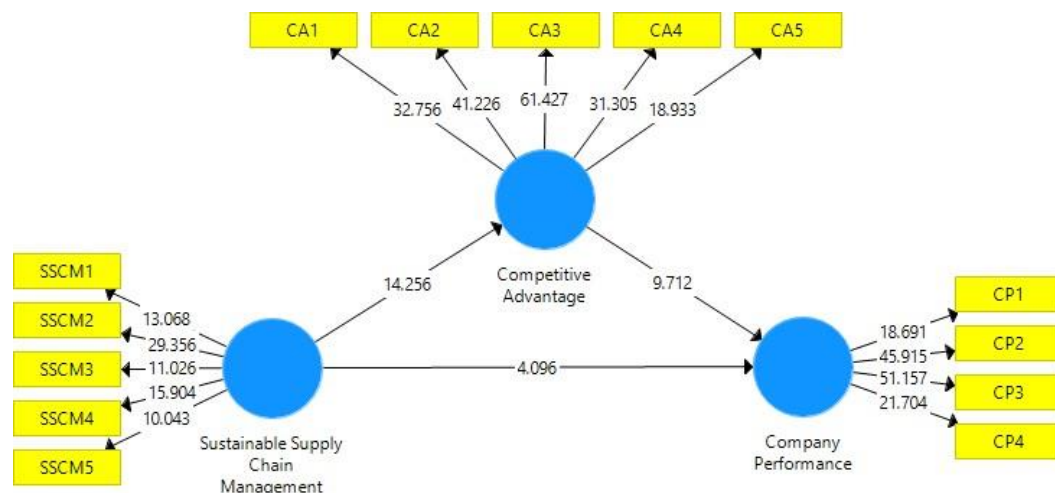


Figure 2. Structural Model Analysis

Source: Questionnaire Results, 2022

The t-statistical value of the four hypotheses (H1, H2, H3, H4) is superior to 1.96 which proves that all the hypotheses formulated are proven (Table 3). The

ability of sustainable supply chain management to predict competitive advantage is 0.521 or 52.1%. The ability of sustainable supply chain management and competitive advantage in predicting company performance is 0.744 (74.4%) (Figure 1).

Table 3. Direct Effect Hypothesis Testing

			Original Sample	t-statistical	Remarks
Company Performance	<--	Sustainable supply chain management	0.268	4.096	Supported
Competitive advantage	<--	Sustainable supply chain management	0.722	14.256	Supported
Company performance	<--	Competitive Advantage	0.649	9.712	Supported

Source: Questionnaire Results, 2022

Table 4. Indirect Effect Hypothesis Testing

			Original Sample	t-statistical	Remarks
Company performance	<--	Competitive advantage	0.268	4.096	Supported
Competitive advantage	<--	Sustainable supply chain management			

Source: Questionnaire Results, 2022

The results of testing the indirect effect hypothesis obtained t-statistics greater than 1.96 (Table 4) so that it can be concluded that competitive advantage has a role as a mediating variable for the effect of sustainable supply chain management on company performance.

### **Discussion**

Sustainable supply chain management has a positive and significant effect on company performance in manufacturing companies in East Java. This research has empirically proven that the higher the implementation of sustainable supply chain management in manufacturing companies, the better the company's

performance from the perspective of finance, customers, internal business processes, as well as growth and learning. The findings of this study indicate that sustainable supply chain management can explain the variation of changes in the company performance of manufacturing companies in East Java. The results of this study certainly support empirical studies from previous research conducted by Baah & Jin (2019) which can prove that sustainable supply chain management has a positive and significant effect on company performance. Likewise, research conducted by Ince et al. (2020) with the same result. The results obtained from this study have confirmed that sustainable supply chain management that pays attention to social, environmental, and economic goals through systemic coordination of business processes can improve company performance.

Another finding shows that sustainable supply chain management has a positive and significant effect on competitive advantage in manufacturing companies in East Java. The positive influence explains empirically that the higher the implementation of sustainable supply chain management in manufacturing companies, the better the competitive advantage possessed by the company.

Sustainable supply chain management has the ability to explain variations in changes in the competitive advantage possessed by the company. Sustainable supply chain management referred to in this research is the process of managing supply chain management activities by considering environmental, economic and social issues to improve the long-term economic goals of the organization and its supply chain. While competitive advantage relates to the extent to which an organization is able to create a superior position in the market as long as competitors remain. The findings obtained in this study certainly support previous research conducted by Khaksar et al. (2015) which is able to prove that sustainable supply chain management has a significant effect on competitive advantage. The results of this study also support a previous study from Baah & Jin (2019) that sustainable supply chain management has a significant positive effect on competitive advantage.

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The results of testing the third hypothesis show that competitive advantage has a positive and significant effect on company performance in manufacturing companies in East Java. The positive influence explains empirically that the higher the competitive advantage possessed by the manufacturing company, the better the company's performance, so that competitive advantage has the ability to explain variations in changes in the company's performance. This research is supported by previous research conducted by Pono, et al. (2020) that competitive advantage has a significant positive effect on company performance. In addition, it also supports previous research by Siahaan, et al. (2020) which demonstrates competitive advantage will create superior value that leads to increased company performance.

Based on the results of the mediation test, it shows that competitive advantage mediates the effect of sustainable supply chain management on company performance. These results show empirically that the fourth hypothesis used in answering the research problem is proven true. Based on a study conducted by Vargas et al. (2018) shows that companies that implement sustainable supply chain management have a competitive advantage over competitors. This is because the resulting product is more environmentally friendly. Previous research findings from Ferreira et al. (2018) Siahaan, et al. (2020) has proven that the company's competitive advantage can improve company performance.

## **CONCLUSION**

Sustainable supply chain management has a positive and significant effect on company performance in manufacturing companies in East Java. This means that the higher the implementation of sustainable supply chain management, the better the company's performance. Meanwhile, if the manufacturing company is lower in implementing sustainable supply chain management, it can certainly reduce the company's performance.

Sustainable supply chain management has a positive and significant impact on the competitive advantage of manufacturing companies in East Java.

This means that the higher the implementation of sustainable supply chain management, the better the company's competitive advantage. Meanwhile, if the manufacturing company is lower in implementing sustainable supply chain management, it can certainly reduce the company's competitive advantage.

Competitive advantage has a positive and significant effect on company performance in manufacturing companies in East Java. This means that the stronger the competitive advantage possessed by the company, the better the company's performance will be. Likewise, the opposite happens when the company's competitive advantage is low, it can cause the company's performance to decrease.

The final conclusion is that competitive advantage mediates the effect of sustainable supply chain management on company performance in manufacturing companies in East Java. This means that the company's competitive advantage mediates the influence of sustainable supply chain management on company performance.

The implications and recommendations of the research are that the performance of manufacturing companies in East Java can be improved by increasing the implementation of sustainable supply chain management and strengthening the company's competitive advantage. This needs to be done considering the two factors used in the research model can affect the company's performance. Further research development needs to be done by adding other variables that affect the performance of manufacturing companies in East Java outside the variables contained in the research model. Variables that can be added include market orientation strategy, marketing capability, and innovative culture.

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