An analysis of the implementation on supply chain management of the firm’s performance

S Akmal¹ and N Matondang²

¹ Industrial Engineering, Universitas Sumatera Utara, Medan, Indonesia
² Commission Supervisor Industrial Engineering, Universitas Sumatera Utara, Medan, Indonesia
*E-mail: syafmal@gmail.com

Abstract: Running business environment today is more open and competitive therefore, by implemented the correct and proportional of Supply Chain Management will minimize the risk, undesired things and sustainable before the End product is received or deliver or package out. Selection to the sustainable Vendor and control quality of the material produce are also among the important key elements. The objective of this paper is to evaluate the effective implementation of the SCM system and minimization of the constraint in order to support Firm’s performance in supplying the set of coffee so that it will keep aligned with business process on the Firm business. The type of this research was correlation investigations. The population was about 50 coffee business men in Takengon.

1. Introduction

The competition in this era, can be said that the change happen are rapidly taking place starting at the progressive of technology and global trade system. [1]. Formerly, most of the activities and responsibility from the company is about to issue the product from the warehouse. With the current situation which the competitive is tight, the company responsible to the all process activities starting from design product, forecast of demand, material handling, production and storage, wholesale, small traders service until on the end of service (2).

One of the key success of the global business competitiveness is the supply chain.[3]. This statement also supported by Baofeng Huo et al [4] said that Supply chain Management is the fundamental requirement that need to be implemented by company in order to increase the performance of the company. The emergence of Supply chain management in the background is mainly to the traditional practice that only prioritize for profit increase. Though for SCM that had been watched for business partner and the environmental change [5]. The Product or service that used by us is the result of several long process which pass the point physical points or non-physic.

A product will reach to the end user's hands after at least some process from raw material search, production process and distribution or transportation process. The process of this process involves various parties that relate to one another. Suppliers of raw materials or suppliers whose supply the production needs of the manufacturing companies will process the raw materials into end products. The end or finished products delivered to end users through central distribution centers, wholesaler, retailer and so on.

A series of parties handling the flow of this product is called by term of Supply chain [6].
Figure 1 illustrates a simple supply chain. An SC will have component components called channel such as suppliers, manufacturers, distribution centers, retailers. All channels work to meet customer needs.

- **Financial**: invoice, payment term
- **Material**: raw material, component, end product
- **Information**: capacity, delivery status, quotation

![Diagram of Supply Chain](image)

**Figure 1.** Structure Supply Chain and streams that managed

2. **Literature review**

Supply Chain Management has explained carefully that planning and controlling the material and flow of information on the logistics flow not only in the company's internal but between companies can be well maintained.

2.1 **Company performance**

Company performance is the most commonly used variable in the company's current research [7]. The performance of the company itself is the actual result or output produced by a company which is then measured and compared with the expected output [8]. In general, researchers define the concept of corporate performance based on the idea that a company is a collection of productive assets that are intentionally in form, including human, physical and capital resources aimed at achieving a common goal.

2.2 **Strategic purchasing**

The strategy set by the company in determining the material suppliers should be able to increase the value for the company. The unique relationship between the company and its suppliers will provide advantages for both parties, especially on improving productivity, innovation and competence, [9]. Based on the existing literatures, manufacturing companies apply Supply Chain Management to build key competitiveness including low cost, flexibility, quality, on time delivery, innovative etc [10].

Before the 1990s part of the purchase was a passive thing to the company, after the 1990's the cooperation between academics and purchasing managers to implement strategic planning [11). Purchasing ability can influence company's strategic planning in improving its competitiveness. Purchasing strategy built currently by the companies are by applying the SCM practice in the company. Indicators used in purchasing strategy are supplier selection, low cost, delivery accuracy, information and communication with suppliers.

