

Supply Chain Management to Optimize Production Based On Goods

Murti Retnowo¹, Anita Fira Waluyo²

¹ Informatics Management, Faculty of Information Technology and Electrical Engineering

² Informatics Engineering, Faculty of Information Technology and Electrical Engineering

University of Technology Yogyakarta, Sleman Yogyakarta

¹ murti.retnowo@staff.uty.ac.id; ² anitafira@uty.ac.id

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ABSTRACT

Competitive competition and the advent of the global marketplace becomes its own challenges, these challenges are associated with getting products and services are timely and low cost. Resolution to face both these things one of which with the application of Supply Chain Management (SCM). SCM is very effective for use in addressing the supply chain and securing competitive advantage and improves organizational performance not only within the Organization but the Organization among the supply chain. SCM will be used to provide the information the State of the stocks of raw materials and will be enabled as a reminder (reminder) and the order of the raw materials to the supplier by using Message Passing or SMS Gateway. Model SCM is expected to control the inventory of goods, either overstock or stocks that are already able to save stock with time quickly and efficiently.

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I. Introduction

Competitive competition and the advent of the global marketplace becomes its own challenges, these challenges are associated with getting products and services are timely and low cost. Organizations or companies will begin to realize it and to deal with it is not enough just by improving efficiency in the organization or company, but the entire supply chain must be made competitive.

Increasing competition between companies in both the local and international markets make the Manager is determined to focus on how to gain a competitive advantage to stay in business. The current accomplishments of the fulfillment of the customers and gain their trust in it more and more difficult. It can be obtained through the improvement of products and services, to satisfy both one of them with the application of Supply Chain Management (SCM) and Outsourcing, Outsourcing and SCM method have been recognized to profit competitive. [7]

Improve organizational performance can be realized between the traditional method to increase competitiveness, as well as with the activities of the outsourcing of the global chain of activities performed. The objective of outsourcing is to make the company more flexible and easier to adapt to new environmental conditions, with a focus on core activities, entrust part of the task, activity or function to another company [5]. The supplier is the source that provides the first material where the goods distribution chain will begin. At present, the method of making decisions about the supply of raw materials, as the level of competition increases, companies need to review strategies in competition and to evaluate the ability of suppliers who are the main raw material providers [4]

The lack of availability of raw materials often widened its own problems in a production process, to request the goods require a long time because it requires logging inventory data against

existing items. The recording of inventory items into the old stuff is still done manually, by a user must sort through inventory items that are in the position under save stock or close to save the stock.

Procurement and inventory data is one of the things that need to be considered, especially the logistics division in the company. Therefore, we need a system using certain methods that can support procurement data management and can also help managers make stock control decisions [1]. SCM is very effective for use in addressing the supply chain (freight turnover) and securing a competitive advantage and to improve organizational performance not only within the Organization but the Organization among the supply chain. The concept of research and develop partnership strategies such as SCM dimension of distribution, sharing and quality of information as well as the relationships between suppliers, [6] in addition with the SCM can be used to maximize the production process by making use of the inventory or count how many flaws and the rest of the existing supplies after the production process.

II. Research Methods

This research aims to know the efficiency of Supply Chain Management (SCM) is applied to the optimization of production based on the availability of the raw materials used. The data type of this research is quantitative and qualitative data-research process take conclusions from specific to General (inductive). As for the steps research conducted among others:

- a. An introduction describes the background and description of the problems that need to be researched and answered related to research topics, as well as explain the objectives to be achieved through research.
- b. Identification of the problem and research objectives of the problem about things that make not efficiency management systems the supply chain.
- c. Study of the literature this is done to study and understand the supply chain management system.
- d. Identification of the problem, it is estimated the problems and discussing the conditions that occur in the production process.
- e. Data collection Designed a questionnaire to obtain information from some respondents who had an important role in the procurement of materials, goods, and services. Techniques of data collection is divided into:
 - 1) research library
The research was done by studying the literature-literature and writings which have relation to the issues raised in this study.
 - 2) field research
Field research is by the way the research directly to the location of the project, reviewing and defacement directly. Then followed by asking questions to parts procurement of materials, goods, and services on the project.

III. Supply Chain Management Models

A supply chain is a network of facilities and distribution channels that encompasses the procurement of materials, production, assembly and delivery of products or services to the customer. The management of the supply chain and the roles of various actors involved differ from industry to industry and company to company. As a result, Supply Chain Management (SCM) has become a vital issue for manufacturers, professionals and researchers. It is felt that to manage the supply chain effectively entire structure of the supply chain must be understood properly. This paper attempts to provide the reader with a complete picture of supply chain management through a systematic literature review. It presents a state of art on SCM by systematically arranging main activities in the supply chain. In addition, the step-by-step approach for understanding the breadth and depth of Supply Chain is proposed which consequently explores the domain of SCM.[2]

Supply Chain planning allows manufacturers to perform data synchronization with the production data supply throughout the corporate network with the rest of the demand that exists within the company. SCM enables manufacturers to collect all existing requests and do centralized planning for calculating production capacity and supply needed to meet demand. The module SCM information consolidated sales, production, inventory, and purchasing to help companies become more demand-oriented and Made by Order (production of goods upon request).

