



# The Effect of Supply Chain Management on Competitive Advantage and Firm Performance

(Case Study: The Fish Processing Industry in Bitung North Sulawesi Province in Indonesia)

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## Abstract:

Supply Chain Management (SCM) has been recognized as a strategy that could lead firm to gain competitive advantage, other than to achieve greater firm performance. This study aimed to analyze the effect of supply chain management to competitive advantage and firm performance, the effect of competitive advantage and firm performance and influence on the performance of SCM in Firm through a competitive advantage in the fish processing industry in Bitung North Sulawesi Province. Research conceptualizes and develops three dimensions of SCM practice (customer relationship management, internal supply chain management, supplier relationship, management) and tests the relationships between SCM, competitive advantage, and firm performance. Data for the study were collected from 21 firm and the relationships proposed in the framework were tested using partial least square (PLS) The results indicate that SCM, which consists of three dimensions of customer relationship management, internal supply chain management and supplier relationship management, has a positive impact on competitive advantage and performance, competitive advantage has positive effect on the performance and the firm's performance depends on the competitive advantages of each of the fish processing industry. SCM in the industry of fish processing in the city of Bitung in North Sulawesi has positive effect on competitive advantage of firm. As for the performance of the enterprise, SCM also direct effect. The performance of fish processing firm directly been affected by the competitive excellence and SCM practice

**Keywords:** Supply Chain Management; Competitive Advantage; Firm Performance; Partial Least Square.

## 1. INTRODUCTION

Fishery is one of the important resources to the livelihood of the people and as the potential prime mover of national economy leading sectors development (Daryanto, 2007). As a country with vast Maritime and aquatic reaches 2/3 length of the beach area of 104,000 km, Indonesia lies between the Indian Ocean and the Pacific Ocean, which consists of 1.9225 million Km<sup>2</sup> of land and 3,257,483 Km<sup>2</sup>, and 17,508 islands with a total area of sea (Km<sup>2</sup>) 5.8 million Km<sup>2</sup>. (North Sulawesi statistical data, 2011) Fisheries make a significant contribution to the Indonesian economy, especially as a source of foreign exchange which if developed would obtain economic value in the form of contribution to GDP, created employment, increasing public revenues, and a number of multiplier effects.(Agriculture and rural development department of sustainable development network, 2010).

Bitung is fisheries industrialization of 9 regions in Indonesia and has a strategic location because it is located in the Strait of Lembeh facing the Celebes Sea and the Pacific Ocean that serves as the fishing port outer circumference of Indonesia. The existence of Bitung in Asia and the Pacific lip allows the development of Bitung became a center of regional economic activities in eastern Indonesia (Bitung Strategic Plan, 2013). With this huge potential, should be used to improve the economy of the marine sector, but the development of maritime sector is still not a priority and get the full attention of policy holders. With the enactment of a Special Economic Zone, the port town of Bitung as an entrance from the Asia-Pacific Indonesia, both as a regional bunkering, warehousing, export-import and logistic service in Indonesia. If

used as a gate of Import export to several countries in the Pacific, it will save transportation costs for the fish processing industry in the city of Bitung (Data Center for Statistics and Information Secretariat General of Marine Affairs and Fisheries (2013). Industry performance of fish processing firm in the city of Bitung in North Sulawesi province has ups and downs and the peak occurred in 2015 when the decrease is very concerning. It can be seen in table 1.1 below:

<b>Year</b>	<b>Volume (Ton)</b>
2010	146,940.40
2011	147,069.8
2012	159,319.4
2013	133,277,587.8
2014	124,501,482.1
2015	45,208,52

Source: Fisheries and Marine Bitung 2016

The decline in fisheries production greatly affects performance on the fish processing industry in the Bitung city. Lack of raw materials makes fish processing industry in Bitung become torpor. This impact is felt primarily for large corporations exist because it requires supply of fish that much every day. More details we can see the total volume and value of exports of fishery products from Bitung in the table below.

<b>Year</b>	<b>Volume (Ton)</b>	<b>Value (US \$)</b>
2007	31.566,84	62.860.722,08
2008	37.633,86	88.526.407,47
2009	26.634,23	82.140.283,40
2010	29.109,84	71.047.445,31
2011	29,955,40	107.769.017,50
2012	29.854,80	215.200.931,56
2013	24.953,29	116.106.578,14
2014	32,574,99	131,100,033.84
2015	18,658,417	98,217,851.86

Source : Fisheries and Marine Bitung 2016

The development of export of fishery products in Bitung unstable, especially in 2013 decreased 24953.29 tons from 29854.80 tons and in 2014 increased in 2015: 32,574,99 and fish processing industry has decreased precipitously namely into 18,658,417 ton as a result of the lack of raw material supply of fish is the impact of the moratorium because the policy makes fishermen could not do unloading (shipment) in the middle of the sea. As a result, the cost of fishermen and entrepreneurs to be doubled and the impact on the selling prices are higher. Increasing the number and value of exports of fishery products in Bitung still has a great opportunity. Opportunities are also supported by the increasing global consumption of fishery products. Nevertheless, global trading conditions with a high level of competition require a strong competitive edge in the trading of various goods and services as well as fish products trade. Fish processing industry should be able to produce a variety of competitive products with good quality to satisfy consumers and compete with products produced by other countries. Here in the present export demand by Country of which can be seen in the table below:

Tabel. 1.3 Export Demand for Fish in Bitung City to Other Country Year 2004-2013

No	Imported Countries	Total demand for fish exports average / year (thousands of tons)	Total developments State GDP of the Importer (millions US \$)
1	Jepang	723.234	311,318
2	USA	435.600	628,696
3	Singapore	335.679	120,779
4	South Korea	319.110	240,577
5	Canada	234.889	219,887
6	Australia	325.560	201,445
7	China	113.563	100,366
8	Italy	120.300	199,887

Source : World Bank (IBRD, Annual report look (2013), IMF Annual report.

