

## EFFECT ANALYSIS OF SUPPLY CHAIN MANAGEMENT ON COMPETITIVE ADVANTAGE AND COMPANY PERFORMANCE (STUDY AT NEW DJOMBANG SUGAR FACTORY)

Maulana Zulkarnain<sup>1</sup>,

Ubud Salim<sup>2</sup>,

Sumiati<sup>3</sup>

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### ABSTRACT

*This study discusses the influence of supply chain management on competitive advantage and firm performance at the New Jombang sugar factory. This study aims to analyze the influence of supply chain management on competitive advantage and company performance. The study used 35 employees of sugar factory leader of New Jombang. Analysis method using Partial Least Square (PLS). The results show that supply chain management has an effect on company performance, supply chain management influence to competitive advantage, competitive advantage influence to company performance, competitive advantage mediate influence of supply chain management to company performance.*

**Keywords:** supply chain management, competitive advantage, company performance, sugar factory of Djombang Baru East Java Indonesia

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### Introduction

Indonesia has experienced the glory era of the sugar industry in the 1930s. At that time, sugar mills operating were 179 sugar factories (PG), productivity of about 14.8 percent and yield of 11-13.8 percent. Sugar exports have reached about 2.4 million tons with peak production reaching 3 million tons (Sudana et al., 2000).

In the period 1991-2001, the Indonesian sugar industry began to face significant problems. One indicator of the problem of the Indonesian sugar industry is the tendency of import volume to continue to increase at a rate of 16.6 per cent per annum in that period. This is because when consumption continues to increase at a rate of 2.96 percent per year, sugar production decreases at a rate of 3.03 percent per year. In five years 1997-2002, sugar production even decreased at a rate of 6.14 percent per year (Dewan Gula Indonesia, 2002). The decline in production and the increase in deficit facing Indonesia is caused by various internal and external factors that are interrelated. External factors regarding government policy, especially for the period of 1982-2000 have a significant effect on the decline of the Indonesian sugar industry.

The government policies favoring non-agricultural and sugar policies, particularly the 1997-2000 period, are less precise in responding to distorting and protective world sugar markets (Sudana et al., 2000), whereas internal factors are caused by a decrease in efficiency at the farm level And the production of Sugar Factories that play a role in the decline of Indonesian sugar industry (Adisasmito, 1998, Murdiyatmo, 2000, and Pakpahan, 2000). The sugar factory of Jombang Baru is a company under PTPN X located in Jombang Regency, the sugar factory of Djombang Baru is not maximal in meeting the needs of milling, especially sugarcane supply because it is unable to compete with private sugar factory private sugar mill with milling capacity reaches 12,000 tons per day while at sugar factory New Jombang is only 2,000 tons per day, then the two sugar factories competing each other to win the competition. In addition, private sugar mills expanded by bringing in a milling machine that can produce sap beside sugar, while the Jombang Baru sugar factory still has not yet done an expansion to milling machines and still rely on old machines that have been eaten by the times.

Then, the system of partnership of Jombang Baru sugar factory to the sugarcane farmers who still lack of either the issue of rendemen or price per quintal of sugarcane that has not been able to compete with partnership system applied by private sugar factory that can give high yield or price per quintal to sugar cane farmer. Differences in milling capacity, milling machine expansion and partnership system to sugarcane farmers resulted in the fact that the Jombang Baru sugar factory is currently unable to compete with the private sugar mills and if left unchecked, the Jombang Baru sugar factory will experience a decrease in performance resulting in a decrease in production.

The New Jombang sugar factory can overcome the problem of performance degradation by improving and improving supply chain management concerning how to obtain quality raw materials up to the distribution of quality sugar. Inefficient production of sugar factories can be done by applying supply chain management concepts to manufacturing, demand management, order fulfillment to distribution. The concept of supply chain management was originally introduced by consultants in the early 1980s (Oliver and Webber 1982) and was used to discuss the benefits of a company's internal business functionality, such as purchasing, manufacturing, sales and distribution (Harland et al., 1999). Implementation of supply chain management concept can be used as one of solution of sugar industry problem especially sugar factory itself starting from problem of raw material quality which not yet optimal, amount of sugar production less, production cost not yet optimal. Implementation of supply chain management concepts can be done on the process of production or processing from sugarcane raw material to sugar quality.

