

# ANALYSIS OF EFFECT OF SUPPLY CHAIN MANAGEMENT ON FIRM PERFORMANCE OF PASSION FRUIT SYRUP

kimberlyfebrina@yahoo.co.id

Kimberly, Faculty of Engineering, Universitas Sumatera Utara, Medan  
Sukaria Sinulingga, Faculty of Engineering, Universitas Sumatera Utara, Medan  
Humala Napitupulu, Faculty of Engineering, Universitas Sumatera Utara  
Rika Ampuh hadiguna, Faculty of Engineering, Universitas Andalas, Padang

## Abstract

*Passion fruit (passifloraceae) is one of the strategic commodities because of its usefulness as raw material of passion fruit syrup as an agroindustry product that has rich nutritional value of vitamin C which is beneficial to human health. This research has five elements of supply chain namely : farmers, suppliers, extract agroindustry, passion fruit syrup agroindustry, and retailers. The objective of this study is to analyze whether there is a significant influence between Supply Chain Management on firm performance. This type of research was a causal research. Data collection used questionnaire. From the result of multiple linear regression analysis, it showed that the variable of process integration has the biggest influence to variable of enterprise SCM performance (dependent) with coefficient value equal to (0,289), then variable of satisfaction with value (0,058), variable of trust (0,286), communication variable (0,184), dependency variable (0,021) and having the least was the variable of influence and commitment (0,080). This means that the five independent variables have a positive and significant influence on the dependent variable.*

**Keywords:** *Supply Chain Management, Firm Performance.*

## Background

Considering that the competition is not only of individual rivalry, but also the competition among supply chains (Cooper et al., 1997, Lambert and Cooper, 2000), companies should expand their areas of analysis and decision-making rather than confined to their single business unit but include throughout its supply chain (Lee and Whang, 2000). Therefore, the collaboration between supply chain members is absolutely necessary in the face of such competition, indicating that supply chain management has strategic and long-term implications for the company. On the other hand, supply chain management is a tactical weapon in reducing costs, reducing market uncertainty risks, increasing responsibilities and as a reference in making short-term decisions at the company's functional and operational levels (Lee, 2000). Today's business world continues to compete to create a growing range of consumer needs, and become more intelligent in choosing its needs. Starting from the middle to upper class always demands the best quality and economical price and quickly reached the hands of consumers. The economy is experiencing significant changes, especially in developing countries such as Indonesia, which is increasing in the day both in the field of economy and development.

The awareness and philosophy of the importance of adoption of supply chain management is an early form of supply chain management itself, which then evolves into activities that seek to implement the philosophy from within the enterprise, and then develop into the activity of managing the various flow of exchange (goods / services, information, finance) between companies in the supply chain. So it needs to be separated into different concepts between strategic awareness and supply chain management activities within the company called supply chain orientation with intercity supply chain management activities (Esper et al., 2010; Mentzer et al., 2001).

The rapid development of information technology, communication, and manufacturing processes resulted in the short lifecycle of the product. Therefore every company will make every effort to improve productivity, efficiency, quick service, easy, and continue to create new innovations to stay ahead and stay in market. In addition to productivity and efficiency that need to be improved, the company must also understand and know what is needed by consumers.

Organizational Performance is the actual result or output produced by an organization which is then measured and compared with the expected output or output (Jahanshahi, et al., 2012). In order for organizations to compete and have good organizational performance, it can be supported by implementing Supply Chain Management. Supply chain management is a set of approaches for efficient integration of suppliers, manufacturers, warehouses, and storage, so that goods are produced and distributed in the right quantities, precise locations, the right time to minimize costs and provide customer service satisfaction. According to (Christopher, 1998) Supply chain management is an organization network involving upstream and downstream relationships in different processes and activities that value consumers and products.

Performance is a description of the level of achievement of tasks in an organization, in an effort to realize the goals, goals, mission, and vision of the organization (Bastian, 2001). Some experts state that the most commonly used indicators of company performance in empirical research are 1) financial performance, 2) operational performance, and 3) market-based performance (Jahanshahi, Rezaie, Nawaser, Ranjbar & Pitamber, 2012).

Financial performance is usually assessed using accounting-based data measurement or financial data. The lack of all accounting-based data measurement is its focus on past performance (Kaplan & Norton, 1992). Data from previous years very little can indicate the future potential of a company. Thus, company performance can not be measured solely based on accounting-only data measurements (Ursula & Wilderom, 1997). Some experts use return on sales, profitability, sales growth, improved work productivity, and improved production costs to measure financial performance (Cho, Ellinger, Ellinger, & Klein, n.d.; Prieto & Revilla, 2006).