Fish importing countries in Bitung there are some countries. Eight countries are: Japan, USA, Canada, South Korea, Singapore, Australia, China, and Italy. For the biggest fish importing countries were: Japan amounted to 723 234 tons and a total GDP of US \$ 311.318 and the next is the United States amounted to 435 600 tons and a total GDP will reach US \$ 628.696. If seen from the table above that some are located on Asian countries such as Singapore, China, South Korea and the European continent. GDP of the importing country in fact is very influential in the demand for export of fish in Bitung and also helped influence the growth of the industry in a certain period. Of the total number and value of production, export realization can be concluded that the fish processing industry in Bitung is potentially quite promising and also require proper management arrangements and improved logistics. Because in view of the value of its exports, the more obvious the fish processing industry should be encouraged and require rapid handling

The practice of supply chain management is a collaboration that includes the firm related to the flow of goods, from raw materials to finished goods that are bought and used by the customer (Indrajit, Djokopranoto.2005; Pujawan, 2005; Heizer and Reinder 2005). However, without the efficient and effective management of the firm will have difficulty competing with a number of existing competitors (Indrajit, Djokopranoto 2007). Gimenez and Ventura (2003), in order to survive in a global environment increasingly fierce, the practice of supply chain management is a competitiveness that can provide fast service at a lower cost, This has encouraged many manufacturing firm globally implement supply chain management. (Said et al 2006) Business Competition nowadays has evolved into the competition between business networks. Firm are required to maximize operational performance in managing all internal resources (suppliers) and external (customer). It is intended to produce goods or services of quality, satisfy consumer desires, timely, cost-effective and management of an effective, efficient and flexible. The integration of the supply chain in its application is still affected by a class firm. Firms are more likely to integrate an international class to consumers and suppliers are broad and balanced than the class below it. (Lajara, 2004). The new strategy must be owned by the firm to cover the entire scope of the business. Implemented SCM became very successful in improving the level of productivity to increase profits (Watabene, 2001).

Based on the description above, researchers interested in assessing the performance of fish processing firm in Bitung in conjunction with supply chain management and competitive advantage. The underlying reasons for the interest of researchers doing this study is of no previous studies that assess the integrated relationship of this variable, the research that integrates this variable did not exist in the fish processing industry in Bitung particular. In this research model, competitive advantage is an intervening variables used on the firm's performance in relation to supply chain management. This study aimed to analyze the effect of supply chain management to competitive advantage and firm performance, the effect of competitive advantage and firm performance and influence on the performance of supply chain in Management Firm through a competitive advantage in the fish processing industry in Bitung North Sulawesi province.

## 2. LITERATURE REVIEW AND EMPIRICAL STUDY

### 2.1. Supply Chain Management

Supply chain management is the integration of activities of the procurement of materials and services, conversion into semi-finished goods and finished products, as well as delivery to customers through the distribution system. Viewing the concept of supply chain logistics management is seen as more wide ranging from basic goods to finished goods used by

end consumers, which is the chain of supply of goods. The main core of supply chain management is the process of distribution. Distribution is the process for moving and storing goods, starting from the supplier to the customer level in the supply chain (Pujawan & Mahendrawathi 2010). Products with low price is not enough, because of the inclusion of the value, variety of products, speed of response, time, innovation and flexibility become very important (Indrajit and Richardus, 2003). It required a concerted effort from a supplier of natural raw materials to process into raw materials for the components into finished products, transport firm that send raw materials from suppliers to the plant, as well as distribution network delivering products to the customer (Pujawan, 2005).

Research on supply chain management have been carried out, among others Gimenez, Ventur (2003) analyzing the relationship of internal and external integration process and its influence on the performance of the firm, and its contribution to competitive advantage. The dimensions are in use internal and external integration of SCM, Wing S. Chowa, Christian N. Madub, Chu Hua Kueib, Min H. Luc, Chinho Lind, Hojung Tsengd (2006). this study tested empirically manager midfield in the United States and Taiwan. The study of the component supply chain management and organizational performance. The results competence of the supply chain has a positive impact on organizational performance in both the United States and Taiwan. the Partnership's strategic suppliers is the long-term relationship between the organization and its suppliers and was formed to facilitate each organization to achieve long-term profitability (Sheridan, 1998; Claycomb, Droge, & Germain, 1999; Noble, 1997). the Partnership's strategic emphasis on long-term relationships directly supporting the process of planning and troubleshooting effort (Gunasekaran, Patel, & Tirtiroglu, 2001) which allows the firm to work more effectively with suppliers who have the willingness to share responsibility for ensuring the success of the products so that the necessary role of the supplier since the beginning of product design decisions to help choose the best components and technologies, selection of effective design, and assessment of the design. Relationships with consumers refers to the practice as a whole are being made to manage consumer complaints, to develop long-term relationships with customers, and improve customer satisfaction (Claycomb et al., 1999; Tan et al., 1998). In connection with the dimensions of supply chain management from a wide range of literature used is based on research conducted by Simchi-Levi (2004), Pujawan and Mahendrathi (2010), Chopra and Meindl (2007), namely *customer relationship management*, *Internal SCM*, *Supplier relationship management*.

## 2.2. Competitive Advantage

Porter (1986) Competitive advantage according the ability of a firm to achieve the economic benefits in the income it can be achieved by competitors in the market in the same industry. Firm that have a competitive advantage has always had the ability to understand the changing market structure and being able to choose an effective marketing strategy. Studies conducted further stipulate Porter generic strategies are classified into three categories, namely cost leadership, differentiation, and focus. Selection of each firm against the above generic strategy will depend on the business environment analysis to determine opportunities and threats. One key to the success of an enterprise is the ability to have and maintain one or several competitive advantages. Further, he said that the source of competitive advantage lies in the ability of the firm to differentiate itself from competitors and how he works at a low cost. Furthermore Dessler (2001) says that competitive advantage to increase market share and maintain the firm's competitiveness. Porter (2005) competitive advantage basically evolved from a value capable created by a firm to its buyers that exceeds the firm's costs in creating, while according to Gordon (2002), Competition of the firm is about five resources, namely: people, time, money, technology and knowledge. Therefore, the firm needs to increase the value to be able to create superior customer value as the size of the organization's competitive advantage. Related to the dimensions of competitive advantage of a variety of literature, that competitive advantage can be seen from the two strategies used are: cost advantage and differentiation, with individual indicators: Production cost and price, efficiency, quality, innovation, product ideas, energy experts, and IT governance.

