

Analysis of Production Performance of Supply Chain Operation Reference in PT. Premier Doughnut Indonesia

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Abstract— This study aims to analyze the company's production performance using the SCOR (Supply Chain Operation Reference) method by looking at the reliability and responsiveness attributes using Perfect Order Fulfillment (POF) and Order Fulfillment Cycle Time (OFCT) metrics. Respondents in this study were Production Managers, Operation Managers, Kitchen Admins, District Managers and also Store Managers or Persons in Charge at 35 Krispy Kreme Indonesia stores. The place of observation is in the Central Kitchen of Krispy Kreme Indonesia, which is located in Taman Tekno, Tangerang, Banten. The results of this study found that the weakness of the production machine and the lack of a distribution fleet were the main influences on the lack of and late delivery of donuts to each store during a major promotion.

Keywords— Krispy Kreme Indonesia, Food Supply Chain, SCOR, Food Production

INTRODUCTION

Supply Chain Management (SCM) is a method or approach to manage the flow of products, information, and money in an integrated manner involving parties, from upstream to downstream consisting of suppliers, factories, actors in distribution activities and logistics services (Pujawan & Mahendrawati, 2017).

The application of the SCM concept in the company will provide benefits, namely customer satisfaction, increasing revenue, decreasing costs, increasing asset utilization, increasing profits, and getting bigger companies. To create coordination and cooperation between parties in the supply chain, it is necessary to have a measurement system that is able to evaluate supply chain performance appropriately.

In supply chain activities, PT. PDI, its main production activity is making food, namely donuts. Krispy Kreme in Indonesia has 35 stores located around Jakarta, Depok, Tangerang and Bekasi. PT. PDI has donut production factories in 2 places, namely Central Kitchen 1 or Commisarry 1 which is located on JL. Tekno Widya, Block F, number FH, Setu, City of South Tangerang, Banten and Central Kitchen 2 or Commisarry 2 which is located on Jl. Harapan Indah Boulevard, Meli Melo Culinary Center 3 Kav 26B, Medan Satria, Bekasi, West Java.

However, there is a large difference in the amount of production issued by the central kitchen compared to the number of orders from all stores, due to the inability of the central kitchen to fulfill store orders, especially during high season or when a big promotion is being held and there is a problem experienced resulting in unequal data the number of donuts sent by the central kitchen, with the number of donuts received by the store.

For shop orders that lack production, it will result in additional time until everything is fulfilled and requires additional fleet costs for follow-up deliveries to shops. The normal time required by the commissary to fulfill a store order is 13 hours, calculated from the time limit for the store to place an order via email, which is 03.00 PM, until the donuts produced reach the loading stage at 04.00 AM. This makes the company suffer losses if it is not analyzed immediately, so that the difference can at least be reduced.

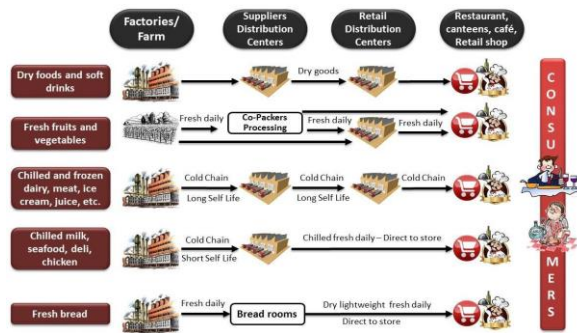
Therefore, there is a need for an in-depth analysis with certain methods. Several companies have proven that the SCOR model has been well tested in order to measure the level of supply chain performance in a company which can be used as a reference for further business process improvements (Rizki, et al, 2012). According to Sugeng, et al (2020), the SCOR model is used to measure and improve the company's total supply chain performance. This model includes an assessment of delivery and demand fulfillment performance, inventory and asset management, production flexibility, warranties, process costs, and other factors that affect the overall performance assessment of a supply chain.