2.3 **Communication**

The communication process between the company and suppliers is used to exchange information. The communication process of both parties brings change for the company in improving its competitiveness. Communication effectiveness in this case can be seen from the frequency of communication, exchange of information so that there is sharing of knowledge through training or benchmarks, sit together to solve the problem in order to get mutually beneficial conditions for both parties and get the standard material quality according to the decision of both parties.
2.4 Collaboration
Collaboration is an attempt by two or more organizations to achieve results that cannot be achieved when it is done alone. Supply chain collaboration is required for companies to be able to integrate information from a wide range of supply chain partners [12]. Allows the company to supervise an event in the supply chain. Allows companies to manage the process by taking precautions [13]. Developing collaboration according to Daugherty can be done with internal and external coordination, integration of data and supply chain information into enterprise information systems, and developing long-term partnerships with supply chain partners.

Co-ordination is part of a collaboration, with internal stakeholders (inter-functional logistics handling) and external parties (partners in distribution channels and end customers) indispensable to equate perceptions, eliminate miscommunication and misperceptions, and grow mutual trust [14]. Indicator used in this research is the coordination between companies so that the role of both parties are well known, mutual berpartisapasi with companies to avoid misperception, the formation of special teams to overcome problems, hold meetings or discussions and give each other information about business strategy.

2.5 Supplier selection
Identification and analysis of criteria for supplier selection and evaluation have been the focus of attention of academics and practitioners since 1960. Researchers are developing performance criteria in which each potential supplier should be evaluated.

3. Conceptual Framework
The conceptual framework is a conceptual model of how one theorizes or makes logical sense of relationships among several factors that have been identified as important to the problems. In this case it starts from strategic purchasing which is set by the company in order to meet the company’s specification and standard of the subjected materials. Purchasing strategy is one of the important factor which is in line with stock of the material availability and logistic.

Among the factors that need to be paid to be analyzed in order to success of the implementation of Company performance in this journal are:

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**Figure 2.** Conceptual model of Firm’s Performance
4. Research methodology

4.1 Type of research
This research is a correlational investigation. It was done with the aim to detect the role of management performance and strategic against the factors that impede the Firm’s Performance as expected based on the data which was covered.

4.2 Location and Research Time
This research was conducted in Takengon, Central Aceh Desa Benear Meriah

4.3 Population
Population is all research subjects or research object. In this research population is 50 Coffee business men.

4.4 Method of data Analysis
In order to measure the validity and reliability, the validity and reliability test were carried out.

4.4.1. Validity test
Data validity testing is used to measure whether a questioner is valid or not. It refers to how well a test measures what it is supposed to measure.

Validity testing is done by means of Pearson correlation product moment method:

\[ R_{xy} = \frac{\Sigma xiyi}{\sqrt{\Sigma xi^2}(\Sigma yi^2)} \]

in which:

\[ R_{xy} = \text{coefficient correlation between } x \text{ and } y \]
\[ Xi = \text{variable score independent } X \]
\[ Yi = \text{variable score dependent } Y \]

Criteria: If \( r_{\text{count}} > r_{\text{table}} \), the items on the questioner is valid and vice versa.

The Validity test results of 19 questions in this research are summarized on Table.

| Questioners               | \( r_{\text{count}} \) | \( r_{\text{table}} \) | Conclusion |
|---------------------------|------------------------|------------------------|------------|
| Purchase Strategic (X1)   | 0.611                  | 0.1279                 | Valid      |
| Communication (X2)        | 0.645                  | 0.1279                 | Valid      |
| Collaboration (X3)        | 0.860                  | 0.1279                 | Valid      |
| Supplier Selection (X4)   | 0.555                  | 0.1279                 | Valid      |

4.4.2 Reliability test
Reliability is the degree to which an assessment tool produces stable and consistent result. In this case, a questioner that it is categorized reliable if the answer is consistent from time to time. Reliability test uses Cronbach’s Alpha, with the criteria of the coefficient Cronbach’s Alpha >0.6.
\[ \alpha = \frac{n}{(n-1)} x \frac{s^2 - \sum s_i^2}{s^2} \]

in which:
\( n \) = sum of sample
\( s^2 \) = variance score
\( \sum s_i^2 \) = sum from each respondent variance