## 2.3. Firm's Performance

Bernardin and Russel (2000) performance is defined as the record of the outcomes produced on a specified job function or activity during the time period. Performance is a record of the results obtained from the functions of a particular job or activity for a certain period of time while Simanjuntak (2005) performance is the level of achievement of results on the implementation of specific tasks, in realizing the goals, objectives, mission and vision of an organization, as well as the level of achievement of results in order to realize the firm's goals. According to Stoner et. al. (1996) performance is a measure of how efficiently and effectively an organization or a manager to achieve adequate goals. Understanding efficiently itself is the ability to minimize the use of resources in achieving organizational goals, means doing the right, while effectiveness is the ability to determine the appropriate destination, means doing the right. Mulyadi (2007) says the performance was the success of the personnel, team, or organizational units in the realization of strategic objectives. Furthermore, he added that the performance is the success of personnel in realizing the goals and strategic in four perspectives: financial, customer, process and learning and growth.. So it can be concluded that performance management is the ability to accomplish goals efficiently and effectively and opportunity personnel, team, or organizational units in performing their duties to achieve the targets. Target set can be used to determine the target which is used as performance assessment. According Stonner and Freeman (1996) cites Drucker opinion stating that the

performance is determined by both the twin criteria are effectiveness is defined as the ability to do things right and efficiency is the ability to do things right. Firm performance can be seen from the firm's profitability, the firm's main achievement, growth, innovation, and return on assets. Profitability is intended to determine the firm's ability to generate earnings and to find out how far the firm is managed effectively. For organizations, the results of performance appraisal is very important in relation to decisions about things like identifying needs education and training programs, recruitment, selection, recognition programs, placement, promotion, system of remuneration, as well as various other aspects in the process of human resource management. Associated with operational management, Radnor and Barnes (2007) defined performance measurement as a process to quantify inputs, outputs, and activity level of a process. Performance measurement is a sub system of performance management (Cokins 2004; Halachmi 2005; Stiffler 2006; Baxter and MacLeod, 2008). Performance measurement is defined as a process to quantify the efficiency and effectiveness of an action (Tangen, 2004; Olsen et al. 2007; Cocca and Alberti, 2010. Parmenter (2010) categorize a measure of performance in three categories: 1) KRI (Key Result Indicator), 2) KPI (Key Performance Indicator), and 3) PI (Performance Indicator). Shahin and Mahbod (2007) mentions that the KPI can be formulated based on the goals of the organization. Saunders et al. (2007) emphasized the importance of the decomposition of the organization's strategy into action. Kaplan and Norton in Parmenter (2010) recommend that the performance measurement does not use more than 20 performance measures. In addition, Hope and Fraser in Parmenter (2010) suggested the use of performance measures is less than 10. Referring to the opinion of Gupta (2004), which is the measurement model Six Sigma business scorecard dimensions of Firm performance. Performance of the firm are: Leadership and Profitability, Management and Improvement, Employees and Innovation, Purchasing and Supplier Management, Operation Execution, Sales and Distribution and Service and Growth. Indicators: Profit, CEO Recognition, Rate of improvement (all departments), Recommendations per employee, Cost of Purchase, Suppliers' defect rate (Sigma), Operational cycle time variance, Process defect rate (Sigma), Percentage of Sales and Customer Satisfaction.

### 3. RESEARCH METHOD

#### 3.1. Population and Sample

This study uses primary and secondary data available in industry fish processing in Bitung, North Sulawesi, Department of Fisheries and Marine Bitung, North Sulawesi Central Bureau of Statistic, the World Bank (IBRD, Annual report look (2013), IMF Annual report, and others, or by accessing the through the website. This research was conducted in the city of Bitung in North Sulawesi province with its object is the fish processing industry with small and medium scale export activities.

#### 3.2. Data Determine Technique

In this study, the unit of analysis is a fish processing firm in Bitung. Number of fish processing units in the micro, small and medium-sized northern Sulawesi Bitung has amounted to 139. The number is 42 UPI; UPI divided 21 micro and 21 small and medium enterprises. This study will take samples of medium and small firm in northern Sulawesi, which has 21 firm conducting export to various countries, all of which are only focused on the city of Bitung.

#### 3.3. Data Collection Technique

The data collected in this study a quantitative data. Sources of data obtained through the survey respondents use the data collection tool is a questionnaire with answers that have been categorized in terms of numbers follow a pattern Likert scale and ordinal scale. The reason for using a Likert scale describes the attitudes, opinions and perceptions of respondents.

#### 3.4. Data Analysis and Testing Hypotheses

##### 3.4.1 Verification Analysis

This study uses an analytical tool Partial Least Square (PLS). PLS is one of the statistical methods (Structural Equation Model) SEM-based variants. According Tenenhaus et.al (2005), PLS is a reliable tool for testing the prediction model because it has advantages over LISREL and amos, more PLS is superior because: (1). Can be used to predict the model with a weak theoretical basis, (2). Can be used on data that do not meet the assumptions of the classical (not normal, there is multicollinearity, and autocorrelation problem). (3). Can be used for small sample size, and (4). Can be used to construct a formative and reflective. Quality measurements and models, will be visible through a variety of statistical information which is calculated as follows: construct validity (convergent or discriminant), construct reliability (Cronbach's alpha or composite reliability), and the significance of loading. To apply the PLS model in this research using software tools XLStat2016.

In this study analyzed the effect of supply chain management to competitive advantage and firm performance. Steps of data analysis and structural equation modeling using partial least square (PLS) is as follows:

**Outer Model** : or Measurement Model defines how each block indicator associated with latent

variables. Design of Measurement Model determines the nature of each indicator latent variables, whether reflexive or formative, based on the operational definition of variables.

**Inner Model :** or structural model describing the relationship between the latent variables based on

a substantive theory. Designing structural models the relationship between latent variables based on the formulation of the problem or the research hypothesis.