In addition to measuring company performance based on financial performance, it is also important to measure based on non-financial performance. The increasing use of the balanced scorecard concept suggests that nonfinancial performance is also an important aspect of company performance measurement (Kaplan & Norton, 1992). This non-financial performance is also known as an operational performance in which aspects are capable of measuring performance when available information is linked to existing opportunities, but not yet financially realized (Carton, 2004). This operational performance can be measured using measurements such as market share, new product launches, quality, marketing effectiveness, and customer satisfaction (Carton, 2004; Carton & Hofer, 2006; Venkatraman & Ramanujam, 1986).

Overall Market-Based Performance will be affected when the market knows information about the company's operations that are not included in the financial performance results (Carton, 2004). These market-based performance measures include: shareholder returns, market value added and annual profits (Carton, 2004). In this research, company performance measurement will only be represented by financial performance and operational performance. This is because measurement of market-based performance can only be done on companies that are public while the object in this study is not necessarily all public companies. So in such conditions, the combination of measurement financial performance and operational performance are sufficient to represent overall company performance (Carton, 2004). The objective of this study is to analyze the effect of supply chain management on firm performance.

## **Theoretical Framework and Development of Hypotheses**

### **Satisfaction**

Customer satisfaction includes one of three purchasing motives, namely Patronage Buying Motive, where customers will be encouraged to make repurchase in

a place that feels satisfactory (Alma 2004). Kotler (2000) states that customer satisfaction is the benefit of a perceived product in accordance with what is expected by the customer. If the product performance is lower than expectations, then the customer will be disappointed, if it turns out as expected, the customer will be satisfied, if exceed the expectations of customers will be very satisfied. This feeling is called customer satisfaction. In addition, customers form expectations based on messages received from sellers, friends and other sources of information. If the seller exaggerates the benefits of a product, then the customer will experience a disconfirmed expectation, which will cause discontent. According to Tjiptono (2000) customer satisfaction or dissatisfaction is the customer's response to the evolution of the perceived disconfirmation between the previous expectations and the actual performance of the perceived product that in this increasingly fierce competition, more and more producers are involved in meeting the needs and wants of consumers, this causes every business entity to place its orientation on customer satisfaction as the ultimate goal, namely the increasing number of business entities that express commitment to customer satisfaction in the mission statement, advertising. The first research hypothesis: satisfaction has a significant positive effect on SCM.

### **Trust**

Sridharan&Simatupang (2013) state that when trust is present, SC members will seek to overcome differences for the benefit of all members. SCM is built on trust (Anbanandam et al., 2011). Lack of mutual trust is a fatal factor that can disperse partnerships in supply chains (Liu et al. In Kim et al., 2009). Mamad&Chahdi's research (2013) confirms that trust is the main factor of collaboration of SC members. Similar results are also shown Ryu et al (2009) which argues in addition to improving collaboration, trust (trust) is very important in building commitment. Companies that believe in the integrity of their partners will have a higher intention to continue working with such partners (Wu et al., 2012; Cambra& Polo, 2011). From the above literature, the second research hypothesis is prepared as follows: H2: Trust has a significant positive effect on SCM

### **Communication**

Through communication, partners within the SC can act freely to maintain relationships over time and reduce uncertainty of collaboration (Mamad&Chahdi, 2013). Tuten& Urban also supports this view and regards communication as a key component in the success of the partnership relationship (Kim et al., 2009). Communication as a pioneer in the presence of trust has also been verified in the study of Wu et al. (2012), Cambra et al. (2011), and Ryu et al. (2009). Therefore, communication research hypothesis is formulated as follows: H3: Communication has a significant positive effect on SCM