Business management has entered an era of inter-network competition where individual business is no longer competing as an autonomous entity solely, but as a supply chain. Some authors have discussed how transcending the boundaries of corporate relationships can lead to the creation of superior value to achieve sustainable competitive advantage (Dyer and Singh, 1998; Dyer and Nobeoka, 2000; Krause et al., 2007; Mesquita et al., 2008; Flynn et al. 2010). In today's competitive environment, the ultimate success of a single business will depend on the management's ability to integrate the corporate network from business relationships. Supply chain management (SCM) has emerged as an important strategy for developing relationships and improving company performance (for reviews, see Chen and Paulraj, 2004).

Empirical evidence supporting the still need for further research on the effect of supply chain management on company performance is the result of research Suhongli (2003); Chin (2009); Arifkhan (2009), Hooshang (2009); Arifkhan (2008); Elmuti (2002); Kim (2006); Gharakhin (2012); Regina (2013) indicates a significant and positive influence on supply chain management practices affecting the performance of supply chain management (SCM) on company performance, while the findings of Rajwinder (2010) and Linet (2015) show different results ie there is no influence between management practices Supply chain to the company's performance.

Based on previous research, there are some research gaps about supply chain management on company performance and competitive advantage on company performance which show different research result between researcher one with other researcher, so it needs an empirical analysis (Suhongli, 2003; Chin, 2009, Arifkhan, 2009; Arifkhan, 2008; Hooshang, 2014; Ashish, 2013; Elmuti, 2002; Kim, 2006; Mahour, 2014; Gharakhani, 2012; Jie, 2013; Regina, 2013) how the influence of supply chain management on corporate performance through Competitive advantage as a mediation variable.

Based on the background, the following problem is formulated:

1. Does supply chain management have a positive and significant impact on company performance?
2. Does supply chain management have a positive and significant impact on competitive advantage?
3. Does competitive advantage have a positive and significant impact on company performance?
4. Does supply chain management have a significant influence through competitive advantage as a mediating variable on firm performance?

Based on the formulation of the problem, the research objectives as:

1. Analyze the influence of supply chain management on company performance.
2. Analyze the influence of supply chain management on competitive advantage.
3. Analyze the influence of competitive advantage on company performance.
4. Analyze the role of competitive advantage as a mediating variable on the influence of supply chain management on company performance

## RESEARCH METHODS

This type of research is a survey study because this research takes samples and uses questionnaires as the main data collection instrument. Thus, this study is categorized as Explanatory Research. This research was conducted at sugar factory of Jombang Baru in August 2016 - Septemberr 2016 with sample 35 employees of sugar factory leader of Jombang Baru. Sampling technique using saturated sampling technique. Methods of data collection conducted using questionnaires. Analyzer used is Partial Least Square (PLS).

Sources of data used in this study in the form of primary data and secondary data Primary data in this study obtained by spreading the questionnaire (questionnaire) to the respondents Secondary data obtained from the internal data of the organization and from external organizations such as the profile Sugar Factory New Djombang and from other sources if Support research. Measurement technique variables from answer questionnaire using likert scale that is 1) strongly disagree 2) disagree 3) hesitate 4) agree 5) strongly agree.

## Results

**Table 1. Characteristics of Respondents**

| Characteristics of Respondents |   |                 | Percentage (%) |
|--------------------------------|---|-----------------|----------------|
| 1. Position                    | a | General Manager | 2.86           |
|                                | . |                 |                |
|                                | b | Manager         | 17.14          |
|                                | . |                 |                |

|                       |                                                |        |
|-----------------------|------------------------------------------------|--------|
|                       | d Assistant plant manager                      | 25.71  |
|                       | Assistant manager of QC / HR / TA field        |        |
|                       | Assistant Manager of Processing / Installation |        |
|                       | Assistant Manager of Finance                   |        |
|                       | e Asisten manajer bidang QC/SDM/TA             | 14.29  |
|                       | f. Asisten manajer bidang Pengolahan/Instalasi | 28.57  |
|                       | g Asisten Manajer Bidang Keuangan              | 11.43  |
|                       | Total                                          | 100.00 |
| 2. Age                | a 30-40 years                                  | 31.43  |
|                       | b 41-50 years                                  | 28.57  |
|                       | c at least 50 years                            | 40.00  |
|                       | Total                                          | 100.00 |
| 3. Gender             | a Male                                         | 100.00 |
|                       | b Female                                       | 0      |
|                       | Total                                          | 100.00 |
| 4. Working Period     | a 1-5 years                                    | 2.86   |
|                       | b 5-10 years                                   | 2.86   |
|                       | c 10-15 years                                  | 14.29  |
|                       | d At least 15 years                            | 80.00  |
|                       | Total                                          | 100.00 |
| 5. Level of education | a Diploma                                      | 42.86  |
|                       | b Undergraduate                                | 45.71  |
|                       | c Master degree                                | 11.43  |
|                       | Total                                          | 100.00 |

## 2. Validity and Reliability of Research Instruments

### Test Validity of Research Instruments

Validity test using SmartPLS is valid if AVE value is more than 0.5. For more details are presented in table 2. Based on Table 2 it can be seen that the value of AVE is greater than 0.5 which means that each indicator variable is declared valid.