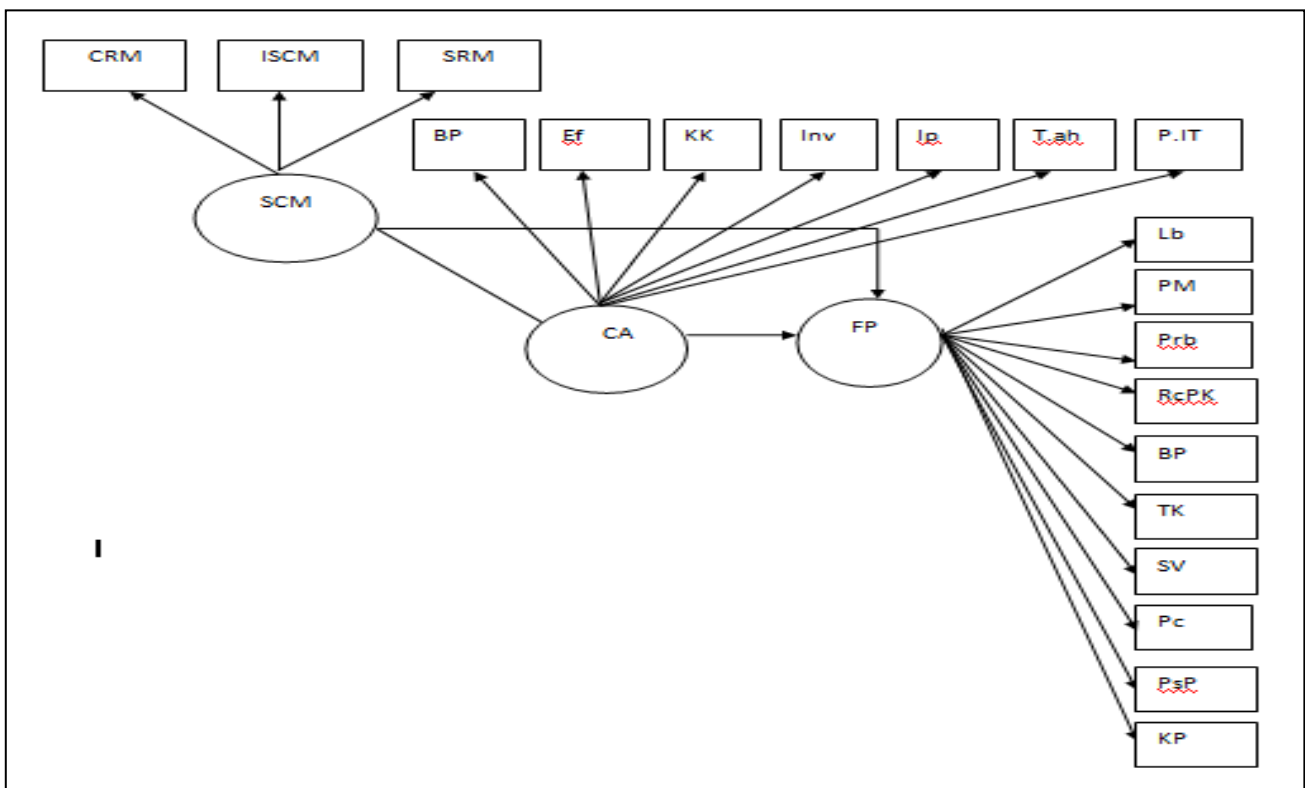
Based on the research hypothesis, the stacking diagram variable track and test research hypotheses as follows:

**Hypothesis 1:** Supply chain management (SCM) have a significant effect on competitive advantage and firm performance

**Hypothesis 2:** Competitive advantage positive effect on firm performance

**Hypothesis 3:** Supply chain management has positive effect on firm performance  
Through competitive advantage

**Figure 3.1 Operational Framework**



**Research**

Source: Processed 2015

**4. RESULT AND DISCUSSION**

**4.1. Result**

**4.1.1. Relation of the Latent Variable and Their Indicators (Outer Model)**

Measurement Model (Outer Model) is to measure the relationship between indicators and constructs. This model to measure the indicators used in describing the latent variables (constructs). To a large measure of correlation between the latent variables (convergent validity) by Chin (1998) can be seen from the loading factor. If the value of the loading factor of more than 0.5 means acceptable, while value is less than 0.5 means it can be removed from the model. For the value of cross loading can be done by comparing the correlation indicator with the construct from another block. (Fornell and Larcker (1981). If the correlation between the indicators are higher than the correlation to construct another block means constructs the predicted size of the block they are better than the other block. After the evaluation of

validity further by looking at the internal consistency reliability of value cronbach's alpha, and composite reliability. Interpretation of the same composite reliability with cronbach's alpha, a value of 0.7 and above acceptable limits, while above 0.8 is satisfactory and very satisfactory and above 0.9 (Nunnally and Bernstein, 1994). Based on the picture above we can see that the analysis of the variables of supply chain management (SCM) which is built on the dimensions of customer relationship management (CRM), internal supply chain management (ISCM) and supplier relationship management (SRM) Of the three the dimensions of the loading factor value is above 0.5. This means that these three dimensions are capable of forming a variable supply chain management (SCM). From each of these dimensions seen the value of the loading factor is generated each indicator. CRM dimensions measured using six indicators. From the calculation of the value of the loading factor almost entirely for more than 0.5 except frequency indicators X1.1.4 request with a value of 0, 461 and should be released from the model and a re-iteration. While for the most dominant indicator in measuring the dimensions of CRM is an indicator of pricing X1.1 with 0783 values. Internal dimensions of supply chain management (ISCM) were measured using five indicators. From the results of calculation of all the indicators used factor of loading value of more than 0.5. The most dominant indicator in measuring ISCM is an indicator of demand fulfillment X1.9 with a value of 0859. For the dimensions of supplier relationship management SRM) were measured using four indicators. From the results of calculation of all the indicators used factor of loading value of more than 0.5. The most dominant indicator in measuring SRM is an indicator of consent orders with suppliers X1.15 with a value of 0.878. From the calculation, the value of cross loading is still no value is less than 0.5, then the next iteration is done by removing the indicator less. The next iteration of the results that ensued resulting values as follows:

**Table 4.1 Model Measurement Variable Supply Chain Management (SCM)**

Variable	Dimensions	Indicators	Loading Factor	D.G. rho (PCA)	Cronbach's Alpha	Information
SCM	CRM	X1.1	0.807	0.838	0.756	Valid and reliable
		X1.2	0.584			
		X1.3	0.793			
		X1.5	0.563			
		X1.6	0.771			
		X1.7	0.736			
	ISCM	X1.8	0.780	0.853	0.782	Valid and reliable
		X1.9	0.861			
		X1.10	0.718			
		X1.11	0.517			
		X1.12	0.739			
	SRM	X1.13	0.801	0.886	0.829	Valid and reliable
		X1.14	0.824			
		X1.15	0.878			