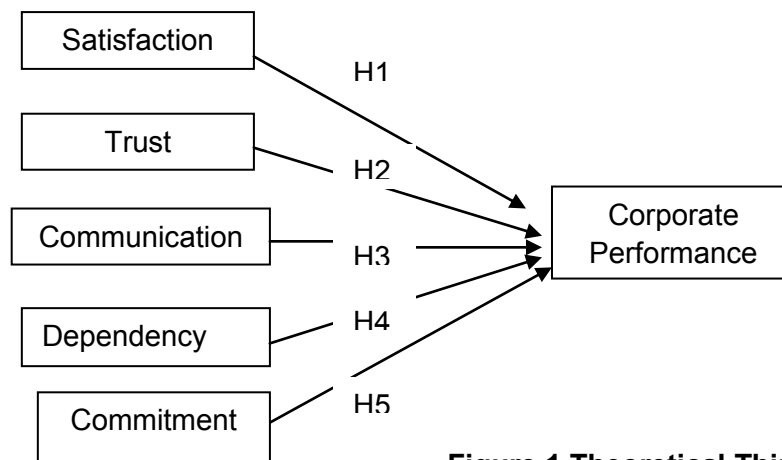
### **Dependency**

Dependency has two components, namely the essence of the relationship and the difficulty to replace the supply chain partners (SC). Mutual dependency will be interdependency and play an important role in connecting stakeholders in developing collaborative relationships (Mamad&Chahdi, 2013). Interdependency is a prediction of the creation of contractual relations and cooperation between organizations (Ferrer et al, 2010). The more dependent an SC party will be to the other party, the more committed it will be to the relationships it engages (Abbad et al., 2013; Ryu et al., 2009). The fourth research hypothesis is as follows: H4: Dependence has a significant positive effect on SCM.

### **Commitment**

According to Cambra& Polo (2010), long-term relationships require commitment from the parties involved. The argument is also supported by Min et al. (Anbanandam

et al., 2011). The commitment of SC partners will enhance collaborative activities and facilitate informative transactions (Ryu et al., 2009) and help avoid conflict between SC partners (Kim et al., 2009). The fifth research hypothesis can be formulated as follows: H5: Commitment has a significant positive effect on SCM. Graphically the relationship of the five variables can be seen in Figure 1.



**Figure 1. Theoretical Thinking Framework**

## Research methods

This type of research is a causal descriptive research using survey method. This study analyzes the influence between SCM variables, and corporate performance.

### Processing and analysis of data

Test Validity and Reliability Validity test is done to measure whether the data obtained after the research is valid data with the measuring tool used (questionnaire). Testing instrument validity was done with SPSS 20 program, with the following criteria: 1. If  $r_{\text{arithmetic}} > r_{\text{table}}$ , then the question is declared valid. 2. If  $r_{\text{arithmetic}} < r_{\text{table}}$ , then the question is declared invalid.

Reliability is an index that indicates the level of confidence of the measuring instrument. If a measuring device is used twice to measure the same symptoms and the measurement results are relatively consistent, then the tool is reliable. The test is done by SPSS 20 program. Question items that have been declared valid in the validity test will be determined its reliability (Now, 2003) with the following criteria: 1. If Cronbach Alpha value  $> 0.7$ , then the question is stated reliable. 2. If the value of Cronbach Alpha  $< 0.7$ , then the question is declared not reliable. Questionnaire test was conducted on 50 respondents who were stakeholders of passion fruit syrup agroindustry, with criteria recorded in customer list Test of Validity and Reliability of SPSS software 20. Validity test was done with SPSS 20 program, where the result of  $r$  count was greater than  $r$  table, that is  $> 0.2272$ , then all attributes are valid. Reliability test was performed using SPSS 20 program with Cronbach Alpha technique, where the result of Cronbach Alpha was 0.721.

## Results and Discussion

### Test Validity and Reliability Test

Test Results Validity and Reliability of Initial Questionnaire. All data stated reliable because it has a value of more than 0.6, while for the validity test, also all invalidated statement of his questionnaire.

### Simultaneous Significance Test (F statistical test)

The statistical test F basically shows whether all independent variables (independent) have a mutual influence on the dependent variable (bound). A small

significant level of <0.05 means that independent variables affect the dependent variable.

### Multiple Linear Regression Test

Form of multiple regression analysis in this study are:

$$Y = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5$$

Y = Supply Chain Management Performance

X1 = Satisfaction

X2 = Trust (Trust)

X3 = Communication (Information Sharing)

X4 = Dependency (Cooperation)

X5 = Commitment (Long Term Relationship)

$\beta_1$  = Regression coefficient Satisfaction

$\beta_2$  = Coefficient of regression Trust (Trust)

$\beta_3$  = Coefficient of regression Communication (Information Sharing)

$\beta_4$  = Coefficient of regression Dependence (longterm relation)

$\beta_5$  = Coefficient of regression Commitment (Cooperation)