The analytical method that will be used is the Supply Chain Operations Reference (SCOR) model by analyzing the reliability and responsiveness attributes which are important attributes from the consumer's point of view (customer-facing) which is taken from the shop's point of view as the recipient of the production. In conducting this research, the writer wants to analyze the causes of the difference in the number of donuts ordered by the store with the results of the central kitchen's production and reduce the difference in the data on the number of donuts sent by the central kitchen with confirmation data from the store.

LITERATURE REVIEW

According to Wuwung (2013), Supply Chain Management is a system that involves the production, delivery, storage, distribution and sale of products in order to meet the demand for these products. The supply chain includes all processes and activities involved in delivering the product to the user. consumer. These include the production process in manufacturing, transportation systems that move products from manufacture to retail outlets, warehouses where these products are stored, distribution centers where shipments in the large dozen are divided into dozens of smaller ones to be sent back to stores and finally to retailers. who sells the product.

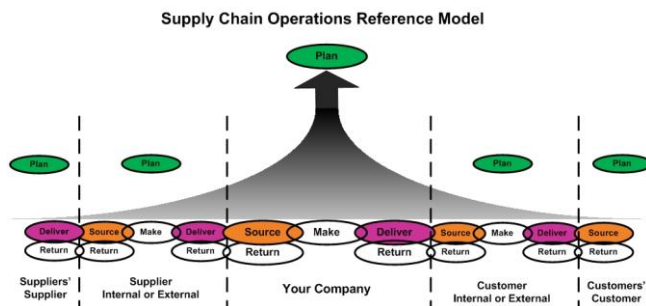
The food and beverage industry manages the product supply cycle to all consumers in various places with special treatment for each product category and marketing channel (channel) and uses different distribution systems for small outlets and large outlets (Figure 1).



Picture.1. Distribution of Food Products based on Handling Characteristics.
 Source: Bortandy Tobing article (2020).

A. Supply Chain Operation Reference (SCOR)

Supply Chain Council (2012) explained, the SCOR Model has 740 frameworks that combine supply chain business processes, performance measurement based on best practices into an integrated structure so that the communication process between supply chain actors and supply chain management activities can run optimally.



Picture.2. SCOR models.
 Source: SCC.

The SCOR method is a reference model of supply chain operations. SCOR is able to map parts of the supply chain. The application of the SCOR method in supply chain management provides the observation and measurement of the supply chain process as a whole. The SCOR model includes three process levels. The three levels indicate that SCOR performs the decomposition or decomposition of the process from the general to the detailed. Level 1, called the Top level (process type) defines the scope for the five core management processes of the SCOR model, namely:

- a) Plan: describes the activities associated with developing a plan to operate the supply chain. The Plan process includes gathering requirements, gathering information about available resources, balancing requirements and resources to determine planned capabilities and gaps in demand or resources and identifying actions to correct these gaps.
- b) Source: describes ordering or scheduling the delivery and receipt of goods and services. The Source process realizes the issuance of purchase orders or scheduling delivery, receipt, validation and storage of goods and receipt of invoices from suppliers. With the exception of Sourcing Engineer-to-Order goods

or services, all processes for identifying, qualifying and negotiating supplier contracts are not described using this process.

- c) Make: describes the activities associated with converting materials or creating content for services. Assembling, Chemical processing, Maintenance, Repair, Repair, Recycling, Repairing, Rebuilding are included in this process.
- d) Deliver: describes the activities associated with creating, maintaining, and fulfilling customer orders. The Shipping Process embodies receiving, validating and creating customer orders, scheduling delivery of orders, picking up, packaging and shipping and billing customers.
- e) Return: describes activities related to the return flow of goods. The Returns Process embodies identification of the need for returns, disposition of decisions, scheduling of returns and delivery and acceptance of returned goods. Repair, recycling, repair, and remanufacturing processes are not described using the Return process element.

Level 2 of SCOR is the configuration level (process category), which defines the form of planning and executing processes in the material flow. And level 3 is called the process element level (decomposition process), which defines the business processes used for sales order transactions, purchase orders, order processing, return rights, addition or replacement of inventory and forecasting.