Source : Research 2016

From the table above, we can see that the overall result of the indicators used in this study is valid in measuring the dimensions. Dimension CRM, the most dominant indicator remains on indicators of pricing X1.1 with a value of 0807. Dimensions ISCM is the most dominant indicator X1.9 indicators, namely, meeting the demand, while the dimensions of SRM is the most dominant indicator X1.15 indicators are indicators consent orders with suppliers. Judging from the composite value of reliability and Cronbach's alpha, the entire value is above 0.7, so that these dimensions are acceptable in terms of reliability. Based on the analysis of the variables competitive advantage and its indicators respectively, where the entire value indicator loading factor (corr) of more than 0.5. While the indicator most dominant influence on the indicator variable is Y1.2 which is differentiation indicator. This means that all indicators that is used to explain the variable competitive advantage or in other words the indicators used to measure the variables valid competitive advantage. A complete measurement values are generated in the following table.

**Table 4.2 Model Measurement Variable Competitive Advantage (CA)**

Variable	Dimensions	Indicator	Loading factor	D.G. Rho (PCA)	Cronbach's Alpha	Info
CA	Price advantage	Y1.1	0,705	0,815	0,509	Valid
		Y1.2	0,834			
		Y1.3	0,590			
	Differentiation	Y1.4	0,891	0,905	0,790	Valid and reliable
		Y1.5	0,875			
		Y1.6	0,840			
		Y1.7	0,514			

Source: Processed 2016

From the table above can be seen that all the indicators used to measure the variables CA valid. While most dominant indicator is that differentiation with 0790 values. Judging from the value of composite reliability, value loading factor (corr) above 0.7, so it is acceptable in terms of reliability. The Cronbach's alpha differentiation 0,509, but the total while the Cronbach's alpha of 0.735, which means CA reliable competitive advantage. Variable firm performance (FP) with the indicator, which all indicators of the value of the loading factor (corr) of more than 0.5. While the indicator variable most dominant influence on firm performance is recommendation per employee to the value of the loading factor (corr) of 0.784.

**Table 4.3 Model Measurement Variable Firm Performance (FP)**

Variables	Indicators	Loading factor	Composite Reliability	Cronbach's Alpha	Info
FP	Y2.1	0,668	0,905	0,883	Valid and reliable
	Y2.2	0,763			
	Y2.3	0,741			
	Y2.4	0,784			
	Y2.5	0,721			
	Y2.6	0,699			
	Y2.7	0,631			
	Y2.8	0,744			
	Y2.9	0,631			
	Y2.10	0,583			

Source : Processed 2016

#### 4.1.2. Relations Between Latent Variables in Research (Inner Model)

This section will examine the X1, supply chain management (SCM) consists of the dimensions of customer relationship management (X1.1), internal supply chain management (X1.2) and supplier relationship management (X1.3) to Y1 competitive advantage (CA) and the impact on (Y2) firm performance (FP) in the fish processing industry by using a structural model (inner model) in the PLS. Structural models to explain the relationship between the latent variables based on a substantive theory. Results of computational structural model using statistical software PLS XLStat 2016 can be found in the appendix. Test model fit the data that indicates whether the theories used in this study were able to describe the phenomenon under study, can be seen in the value of statistical goodness of fit (GoF), either absolute, relative, outer and inner models. If the GoF value close to 1, indicates that the model fits the data relatively well (Esposito, et al 2010). The result using values obtained PLS XLStat 2016 as in the following table.



Table 4.4. Goodness of Fit Value (GoF)

	GoF	GoF (Bootstrap)	Standard error
Absolute	0.629	0.634	0.039
Relative	0.911	0.898	0.036
Outer Model	0.986	0.968	0.032
Inner Model	0.924	0.927	0.012

Source : Research 2016

Based on the analysis above we can see the value of goodness of fit (GoF), absolute, relative, outer and inner models, totaling more than 0.5 or close to 1, this means that the theory used in this study were able to describe the phenomenon researched. GoF index is a single measure that is used to validate the performance of combined measurement model and structural model. GoF value lies between 0-1, with interpretation 0.1 GoF small, moderate GoF 0.25 and above 0.36 large GoF (Tenenhaus, et al (2005),

Mathematically the relationship between variables in this study described as follows.

Structural Equation Sub Path First

$$\eta 1 = \gamma 1 \xi + \delta 1$$

Structural Equation Sub Path Second

$$\eta 2 = \gamma 2 \xi + \delta 2$$

Structural Equation Sub Path Third

$$\eta 2 = \beta \eta 1 + \delta 2$$

Information:

$\xi$  = Supply chain management

$\eta 1$  = Competitive advantage

$\eta 2$  = Firm Performance

$\gamma$  = the path coefficients that describe the influence of exogenous variables to endogenous variables.

$\beta$  = the path coefficients that describe the influence of the endogenous variables ( $\eta 1$ ) to other endogenous variables ( $\eta 2$ )

$\delta$  = other factors

Based on a hypothetical study, the data will be tested using path analysis. Because the data submitted is the entire population, then there are no tests of significance. Because the significance test determines the accuracy of the hypothesis based on the facts that have been collected from the sample, not the census data, Cooper and Schindler (2003). To answer this hypothesis, the path coefficient obtained directly compared with zero. For the partial test path coefficient value of the variable being tested is greater than zero, then  $H_0$  is rejected and vice versa if the path coefficient variable being tested is less than or equal to zero then  $H_0$  is accepted. and for the simultaneous testing if there is a path coefficient value of the independent variable is not equal to zero, then  $H_0$  is rejected and vice versa if all path coefficients equal to zero, then  $H_0$  is accepted.