In the current market demand-oriented, to optimize and integrate sales and logistics and then enter the data into the production schedule on time is very important. Supply Chain Management provides great benefits for producers that allow them to:

- a. Improve response to market changes.
- b. Improve visibility into aggregate demand, production and supply in the entire company.
- c. Reduce the level of inventory.
- d. Improve customer service and timely delivery performance.
- e. Optimize the supply to meet demand profitably.
- f. Supply, distribution, and transportation costs are lower.
- g. Improve the accuracy of estimates of demand planning cycle time with compressed

The module of Supply Chain Management (SCM): [6]

- a. Pre Sales **Management**.
- b. Salesforce Automation.
- c. Customer Relation **Management** (CRM)
- d. Sales, Invoicing & Dispatch.
- e. Purchase **Management** (Sales Order Linked)
- f. Central Inventory **Management**.
- g. Inter-Site and Office connectivity (Cloud Hosted application)
- h. Admin **Module**.

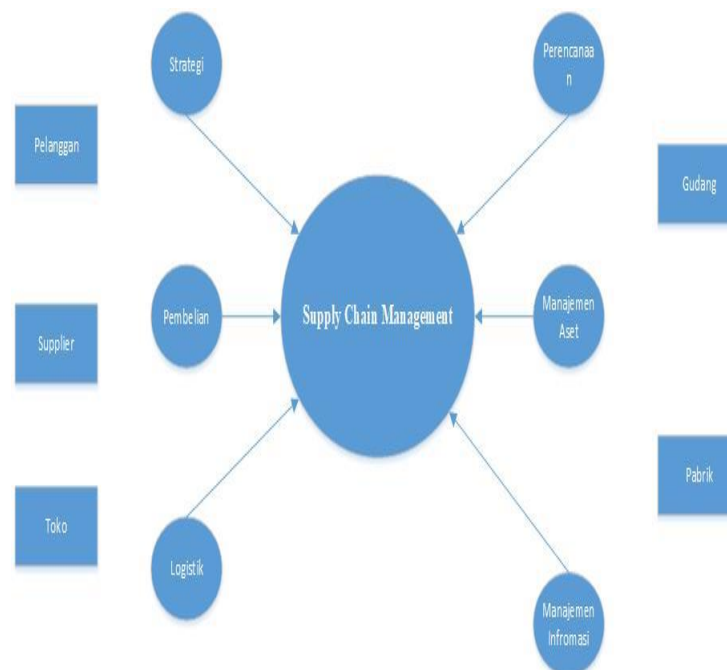


Fig 1. SCM working principles

IV. Business Process

Supply Chain Management has three components, which are Upstream Supply Chain Management is a process by which companies obtain a supplier from outside parties to obtain raw materials. Then the second component is the Internal Supply Chain Management is a process by which the occurrence of a change of raw materials into a finished product. The last components of SCM Supply Chain Downstream Management is a process by which the distribution of goods by the company to the customer which is usually done by external distributors. The process involved in the SCM are:

a. Customer

At most companies, the customer is the first chain of giving orders. The customer decides to buy a product offered by the company in question by contacting the Sales department of the company. Important information contained in the order of which as of the date of delivery of the product and the desired amount for products ordered.

b. Purchasing

Upon receiving the planning production, in this case is the need for raw materials and the materials of his supporters, the Department purchases, or Purchasing Department will do the infusion of raw materials and ingredients of his supporters as well as set the date the acceptance and the amount needed.

c. Inventory

Raw materials and material support which have been accepted by the factory will be inspected for quality and accuracy of the numbers are then stored in the warehouse to production needs.

d. Production

Part of the production will use raw materials and supporting materials are supplied by the supplier to perform the production process to produce finished goods needed by the customer. Finished goods that have been produced are then entered the warehouse and ready to be shipped to the customer according to the schedule specified.

V. Implementation

The optimization process begins with a request or will do the production process, the request can be based on customer demand or can also be a routine production process. Optimization can be done when you already know what products will be made and how many production processes will be produced and see the stock of raw materials in the warehouse.

