

# Performance analysis of supply chain on saroo model shoes products using SCOR model

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**Abstract.** The purpose of this study was to measure the performance of Supply Chain Management in a company engaged in the shoe industry. Shoe model which is used as object in this research is model of Sarro which is model of shoes which most in demand by consumer. The method of measuring the performance of Supply Chain Management used in this research is SCOR (Supply Chain Operation Reference) method which can integrate three main elements in management that is business process reengineering, benchmarking and measurement process. The result of this is to evaluate the performance of Supply Chain Management network on the company to three important components which become the main basis of assessment on SCOR method so that this will have implication to strategy that can be done by company in order to increase sales of shoes product so that can compete in market.

## 1. Introduction

Nowadays, companies are increasingly challenged by the increasingly diverse demands and demands of consumers, it is the company's consideration in efforts to make improvements. Process improvement is done not only within the company or production process only. But the existence of interconnection between upstream to downstream or can be started from supplier to distributor even to the last user, as contained in the concept of supply chain management [1][2]. Therefore, in general every company will consider the performance and improvements that will be done on an ongoing basis, it is certainly necessary a performance measurement of supply chain performance. The method that can be used in the performance measurement process is SCOR (Supply Chain Operation Reference), SCOR model can split supply chain processes as scope into 5 core processes such as plan, source, make, deliver and return [3].

There are several studies that discuss about the measurement of performance in a company by using several methods. In a study conducted by Kersten [4] discusses the performance measurement of the company's Supply Chain Management using SCOR method based on the simulation process. In another study, Carpinetti and Junior [5] also measured the company's performance by comparing the method SCOR with Fuzzy-TOPSIS model. Another study was conducted by Kindagen and Cooper [6][7] which discussed the use of concepts and the characteristics of Supply Chain Management in determining strategies to compete in the market. However, some previous studies have not done benchmarking on performance other similar companies so that we do not know the extent of the performance of Supply Chain Management from the company that the object of this research.



Therefore, in this research will be a process of measurement performance Supply Chain Management by using SCOR method followed by a process of comparison with similar companies and will be determined some strategies that can cover the weaknesses owned by the company by using Theory of Constraint method. The goal to be achieved in this study is to measure the performance of Supply Chain Management in a company engaged in the shoe industry.

## 2. Methodology

SCOR (Supply Chain Operations Reference) is a model that can be used as a reference of supply chain operations [8]. Basically, scor is also a model of the outcome of a process. This model integrates three main elements in management: business process reengineering, benchmarking and measurement processes into the framework of functions in the supply chain. SCOR model divides supply chain processes into 5 core processes such as:

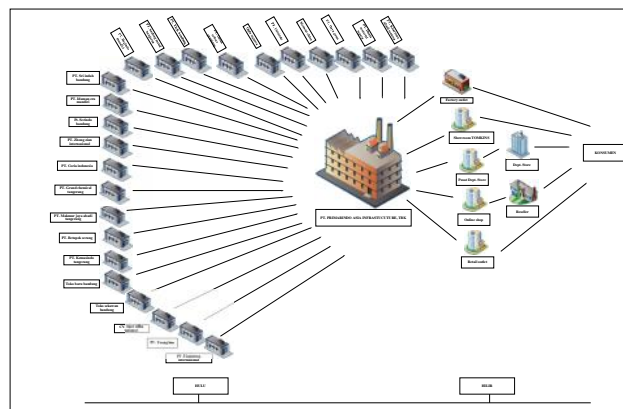
- Plan is a process that balances demand and supply to determine the best course of action to meet the needs of procurement, production and delivery.
- Source is the process of procurement of goods and services to meet the demand.
- Make is a process to transform raw materials or components into products that customers want.
- Deliver is a process to meet the demand for goods and services. Usually includes order management, transportation and distribution.
- Return is the process of returning or receiving product returns for various reasons.

Benchmarking is comparing a process and the performance of the organization relative to the process and performance of the reference company, basically in the case of similar companies are classified best in class.

Theory of Constraints is a method of organizational change focused on increasing profits. This theory develops by Eliyahu M Goldratt. The important concept of TOC is that every organization must have at least one constraint. A constraint is a factor limiting the organization from getting more than anything that is being championed, which is usually a profit [9].

## 3. Results and discussion

Here is the upstream to downstream network that occurs in the supply chain process at PT. Primarindo Asia Infrastructure, Tbk. The connection all item in the supply chain can be seen in Figure 1.



**Figure 1.** Upstream Downstream Network PT. Primarindo Asia Infrastructure, Tbk

The following is the scope of the company based on the five core processes of the SCOR model:

- Planning (Plan) is a process that balances demand and supply to determine the best action in meeting the needs of procurement, production and delivery. Planning undertaken by PT. Primarindo Asia Infrastructure, Tbk which starts from the process of receiving request from the marketing department in the center coordinated with the PPIC section then this section will make

the procurement plan to the purchasing department but before the raw material warehouse will provide information about the stock of raw materials that are still available.