#### 4.1.3. Testing Results Effect of Supply Chain Management (SCM) Significant Influence against a Competitive Advantage and Firm Performance in Fish Processing Industry in the city of Bitung in North Sulawesi

From the calculation, it is known that the supply chain management to customer relationship management formed by 46.9%, the internal supply chain management amounted to 49.3%, and supplier relationship management by 37.7%,. Based on the results of  $R^2$  is 0,999 this case showed that the variables of supply chain management (SCM) is able to be explained by the three dimensions of 99.9%

The resulting mathematical model is as follows:

$$SCM(X1)=0.468710810496183*CRM(X1.1)+0.492574158421384*ISCM(X1.2)+0.377210959222234*SRM(X1.3)$$

SCM contribution to competitive advantage (CA) amounted to 0,020, or in other words, supply chain management (SCM) have contributed 20% to competitive advantage (CA) in the fish processing industry in the city of Bitung in North Sulawesi. This means that any change by 1 unit to supply chain management will increase the competitive advantage on the fish processing industry in North Sulawesi Bitung 0,020

The resulting mathematical model is as follows:

$$CA (Y1) = 1.99384639077997E-02 * SCM (X1.1)$$

R2 value of 0.999, this means that the variable competitive advantage able to be explained by the variable supply chain management at 99.9% or, the ability of supply chain management variables explained variable competitive advantage at 99.9%, while the rest is explained by other factors. Then to see supply chain management (SCM) contribute to firm performance (FP) amounted to 0,017, or in other words, SCM has a contribution of 17% of the variable performance of the firm (FP) in the fish processing industry in the city of Bitung in North Sulawesi. This means that any change by 1 unit to supply chain management will increase the firm's performance in the fish processing firm in the city of Bitung in North Sulawesi amounted to 0,017.

The resulting mathematical model is as follows:

$$FP (Y2) = 1.71538137356372E-02 * SCM (X1)$$

R2 value of 0.562, this means that the variable performance of the firm is able to be explained by the variable supply chain management amounted to 56.2% or, the ability of the supply chain management variables explain the variable performance of the firm amounted to 56.2%, while the rest is explained by other factors. From the results of these calculations, we can conclude that H0 rejected and H1 accepted, because the path coefficient of supply chain management ( $\xi$ ) on competitive advantage ( $\eta1$ ) of 0,020 and firm performance ( $\eta2$ ) amounted to 0,017, or more than zero.

#### 4.1.4. Testing Results of Competitive Advantage Against Firm Performance on the Fish Processing Industry in the City of Bitung in North Sulawesi

From the calculation finds that the contribution performance of the firm's to the competitive advantage by 0.179, or in other words a competitive advantage accounted for 17.9% of the firm's performance in the fish processing industry in the city of Bitung in North Sulawesi. This means that any change by 1 unit to competitive advantage will increase the firm's performance in the fish processing firm in the city of Bitung in North Sulawesi amounted to 0.179

The resulting mathematical model is as follows:

$$FP (Y2) = 0.178783160971998 * CA (Y1)$$

R2 values of 0.526, this means that the variable performance of the firm (FP) is able to be explained by the variable competitive advantage (CA) of 52.6%, or the ability of competitive advantage variables explain the variable performance of the firm amounted to 52.6%, while the rest is explained by other factors, From the results of these calculations, we can conclude that H0 rejected and H1 accepted, because the path coefficient of competitive advantage ( $\eta1$ ) on firm performance ( $\eta2$ ) of 0.252 or greater than zero.

#### 4.1.5. SCM on the Firm Performance (FP) through Competitive Advantage (CA)

Contributions of SCM to CA is 0,020 or in other words that the SCM has a 20% contribution to competitive advantage. then a competitive advantage to contribute amounted to 0.179, or in other words 17.9% of competitive advantage contributing to firm performance, while SCM contribution to firm performance, directly by 0,017 or by 17% while the indirect contribution of 0.004. Total contributions either directly or indirectly from supply chain management variables on the performance of the firm amounted to 0,021 means of supply chain management has contributed to the firm's performance with a competitive advantage by 21%. From the results of R2 of 0.526, this means that the variable performance of the firm is able to be explained by the variable supply chain management (SCM) and competitive advantage (CA) amounted to 56.2% and the rest by other variables not included in the study. From the results of these calculations, we can conclude that H0 rejected and H1 accepted, because the path coefficient of supply chain management ( $\xi$ ) on the performance of firm ( $\eta2$ ) through competitive advantage ( $\eta1$ ), amounting to 0.179 or greater than zero.

## 4.2. Discussion

### 4.2.1. Effect of Supply Chain Management (SCM) Against Competitive Advantage (CA) and Firm Performance (FP) On Fish Processing Industry in the city of Bitung in North Sulawesi.

Based on the results of these calculations we can know that the supply chain management (SCM), which consists of three dimensions of customer relationship management, internal supply chain management and supplier relationship management, has a positive impact on competitive advantage and performance of the firm on processing firm fish in

Bitung, North Sulawesi. So we can conclude that the competitive advantage of fish processing firm in the city of Bitung is highly dependent on supply chain management. If the supply chain management is well done, then the firm will have a competitive advantage. Therefore it is very important for fish processing firm conducting export in order to have a good competitive advantage, must be able to improve and maintain their supply chain management respectively. especially with regard to the internal dimension of supply chain management because the dimension is what has contributed most to the supply chain management, especially matters related to planning demand, supply planning and services that should be focused on the determination of the level of inventories, scheduling and warehouse management firm (Pujawan and Mahendrawathi, 2010). For the processing industry of fish in Bitung City must find a way to suppress the accumulation of goods in the warehouse when the amount of raw materials in order to reduce costs, ensure the smooth supply of goods, ensuring the smooth goods ranging from, suppliers, the firm itself, wholesaler, retailers, up to the end customers. This is a long chain that needs to be managed properly, then related to the quality of goods produced, not only determined by the production process, but also by the quality of raw materials and the quality of the delivery security. and develop supplier partnerships, presence of co-operation with the supplier (supplier partnership) and can guarantee the smooth movement of goods in the supply chain should be increased because of the existing results of this dimension has the lowest contribution in the formation of SCM.

Fish processing firm in the city of Bitung need to improve their relationships with suppliers in order to guarantee the activities of their production processes. SCM practices is essential for the competitiveness of fish processing firm in the city of Bitung it is in line with the opinion of Bratic (2010) which says that there is a relationship between supply chain management with a competitive advantage. This opinion is also supported by a study of Ventura and Gimenez (2003) in which the supply chain management consists of Internal and External Integration contributed to gain a competitive advantage. Likewise statement Gimenez and Ventura which says that supply chain management is competitiveness is important for firm, especially for those who have entered the global market to provide fast service with a variety of products that are high and cost low, so the firm can stay afloat amid increasingly fierce competition. The firm that have implemented SCM became very successful in improving the level of productivity to increase profits dramatically (Watabene, 2001).