B. Supply Chain Reliability

Supply Chain Reliability is the company's ability to carry out its supply chain activities as expected, where these activities are said to be on time, in quantity and quality. This attribute relates to the reliability of a supply chain process of a company. The indicator that measures the reliability of the process is Perfect Order Fulfillment (POF), which is the percentage of orders that meet delivery performance with complete and accurate documentation and no shipping damage. Determined by the formula:

$$\frac{\text{Total Orders} - \text{Number of Problematic orders}}{\text{Total Orders}} \times 100\%$$

C. Supply Chain Responsiveness

Supply Chain Responsiveness is the speed at which the task is performed. The speed with which the supply chain provides the product to the customer. Examples include the cycle time metric. Related to the speed of time in responding to any changes that occur in a supply chain process of a company. An indicator that measures the speed of time in responding to each of these changes is the Order Fulfillment Cycle Time (OFCT) which is the amount of time it takes from the time the order is received until the product is received by the customer. Determined by the formula:

$$\frac{\text{Amount of Successful Order Completion Time}}{\text{Total Successful Orders}}$$

D. Production process

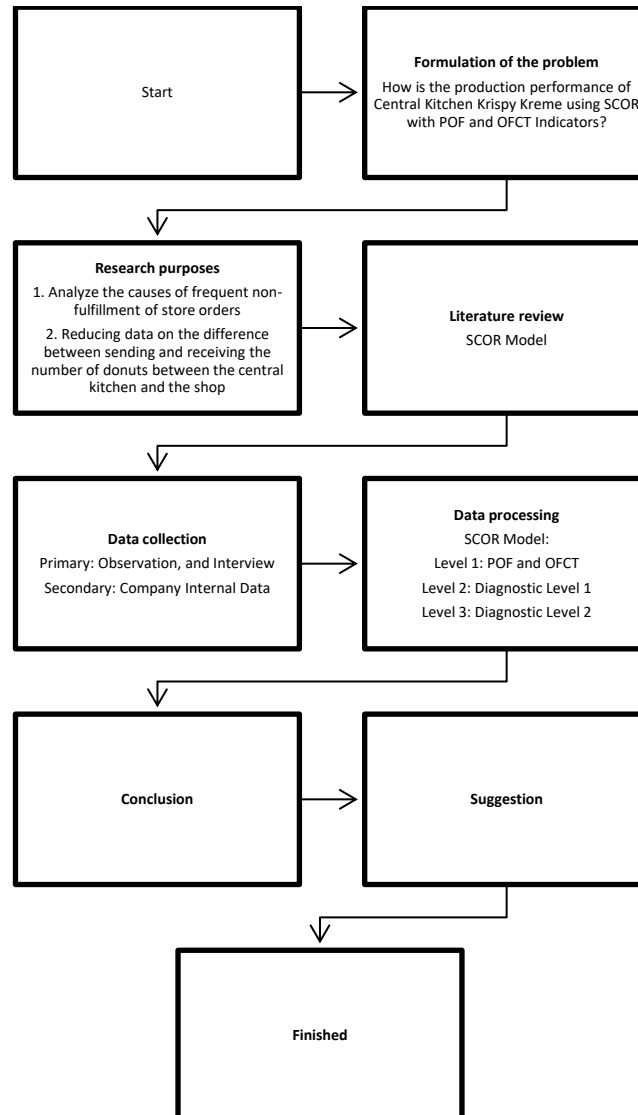
Production is an activity to create or increase the use of goods and services. According to Assauri (2008), "The production process is a way, method and technique to create or add to the usefulness of a product or service by using existing sources (labor, machinery, materials and funds).

METHODS

The research approach used in this study is an application model research, where this study makes observations in data collection, the researcher only records the data as it is, analyzes and interprets the data. Model application is a type of research that emphasizes solving practical problems directed at answering questions in the context of determining policies, actions on certain performances (Indrianto and Suparno, 2002).