- Procurement (Source) is the process of procurement of goods and services to meet the demand. Procurement of goods will be done by suppliers who have been given orders from the company so that the supplier will make the delivery of goods and directly into the warehouse of raw materials.
- Production process (Make) is a process to transform raw materials or components into products that customers want. Production process conducted by the company that is based on orders (make to order) is requested by the marketing. But the company always makes the product exceeds the order which means it can be a stock warehouse so (make to stock).
- Deliver (Deliver) which is a process to meet the demand for goods or services. In this section the incoming goods will be checked back then the goods in the store based on the delivery system first.
- Return (Return) is the process of returning or receiving returns of products for various reasons. This process occurs when the goods are already distributed to the intended places, this condition usually occurs due to the identification of the state of the product is damaged or defective.

The following is a level 1 matrix resulting from performance measurements that have been done on supply chain attributes such as reliability, responsiveness, flexibility, cost and assets are divided into customer facing and internal facing. To see the data that has been produced then can be seen in Table 1.

**Table 1.** SCOR Matrices Level 1 PT. Primarindo Asia Infrastructure, Tbk

Performance Attribute	Customer-Facing			Internal-Facing	
	Reliability	Responsiveness	Flexibility	Cost	Asset
Delivery performance	100%				
Fill rate	97,34%				
Perfect order fulfilment	86,06%				
Order fulfilment lead time		6 days			
Supply chain response time			75 days		
Production flexibility			11 days		
Costs of good				100%	
Total supply chain management costs				72,6%	
Sales, general & administration cost				84,4%	
Warranty cost or return processing cost				100%	
Cash-to-cash cycle time					915,72 days (32,3%)
inventory days of supply					82,40 days (28,1%)
Asset turns					94,2% (0,21 kali)

The supply chain matrices consist of several parts, the supply chain council has developed many matrices to measure the overall performance of the supply chain. The measure used is by using standards to develop benchmark comparisons between firms. The table below lists some actions with the average and best-in-class benchmarks for large industrial products that can be used as a reference in comparison of research results conducted at PT. Primarindo Asia Infrastructure, Tbk. the supply chain council has also developed a series of similar steps for different categories of companies. The results of the benchmarking process between the company and the others can be seen in table 2 [10].

**Table 2.** Table of performance comparison of PT. Primarindo Asia Infrastructure, Tbk with reference to best in class company.

<b>Matriks</b>	<b>Best In Class</b>	<b>Rate</b>	<b>Performance of PT. Primarindo Asia Infrastructure, Tbk</b>
Delivery performance	93%	69%	100%
Fill rate by line item	97%	88%	97,34%
Perfect order fulfillment	92,4%	65,7%	86,06%
Order fulfillment lead time	135 days	225 days	6 days
Warranty cost as % of revenue	1,2%	2,4%	100%
inventory days of supply	55 days	84 days	82,40 days
Cash-to-cash cycle time	35,6 days	99,4 days	915,72 days
Asset turns	4,7 times	1,7 times	0,21 times

After the performance measurement and benchmarking is done by using SCOR level 1 method, then the next step is to take corrective action to be able to minimize the weakness owned by the company. Based on the benchmarking process that has been done, there are four things that are considered as a weakness point owned by the company, such as inventory days of supply, cash to cash cycle time and asset turns. The method used to perform the process of improvement is the method of Theory of Constraints (TOC).

- Cash to cash cyle time A measure that states the length of time needed by the Supply Chain to convert inventory into money. The shorter the time, the better the company's performance. When viewed from benchmarking results that have been done, the time required by the company was very long when compared with other industries.
- Asset turns A measure that states the frequency of an asset can be used by a company in a period to generate profit. The greater the frequency, the better the performance of a company. In this research, Asset turn value of company is very small.

Compared to previous research [5][6] the results of performance appraisals that have been done with SCOR method in this company followed by benchmarking process on several companies included in the best in class so it can be known advantages and disadvantages of the company. Then determined strategies that can overcome these weaknesses. This is what distinguishes this research compared to some previous studies.

#### 4. Conclusions

Based on the result of performance measurement process that do use five attributes and the benchmarking process, show that the cash to cash cycle time and asset turns have a low performance so that the company's position is on the performance achievement of 75%. The process of improving the performance of PT. Primarindo Asia Infrastructure, Tbk, it is necessary to coordinate some parts of the company, namely the procurement, production and quality control and marketing. With the coordination, it is expected to improve the performance of cash to cash cycle time and asset turns.

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