There are three reasons why the researcher used Cronbach’s alpha. First, it was because it is most often used for questioner test (Bryman & Bell, 2007). Secondly, it detects inconsistence (Malhotra, 2012). Third, coefficient of Cronbach’s alpha measures the instrument reliability where the questions use scores in certain range such as 1 to 5 (Sinulingga, 2012). Results of reliability test towards research variables are shown as follow:

Table 2. Reliability test result.

| No | Variable                      | r~ counted reliability | r-table | Conclusion |
|----|-------------------------------|------------------------|---------|------------|
| 1. | Strategic Purchasing (X1)     | 0.757                  | 0.6     | reliable   |
| 2  | Communication (X2)            | 0.783                  | 0.6     | reliable   |
| 3  | Collaboration (X3)            | 0.810                  | 0.6     | reliable   |
| 4  | Selection of Supplier (X4)    | 0.758                  | 0.6     | reliable   |

On table 1 above show those variables have reliability values higher than 0.6 hence, this can be concluded that the research variables are reliable.

4.5. Normality test

Normality test is used in the first step of data selection method. If data is normal, use the parametric statistic but if not use, non-parametric statistic or do some adjustment so that data become normal. The purpose of Normality test is to know whether in model of disrupted variable regression or residual has normal distribution. Regression model that categorized as good is normal distribution data or close to normal. There are two ways for detecting whether residual is normal distribution by graphic analysis and statistic test. With the help of graphic exist on SPSS program, if data is spread around diagonal line or who does not follow the direction of diagonal line, thus the regression model did not meet the assumptions of normality. Normal test data statistically can be tested by skewness test and kurtosis, distribution data is said to be normal if test significance > 0.05. If significant value < 0.05 therefore distribution data is not normal.

4.5.1 Simultaneous test (F-Test)

Test-F is used to determine the simultaneous effect of independent variable independent variable with the following formula:

\[ F = \frac{MSR}{MSE} = \frac{SSR/k}{SSE/(n-k)} \]

With condition if \( F \)-calculated > \( F \)-table where confidential percentage 5% therefore, Ho rejected or Ha accepted.
4.5.2 Partial effect test (t-test)
This test is used to determine of partial effect from each dependent variable on independent variables with following formulas:

\[ t = \frac{r_{xy} \sqrt{n - 2}}{\sqrt{1 - r_{xy}^2}} \]

With use degree of freedom (df = N-2) on the significance table 5% then if t calculated > t-table, it means the calculate contribution is significant (Sudjana, 2006:44). All data analysis for multiple linear regression done by computer process Statistical Package for Social Science version 16.

4.5.3 Regression equation
Model data analysis use Multiple Linear Regression equation which use to determine the effect of some dependent variable on independent variable
The equation model is as follow:
\[ Y = a + b_1X_1 + b_2X_2 + b_3X_3 + b_4X_4 + e \]
\[ Y = \text{Success ERP (has positive impact or effective)} \]
a = Constant
b = Regression coefficient
e = Standard error
X1, X2, X3&X4 = Independent variables

5. Respondents’ characteristics
Characteristics in this research consisted of age, gender, education and the length of service

5.1. Respondents’ characteristics based on age

| No | Age          | The sum of respondents | Percentage (%) |
|----|--------------|------------------------|---------------|
| 1  | ≤ 29 years   | 4                      | 8             |
| 2  | 30 - 34 years| 7                      | 14            |
| 3  | 35 - 39 years| 15                     | 30            |
| 4  | 40 - 44 years| 7                      | 14            |
| 5  | 45 - 49 years| 8                      | 16            |
| 6  | ≥ 50 years   | 9                      | 18            |
|    | Total        | 50                     | 100           |

Table 3 above shows that of the 50 respondents, the highest percentage is the age between 35 – 39 years and the lowest is age below 29 years.