For more details are presented in table 1.2 as follows:

**Table 2. Validity Test Results**

| Variable                | AVE   | Information |
|-------------------------|-------|-------------|
| Supply Chain Management | 0.681 | Valid       |
| Competitive advantages  | 0.639 | Valid       |
| Company performance     | 0.799 | Valid       |

#### Test Reliability of Research Instruments

Reliability test is a test used to determine the extent to which a person's answers are consistent or stable over time. Reliability testing techniques in the SmartPLS software is to use the value of Cronbach's Alpha and Composite Reliable. Criteria of decision making is if the value of Cronbach's Alpha and Composite Reliable greater than 0.70 then the variable is reliable. For more details can be seen in table 3 as follows:

**Table 3. Reliability Test Results**

| Variable                | Composite Reliability | Cronbach Alpha | Keterangan |
|-------------------------|-----------------------|----------------|------------|
| Supply Chain Management | 0.950                 | 0.941          | Reliable   |
| Competitive advantages  | 0.876                 | 0.813          | Reliable   |
| Company performance     | 0.952                 | 0.937          | Reliable   |

#### Goodness of Fit Inner Model

Evaluation of Goodness of fit Model is used to know the ability of endogenous variables to explain the diversity of exogenous variables, or in other words to know the contribution of exogenous variables to endogenous variables. Goodness of fit Model in PLS analysis is done by using Q-Square predictive relevance (Q<sup>2</sup>). Adapaun results of the Goodness of fit Model that has been summarized in the following table 5.10:

**Table 4. Goodness of Fit Model Result**

| Variable                                                                                | R <sup>2</sup> |
|-----------------------------------------------------------------------------------------|----------------|
| Competitive advantages                                                                  | 0.334          |
| Company performance                                                                     | 0.636          |
| $Q^2 = 1 - (1 - R_1^2)(1 - R_2^2) \rightarrow Q^2 = 1 - (1 - 0.334)(1 - 0.636) = 0.758$ |                |

#### Hypothesis Testing

Hypothesis testing between supply chain management variables, competitive advantage variables and company performance variables. The results of hypothesis testing can be seen in the following figure 1.

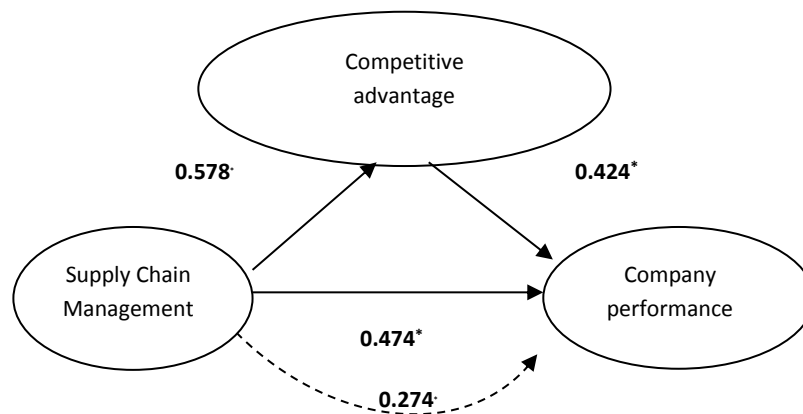


Figure 1. Hypothesis testing results

### The direct impact path coefficient test

The direct path effect significance test is used to test whether exogenous variables are influenced by endogenous variables. The test criteria states that if the value of T-statistics  $\geq$  T-table (1.96) then expressed the existence of significant influence exogenous variable to endogenous variables. The results of hypothesis testing and path coefficient direct influence between research variables are as follows:

Table 5. Results of Hypothesis Test of Direct Effect Line

| Hypothesis | Variable Exogen         | Variable Endogen       | Path Coefficient | t-statistics | Results     |          |
|------------|-------------------------|------------------------|------------------|--------------|-------------|----------|
| H2         | Supply Chain Management | Competitive advantages | 0.578            | 5.499        | Significant | Accepted |
| H1         | Company performance     | Company performance    | 0.424            | 2.928        | Significant | Accepted |
| H3         | Competitive advantages  |                        | 0.474            | 3.428        | Significant | Accepted |

### The coefficient test of indirect effect lane

Hypothesis testing of indirect effect is done with the aim to test whether there is indirect influence of independent variable to dependent variable through intervening variable. The test criteria states that if t-statistic is more than (1.96) it is stated that it has an indirect effect of exogenous variable on endogenous variable through intervening variable.