Fish processing firm in the city of Bitung majority already conducting export to various countries in the world or can be globalized, for it is important for firm to manage with the best firm that are involved directly or indirectly in providing products that can produce a product that has a sale value. Associated with the city of Bitung which will be used as a Special Economic Zone is very important for the fish processing industry in Bitung to build the firm's competitiveness by managing the supply chain all the more particularly with regard to matters of how to build long-term relationships with suppliers, manage the planning and fulfilment customer demand as well as how to build relationships with customers. With the establishment of Bitung as a special economic zone of course the opportunity to enter the global market are more open again, let alone supported by the infrastructure of the maritime industry, Bitung. as well as the investment opportunities will be more wide open, it indicates the opportunities will be open wide as well. So will the creation of business opportunities in the fisheries sector. Also with the firm's performance in the fish processing industry export activities in Bitung influenced by supply chain management in the firm. If the supply chain management that is enforced goes well, then it will increase the firm's performance. This can be evidenced from the calculation results obtained showed that supply chain management is a positive influence on the performance of the firm, although its influence directly not too big on the fish processing industry in the city of Bitung in North Sulawesi. This is in line with the opinion of Sa'nchez and Pe'rez (2005) also says that there is a positive relationship between the performance of the supply chain management and corporate performance. Likewise with the opinion of Hsu, Tan, Kannan and Leong (2009) says that the supply chain management mediates the relationship between the operating capability in this case just in time (JIT) and total quality management (TQM) to the firm's performance. as well as research conducted by Arawati, A, (2011) which states that there is a positive relationship between supply chain management, production quality, and performance of the firm. The results of the Gunasekarana, et al (2004) also support this research, evidenced by the results of research supply chain activities / processes: (1) plan, (2) source, (3) make / assemble, and (4) the delivery / customer influence firm performance. Performance measures for the supply chain is an important aspect for measuring the performance of supply chain management that will either bring improvement of cross-functional planning and intra organizational processes and control and supply chain integration is more complete. As well as research conducted by Arumugam Chettiar Veeri, Rouhollah Mojtahedzadeh (2011) of the results showed that between supply management (leadership, IT adoption, customer orientation, training, and communication) have an influence on the performance of a service firm. Furthermore according Wing S. Chowa, Christian N. Madub, Chu Hua Kueib, Min H. Luc, Chinho Lind, Hojung Tsengd (2006) Supply chain competencies have a positive effect on organizational performance in both the United States and Taiwan. Supply chain management influence on operating performance is affected by the process of integration, cooperation, long-term relationship. sharing information through process improvement and inventory reduction of waiting time (Cooper et al., 1997; Cooper and Ellram, 1993; Bechtel and Jayaram, 1997; Mentzer et al., 2001). The issue of sustainability is very important in the management of the supply chain to guarantee business continuity (Beamon 1999).

Sustainability of fisheries development is strongly influenced by the availability of fish resources are environmentally sustainable. Therefore, utilization of fish resources need to be accompanied with proper management. so as to provide sustainable benefits for the firm. The resulting benefits are also not only economic benefits, but also benefits the environment, culture, and science and technology. Development of sustainable fish processing business carried integrated with emphasis on the balance between resource use and governance. This is in line with the opinion of the (Blengini and Shield, 2010). that the integration of supply chain management strategies and operational levels simultaneously is very important because the risk that triggered the issue of sustainability allow for multiple interpretations. In short Firm are on a race looking for ways to survive and thrive and be able to maintain its market share and to fulfill the will of consumers because it must be oriented to the customer, which is related to three main aspects namely price, quality and services. Cheap product is not enough, because value, variety of products, speed of response, time, innovation and flexibility become very important (Indrajit and Richardus, 2007).

#### **4.2.2. Effect of Competitive Advantage to Firm's Performance on Fish Processing Industry in the city of Bitung in North Sulawesi Province**

From the calculation results obtained can be argued that the competitive advantage has positive effect on the performance of firm in the fish processing industry in the city of Bitung in North Sulawesi province. The firm's performance depends on the competitive advantages of each of the fish processing industry. If a good competitive advantage, it can be sure the firm's performance will be good too. For the perpetrators of the fish processing industry in the city of Bitung in North Sulawesi province should try to maintain or improve its competitive advantage. Especially in terms of product differentiation, because the dimension is what has contributed most to the competitive advantage in the fish processing industry in the province of North Sulawesi.

Porter (2008) states that a competitive advantage for the firm gives an overview of selecting and implementing a common strategy to improve and maintain the competitiveness of firm, which in turn will improve the performance of the firm itself. From some research done any competitive advantages or firm that have a competitive edge will increase the firm's performance significantly. This study is also in line with Suhong Lia, Bhanu Ragu-Nathan, T.S. Nathanb doubt, S. Subbara (2006) from the results of the study indicate the exogenous variables can increase competitiveness and improve the performance of the organization. Research also indicates that competitiveness has a direct positive impact on organizational performance. Competitiveness through Price / Cost, Quality, Delivery Dependability, Product Innovation, Time to Market will affect market performance and financial performance. This study is in line with the results from Kevin Zheng Zhou, James R. Brown and Chekitan S. Dev (2008) which says that there is a relationship between customer value, market orientation, competitive advantage and corporate performance. Also the results of research conducted by Ismail, Rose, Abdullah and for a moment (2010) in which they examined 127 manufacturing firm in Malaysia, the result that there is a relationship between competitive advantage and corporate performance.