5.2. Respondents’ characteristics based on gender

| No | Gender | The sum of respondents | Percentage (%) |
|----|--------|------------------------|---------------|
| 1  | Female | 2                      | 4             |
| 2  | Male   | 48                     | 96            |
|    | Total  | 50                     | 100           |

Table 4 above shows that the majority of the respondents in this research were male (82%).
5.3. Respondents’ characteristics based on education

Table 5. Respondent distribution frequency based on education

| No | Education          | Sum of respondents | Percentage (%) |
|----|-------------------|--------------------|----------------|
| 1  | High School       | 34                 | 68             |
| 2  | Diploma (D3)      | 16                 | 24             |
| 3  | Bachelor (S1)     | 4                  | 8              |
|    | Total             | 50                 | 100            |

Table 5 above, it is showed that business men education level is high school is the most.

6. Data analysis and interpretation

6.1. Description of Research Variables
This research was focused on analysis on variables that could influence the performance of the Firm in running their business associate with Coffee.

6.2. Hypothesis Test
This study contains more than one independent variable; namely, management, Strategic purchase, communication, collaboration, supplier selection. Therefore, hypothesis test was done by using F-test simultaneously and t-test partially. Based on the output of SPSS ver.16 on the Table (coefficient) in the column nonstandardized coefficients, the regression equation could be written as follows:

\[ Y = 1.439 + 0.956X_1 + 1.047X_2 + 0.964X_3 + 1.143X_4 \]

Decision to choose = 1.439 + 0.956 (purchase strategic) + 1.047 communication + 0.964 collaboration + 1.143 Supplier selection + e.

It indicated that:
1. All coefficient regression variables had positive values such 0.956X1, 1.047X2, 0.964X3, 1.143X4 which indicated that all of the 4 variables had significant influence on Firm Performance as the reference for the success in Firm Performance implementation.
2. Independent variable that had significant change in the success in implementation was X4 which had the value of 1.143, whereas independent variable that had least or had small influence on Y (Performance).
3. From the Table above, it could be seen the value of t-calculate X3 (collaboration of the business) 16,987 > t with t-table (2,009) and P-value (0,000) < 0.05. If it was compared with the value in t-table (N=50 or degree of freedom =46 amount 2,009 and sig-α = 0.05, it could be known that t-calculate X3 (16,987) > t-table (2,009) and P-value (0,000) < 0.05. This result of analysis met the requirement of hypothesis test where t-calculate > t-table and p-value < 0.05, which indicated H_a was accepted and H_o was rejected. Therefore, it could be concluded that variable X3 (collaboration) had significant influence on independent variable Y (Firm Performance).
4. Supplier Selection from the Table above, it could be seen the value of t-calculate X4 (supplier) 34,971 > t with t-table (2,009) and P-value (0,000) < 0.05. If it was compared with the value in t-table (N=50 or degree of freedom =46 amount 2,009 and sig-α = 0.05, it could be known that t-calculate X4 (34,971) > t-table (2,009) and P-value (0,000) < 0.05. This result of analysis met the requirement of hypothesis test where t-calculate > t-table and p-value < 0.05, which indicated that H_a was accepted and H_o was
rejected. Therefore, it could be concluded that variable X4 (Supplier selection) had significant influence on independent variable Y.

7. Conclusion and suggestion
At the beginning of the Firm’s management implementation there was no single coffee bussinesmen running with full supply chain management as the result the supply and demand of associate coffee were poor and substandard. This task is a critical to the success of Firm hence the implementation progress of the Firm cannot be monitored or be controlled.

Based on the survey and interview from the respondents, it revealed that factors that make the implementation (in general) not success or fail at some desa in Takengon are:
1. Supplier selection were still much depend on vendors respond to resolve the problems when there arisen from the users or required by the system.
2. The Firm system run with lack of communication which include the advertisement. To run in business coffee is still potentially bright, but development and implementation still have problems which need full support from other parties such as more vendors involve in order to run it smoothly.
3. Collaboration among the coffee businessmen need to build in order to anticipate the high demand from the customer, late delivery and standardize of the quality of coffee as well.

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