Table 6. The coefficient test of indirect effect lane

| Variable Exogen         | Variable Mediation     | Variable Endogen    | Path Coefficient | t-statistics | Results     |
|-------------------------|------------------------|---------------------|------------------|--------------|-------------|
| Supply Chain Management | Competitive advantages | Company performance | 0.274            | 2.808        | Significant |

### Testing of mediation properties

Testing of mediation properties can be tested through the Variance Accounted For (VAF) method. The test criteria states if the VAF value  $> 80\%$  then the mediation variable is expressed as Full Mediation, if the VAF value is between  $20\%$  to  $80\%$  then the mediation variable is expressed as Partial Mediation, but if the VAF value is  $\leq 20\%$  Then no mediation or mediation variables can not mediate the influence of exogenous variables on endogenous variables. From the VAF method the results obtained from testing the nature of mediation as follows:

**Table 7. Testing of mediation properties**

| Variable Exogen         | Variable Mediation     | Variable Endogen    | Direct | Indirect | Total | VAF   |
|-------------------------|------------------------|---------------------|--------|----------|-------|-------|
| Supply Chain Management | Competitive advantages | Company performance | 0.424  | 0.274    | 0.698 | 0.392 |

## CONCLUSION

Based on the research objectives and the results of discussion on the influence of supply chain management on competitive advantage and company performance, it can be described the following research conclusions:

Improved supply chain management at the Jombang Baru sugar factory is able to improve the performance of the sugar factory of New Jombang. Implementation of supply chain management that has indicators of supplier partnerships, customer relationships, customer service, demand management, order fulfillment, manufacturing process, product development and commercialization, supplier returns and customer returns are effective enough to enable Including cost reductions, financial performance, operational performance, and market-based performance.

Improved supply chain management at the New Jombang sugar factory is able to increase the competitive advantage of the Jombang Baru sugar factory. Implementation of supply chain management that has indicators of supplier partnerships, customer relationships, customer service, demand management, order fulfillment, manufacturing process, product development and commercialization, supplier returns and customer returns have been effective enough to create competitive advantage Including price, product quality, delivery reliability, product innovation, and time to market increase.

Increased competitive advantage in the sugar factory of New Jombang is able to improve the performance of the sugar factory of New Jombang. The results of this study have shown that the increasing competitive advantage in the sugar factory of New Jombang, will be followed by the increasing of company performance at sugar factory of Jombang Baru.

Improved supply chain management at the New Jombang sugar factory is able to improve the company's performance by first creating and producing competitive advantage. The results of this study have shown that the increase of competitive advantage in the sugar factory of Djombang Baru serves as a partial mediation from the result of improved supply chain management that has an effect on the improvement of company performance.

## Future Research Suggestions

Based on the research findings that show that the accuracy of the model in the analysis in this study amounted to 0.758. This means diversity of supply chain management variables, competitive advantage and company performance can be explained by 75.8% model and the remaining 24.2% can be explained by other variables. Thus, the researchers can further develop the research model by: (1) adding other variables such as: internal supply or external supply chain, supply chain flexibility, (2) developing measurement models eg on measuring competitive advantage eg post service or on company performance measurement eg Customer delivery performance and financial performance with indicators of market growth, share prices, market share growth, ROI growth or measuring company performance using Balance Scorecard method, (3) expanding coverage of research area, eg one province or one island, (4) developing research with Comparing the state-owned sugar mills to private sugar mills.

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Maulana Zulkarnain<sup>1</sup>,

<sup>1</sup>Master Student in Faculty of Economics and Business,  
University of Brawijaya, Malang, Indonesia

Ubud Salim<sup>2</sup>,

<sup>2,3</sup> Advisor in Faculty of Economics and Business,  
University of Brawijaya, Malang, Indonesia

Sumiati<sup>3</sup>

<sup>2,3</sup> Advisor in Faculty of Economics and Business,  
University of Brawijaya, Malang, Indonesia