#### **4.2.3. Effect of Supply Chain Management on Firm's Performance through Competitive Advantage in the Fish Processing Industry in the city of Bitung in North Sulawesi.**

Supply chain management in the industry of fish processing in the city of Bitung in North Sulawesi has positive effect on competitive advantage of firm. As for the performance of the enterprise, supply chain management also direct effect but the effect is not too large. However, the firm's performance in the fish processing industry at a competitive advantage. The competitive advantage is directly profound and positive effect on the firm's performance. Thus it can be concluded that the performance of fish processing firm directly been affected by the competitive excellence and supply chain management. So to maintain the firm's performance in the processing of fish in the city of Bitung in North Sulawesi and shall increase competitive advantage and managing supply chain management well. It is expected the firm's performance will go well. This is in line with research conducted by Chonticha Mathuramaytha (2011), where he carried out a study of the literature on the relationship of supply chain collaboration to competitive advantage and firm performance, and the results of these studies is supply chain collaboration significantly affect the competitive advantage and firm performance. as well as the opinion of Gimenez and Ventura (2003), SCMP is competitiveness (CA) is important for global firm in providing a fast service with a variety of products that are high and cost low, so the firm can stay afloat amid tight competition with so of course the firm's performance will continue to rise.

## **5. CONCLUSION**

Based on the results of the discussion of research in the previous chapter, some conclusions can be drawn as follows, Supply chain management (SCM) in the fish processing firm that does export activities in the city of Bitung in North Sulawesi is good enough. Everything that we can sees from what has been done by the firm is to try to improve the maintenance and building good relationships with its customers, maintaining the relationship that has been fostered with its suppliers and most importantly the implementation of the manufacturing itself because it is the most dominant in the form of supply chain management. Competitive advantage on the fish processing industry in the city of Bitung in North Sulawesi is good enough. It can be seen from the things that the firm is trying to maintain a cost advantage and also ensuring product differentiation so that firm are able to excel in the competition, this is important for differentiation of

the most dominant influence in maintaining a competitive advantage possessed. Performance fish processing firm in Bitung City has been good enough. It can be seen from the things that has been done by the firm, among others in the running of good leadership, an increase in work, relationships with suppliers, trying to increase sales, after-sales service, as well as opportunities for employees and innovation associated with Recommendations per employee related to how the contribution of employees in recommending ideas for the progress of the firm, which is the most dominant thing in driving the firm's growth. If the firm is able to improve it, so the performance of existing fish processing firm in Bitung City will be better again.

In the fish processing industry in Bitung City found there are positive influences on the supply chain management to competitive advantage and to firm performance. It can be seen when firm were able to implement supply chain management with both the direct increase competitive advantage and corporate performance of the fishing industry in North Sulawesi. In the fish processing industry in the city of Bitung in North Sulawesi also found there is a positive influence on the competitive advantage of the firm's performance. This is apparent when the fish processing firm in the city of Bitung in North Sulawesi is able to optimize the advantages that directly improve the performance of the firm itself. In the fish processing industry in the city of Bitung in North Sulawesi also found there is a positive influence on the performance of the supply chain management through competitive advantage. It can be seen when the fish processing firm able to implement supply chain management with both the direct and indirect (via a competitive advantage) is able to improve the performance of the firm from the fish processing industry in the city of Bitung in North Sulawesi.

Based on the conclusions above, there are some suggestions that are from the results of this study: Supply chain management or supply chain management (SCM) on a fish processing firm in Bitung City has been quite good, but it will be better again, when several manufacturers to further improve the Internal Supply Chain Management (ISCM) mainly related to the planning and fulfillment of customer demand. Because the dimensions and indicators provided the largest contribution in the form of supply chain management, but other dimensions are also not ruled out primarily related to an increase in supplier relationship management, related to the supplier selection, supplier evaluation, pricing and fulfillment of order. Because of the dimensions and indicators, it contributes lowest in the form of supply chain management but the dimensions of relationship with customers also not ruled out.

It is expected the fish processing firm in the city of Bitung can be more competitive, especially with the countries of the world's largest fish producer, considering Indonesia is one of the world's largest fish producer. For the performance of the firm from a fish processing firm in Bitung city can do better than before, firm have to pay more attention to service and customer satisfaction associated with the growth of the product produced by the firm, after-sales service, as well as the percentage of related sales level of market share capable of controlled, growth of the market. Firm also need to be more concerned with leadership and profit mainly concerned with profits and relationship managers and employees. Because these also have influences in improving the performance of existing fish processing firm in the city of Bitung in North Sulawesi.

## 6. SUGGESTION

Supply chain management, competitive advantage and firm performance measure are become most importance strategy in the fish processing industry in the city of Bitung in North Sulawesi. Therefore, it will be an effort for them to become more effective and competitive by enhancing the organization's ability to improve leadership and profitability, management and improvement, employees and innovation, purchasing and supplier management, operation execution, sales and distribution and service and growth. Based on the results of these calculations, SCM which consists of three dimensions of customer relationship management, internal supply chain management and supplier relationship management, has a positive impact on competitive advantage and performance of the firm on processing firm fish in Bitung, North Sulawesi. So we can conclude that the competitive advantage of fish processing firm in the city of Bitung is highly dependent on SCM. If the supply chain management is well done, then the firm will have a competitive advantage. Competitive advantage has positive effect on the performance of firm in the fish processing industry in the city of Bitung in North Sulawesi province. The firm's performance depends on the competitive advantages of each of the fish processing industry. If a good competitive advantage, it can be sure the firm's performance will be good too. However the firm's performance in the fish processing industry at a competitive advantage. This is because the competitive advantage is directly profound and positive effect on the firm's performance.

There are some suggestions that are from the results of this study, SCM on a fish processing firm in Bitung City has been quite good, but it will be better again, when several manufacturers to further improve the Internal Supply Chain Management (ISCM) mainly related to the planning and fulfillment of customer demand. Competitive advantage in fish processing firm in the city of Bitung in North Sulawesi is good enough. but it would be better if firm, processing of fish in Bitung add differentiation of its products by using experts, the ability to generate product ideas, the use of the latest technology, as well as trying to bring more information to employees about the importance of IT governance, especially in producing products derived fish produced to be more diverse and higher quality. For the performance of the firm from a fish processing firm in northern Sulawesi Bitung City can do better than before, firm have to pay more attention to service and customer satisfaction associated with the growth of the product produced by the firm, after-sales service, as

well as the percentage of related sales level of market share capable of controlled, growth of the market. Firm also need to be more concerned with leadership and profit mainly concerned with profits and relationship managers and employees. Because these also have influences in improving the performance of existing fish processing firm in the city of Bitung in North Sulawesi. In addition, the finding and the proposed conceptual model of this research can be used and contribute not only to the academic but also to the industry especially to the fish processing industry in Bitung North Sulawesi Province.

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