**Coefficients<sup>a</sup>**

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.	Collinearity Statistics	
	B	Std. Error	Beta			Tolerance	VIF
1 (Constant)	13,587	2,540		5,348	,000		
Satisfaction	,068	,163	,058	,417	,679	,931	1,074
Trust	,337	,195	,286	1,727	,091	,650	1,539
Communication	,236	,221	,184	1,068	,291	,599	1,671
Dependency	,026	,173	,021	,151	,881	,951	1,051
Commitment	,076	,140	,080	,543	,590	,827	1,209

a. Dependent Variable: YT

From the calculation of the above table, it can be presented the regression equation obtained as follows:

$$Y = 0.058 X_1 + 0.286 X_2 + 0.184 X_3 + 0.021 X_4 + 0.080 X_5$$

### 1. Simultaneous Significance Testing (Test F)

**ANOVA<sup>a</sup>**

Model	Sum of Squares	df	Mean Square	F	Sig.
1 Regression	94,665	5	18,933	2,457	,048 <sup>b</sup>
Residual	339,115	44	7,707		
Total	433,780	49			

Basically, F StatisticTest shows whether all independent variables (independent) have a mutual influence on the dependent variable (bound). A small significant level of <0.05 means that independent variables affect the dependent variable.

## Conclusion

Based on the calculation results and testing of research hypotheses, it can be concluded as follows:

1. There is a significant and positive influence between Supply Chain Management on firm performance. Implementation of Supply Chain Management in a good agro-industry company will be able to increase competitive advantage owned by the company.
2. Implementation of good Supply Chain Management will be able to improve the performance of the firm, both from financial performance and operational.
3. The competitive advantage of the increased company will be able to improve the firm's performance as well.

## Suggestion

1. To improve firm performance, the strategy of supply chain management strategy should be applied. Information sharing, long term relationship, cooperation, and process integration are part of the factors that affect supply chain management performance. So, companies should pay attention to information sharing as the basis for the implementation of supply chain management, then long term relationship that can give competitive advantage to the company that implement it, further cooperation which is the best alternative in doing optimal supply chain management, and process integration as merging all activity that exist throughout the company's supply chain management. Hence, when all of it is applied to the company, it can increase productivity and profit companies.
2. Further research should be carried out on the influence of supply chain management performance to the company by adding variables outside this research variables such as cost (price), quality (quality), flexibility (flexibility of operations), delivery (delivery). Also procurement, production planning, and return.

## REFERENCES

- Amabile, Teresa M. (1996). "Assesing The Work Environment For Creativity". Academy of Management Journal. p.1154- 1184
- Andria, Yuvi. (2007). Optimasi Model Rantai Pasokan Agroindustri Cocodiesel dengan Menggunakan Alogaritma Genetika. Fakultas Teknologi Pertanian Institut Pertanian Bogor.
- Bastian, Indra. (2001). Akuntansi Sektor Publik. Penerbit BPFE, Universitas Gajah Mada, Yogyakarta
- Brigham, E.F., and Ehrhardt, M.C. (2002). Financial Management, Theory and Practice, (10th ed). New York : Thomson Learning, Inc.
- Carton, Robert B. (2004). Measuring Organizational Peformance : An Explaratory Study. A Dissertation Submitted to the Graduate Faculty of The University of Georgia in Partial.
- Claycomb, C., Droge, C., & Germain, R. (1999). The effect of just-in-time with customers on organizational design and performance. *International Journal of LogisticsManagement* 10(1), 37–58.
- Christopher, Martin. (1998). Logistic and Supply Chain Management : Strategies for Reducing Cost and Improving Service, London : Prentice-Hall, Inc
- Chopra, Sunil dan Peter Meindl. (2004). Supply Chain Management: Strategy, Planning, and Operations. Second Edition. Prentice Hall Inc., Upper Saddle River, New Jersey
- Cooper, Robert G. (2000). "Product Inovation and Technology Strategy". Journal Research Technology Management. p.38-41.
- Crosby, P.B. (1979), Quality is Free: The Art of Making Quality Certain. New York: McGraw-Hill