Optimization calculation is done by finding the existing stock of goods minus the remaining quotient of the existing process with the formula:

$$O = (a - (a \bmod n)) / n \quad (1)$$

Where:

n: number of raw materials used in 1 production process

a: The amount of raw material stock

For example, to produce product B requires a lot of raw materials including raw material A has a stock of 35 pieces to produce a product requires raw materials A as many as 9 pieces then the calculation is as follows: look for the remainder of the quotient

$$s = 35 \bmod 9$$

$$s = 8$$

to calculate optimization

$$O = (35-s) / 9$$

$$O = (35-8) / 9$$

$$O = 3$$

So, the optimal product value that is produced based on the optimal raw material A is 3 products which will then be compared with other raw materials used to produce the product so that it produces the most optimal value for producing a product.

The optimization process with supply chain management starts with determining what products will be made and how much will be produced so that any raw materials can be collected to be used to make these products and calculate the availability of raw materials used to make these products along with the number of raw materials used to produce products along with their quantities, then afterward a Comparative process is carried out on each raw material based on the number of raw materials needed with the availability of raw materials in the warehouse.

The process of comparing raw material requirements with the availability of raw materials is used to optimize the number of products to be produced. Optimization is done by comparing the number of products that can be produced from each raw material, so that the optimal number of products to be produced for the production process is obtained or provide production optimization information based on the availability of raw materials available to the user that the optimal product produced has been obtained, then depending on the user whether the production process will be in accordance with the optimal amount or will be reduced or remain in accordance with the order, if in accordance with the order so when the optimal value is below the order value will be ordered to the supplier based on the last purchase and the amount needed.

The flow of the production optimization process can be seen in the picture below:

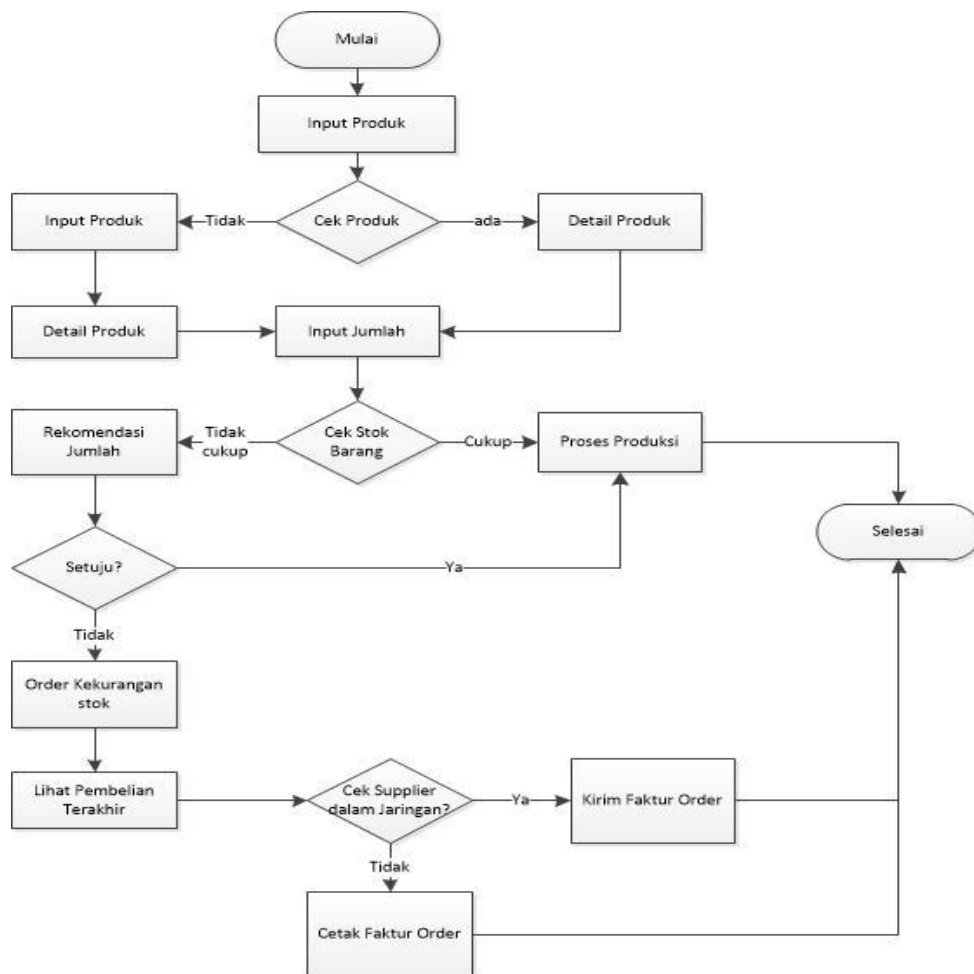


Fig 2. Process Flow

VI. Conclusions

Based on implementing Supply Chain Management in this study are:

- a. The program can provide product optimization information that will be generated to users based on the existing stock of goods that are in accordance with the raw material production needs.
- b. The program can provide information to users about existing stock items and final product purchases.
- c. To apply for orders automatically all suppliers must be connected in one network.

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