- Deming, W. E. (1982). *Quality, Productivity and Competitive Position*. M.I.T. Center for Advanced Engineering Study
- Ferdinand, Augusty Tae (2003). *Sustainable Competitive Advantage: Sebuah Explorasi Model Konseptual*. Badan Penerbit Universitas Diponegoro, Semarang.
- Ghozali, Imam. (2008). *Structural equation modeling metode alternatif dengan partial least square*. Semarang: Badan Penerbit Universitas Diponegoro.
- Gunasekaran A, Patel C, Tirtiroglu E. (2001) Performance measures and metrics in a supply chain environment. *International Journal of Operations and Production Management*;21(1/2):71–87.
- Harrison A and van Hoek, R.,(2008), *Logistics Management and Strategy* 3th edition, Harlow, England: Pearson Education, first published in 2002.
- Hasson D, Arnetz BB. (2005). Validation and findings comparing VAS vs. Likert Scales for psychosocial measurements. *International Electronic Journal of Health Education* 92.
- Hidayat. (1986). *Teori Efektifitas Dalam Kinerja Karyawan*. Gajah Mada University Press. Yogyakarta.
- Hugos, M. (2003). *Essentials of Supply Chain Management*, Hoboken, New Jersey, John Wiley & Sons
- Indarjit, Eko Richardus, & Pranoto, Joko, (2002). *Konsep Manajemen Supply Chain*, PT. Gramedia Widiasarana Indonesia, Jakarta.
- Jogiyanto. (2009). *Konsep & Aplikasi PLS untuk Penelitian Empiris*. BPFE Yogyakarta
- Kotler, Philip dan Gary Armstrong. (2003). *Dasar- Dasar Pemasaran*. Jilid 1, Edisi ke-9. PT. Indeks Kelompok Gramedia, Jakarta.
- Kotler, Philips.(1994). *Marketing Management Concept*, New Jersey. Prentice Hall Inc.
- Kotler, P. (2005). *Manajemen Pemasaran, Jilid 1* (edisi 11). Jakarta: PT Indeks Kelompok Gramedia.
- Koufteros, X. A. (1995). *Time-Based Manufacturing: Developing a Nomological Network of Constructs and Instrument Development*, Doctoral Dissertation, University of Toledo, Toledo, OH
- Levi, David Simchi, Philip Kamin Sky & Edith Simchi Levi. (2000). *Designing And Managing The Supply Chain : Concept, Strategies And Case Studies*. Singapore : Irwin McGraw-Hill
- Li, S., Ragu-Nathan, B., Ragu-Nathan, T.S. & Subba Rao, S. (2006). "The Impact of Supply Chain Management Practise on Competitive Advantage and Organizational Performance," *Omega*, 34(1). 107 – 124.
- McGinnis, MA and Vallopra, RM, (1999). Purchasing and Supplier Involvement in Process Improvement: A Source of Competitive Advantage. *Journal of Supply Chain Management*. Fall, Vol. 35, No.4, pp.42-50
- Moberg, C. R., Cutler, B. D., Gross, A., & Speh, T. W. (2002). Identifying antecedents of information exchange within supply chains. *International Journal of Physical Distribution and Logistics Management* 32(9), 755–770.
- Monczka, R. M., Petersen, K. J., Handfield, R. B., & Ragatz, G. L. (1998). Success factors in strategic supplier alliances: The buying company perspective. *Decision Science* 29(3), 5553– 5577.
- Montgomery, G. L. & Straja S. R. (2010, September). Share-Based Payment Valuation Relative Total Shareholder Return Plan. *Montgomery Mowen*, John, C dan Michael Minor. (2002). *Perilaku Konsumen*. Jilid Kedua. Jakarta: Erlangga.
- Noble D. (1997). Purchasing and supplier management as a future competitive edge. *Logistics Focus*;5(5):23–7.
- Porter, Michael E., (1993). *Keunggulan Bersaing– Menciptakan dan Mempertahankan Kinerja Unggul*. Erlangga, Jakarta.
- Pujawan, I Nyoman, (2005). *Supply Chain Management*. PT. Guna Widya, Surabaya.
- Qrunfleh, Sufian.; Asree, Susita.; Altammar, Sawsan.; Conahan, Caleigh (2011), *Tactical Supply Chain Management: Impacts on Supply Chain Performance and Firm Performance*, POMS 22nd Annual Conference, USA

- Stein, T., & Sweat, J. (1999) Killer supply chains. *Information Week* 708(9), 36–46.
- Stonebrake, Peter W.; Leong G. Keony (1994), *Operations Strategy: Focusing on Competitive Excellence*, Allyn and Bacon, USA
- Sugiyono. (2008). *Metode penelitian bisnis: Pendekatan kuantitatif, kualitatif dan R&D* Bandung: Alfabeta.
- Tan, K. C., Kannan, V. R., & Handfield, R. B. (1998). Supply chain management: Supplier performance and firm performance. *International Journal of Purchasing and Materials Management* 34(3), 2–9.
- Thatte, A.A. (2007). *Competitive Advantage of a Firm through Supply Chain Responsiveness and SCM Practices*. Doctoral dissertation, The University of Toledo.
- Tompkins J, Ang D. (1999). What are your greatest challenges related to supply chain performance measurement?. *IIE Solutions*; 31(6):66.
- Waller, M. A., Dabholkar, P. A., & Gentry, J. J. (2000). Postponement, product customization, and market oriented supply chain management. *Journal of Business Logistics* (2), 133–159.