In this study, an application model with the type of evaluation research is used, namely research that is used to support the selection of several alternative actions in the business decision-making process

To find out the activities carried out and describe or identify the state of an object to be studied regarding supply chain management at PT. Premier Donut Indonesia, where the final product produced by Commisarry reaches the store, with POF and OFCT attributes that are the focus based on facts on the ground.



Picture.3. Framework

RESULTS AND DISCUSSION



Picture.4. Production Process Flow

The production flow starts from receiving an email order that is sent to the admin commissary from all stores, it is recapitulated into one excel sheet in order to get the total that must be produced and all the materials that must be used. After the mixing process, the donuts will be made by the production machine. The next production process is to give the filling or topping to the donuts, which is usually called processing. Furthermore, the distribution and packing process is carried out according to the number of orders per store. Donuts will be divided using a donut rack, where 1 rack can accommodate 44 – 46 dozen donuts. Donuts that have been divided according to the number of orders from each store will be sent by truck.

E. SCOR analysis level 1

at level 1 it begins by defining the company's business objectives. PT. Premier Donut Indonesia is to provide the highest quality products with sufficient stock in all of their Krispy Kreme stores, using indicators of reliability and responsiveness to customer demand. The reliability metric used to measure it is Perfect Order Fulfillment (POF) and the responsiveness metric used to measure it is Order Fulfillment Cycle Time (OFCT).

a) Perfect Order Fulfillment (POF)

The POF value can be calculated using total store order donut data with the number of donuts not being fulfilled during March 2021 with the following calculation:

TABLE 2. POF CALCULATION

Types of products	Total Product Order	Total problem product	POF
OG	312,057	15,462	95.05%
Dry Ring	466,840	39.109	91.62%
Dry Shell	137,638	9.320	93.23%

Data processed, 2021

In table 2, the data in the total product order column is the total number of donut orders from all shops that ordered at the commission during March 2021, while the total problematic product column is the difference between orders and donut receipts by the store, plus damaged products. The average value of POF commissioner PT. Premier Donut Indonesia when viewed from the three types of products above is 93.30%. Based on these data, it can be concluded that the performance of the Commissioner of PT. Premier Donut Indonesia in meeting the needs of shop orders has been good, although it has not been able to reach the target of 100%.

b) Order Fulfillment Cycle Time (OFC)

The amount of the OFCT value can be calculated by the average hours needed to fulfill all store orders, which are targeted to be fulfilled within 13 hours starting from the time the order data comes in, which is 03.00 PM and must have left for the shops no later than 04.00 AM.

TABLE 3. OFCT CALCULATION

Sunday	OFCT
1	15.96 hours
2	17.58 hours
3	17.61 hours
4	13.91 hours
Average	16.27 hours = 16 hours 16 minutes

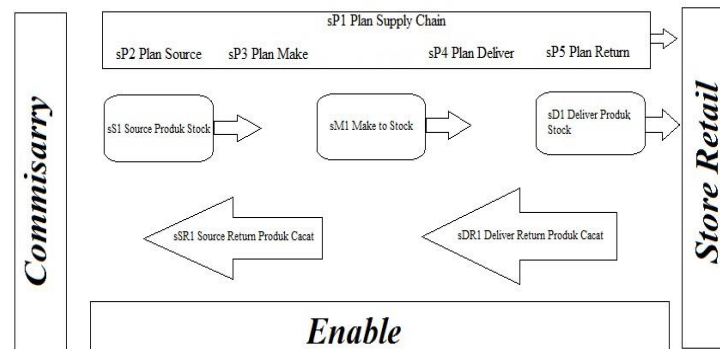
Data processed, 2021

The average OFCT score was 16 hours 16 minutes. Based on these data, it can be concluded that the performance of PT Premier Donut Indonesia in fulfilling orders from all stores is still not good because there are so many delays.

F. SCOR analysis level 2

At level 2 mapping will display an overview of the implementation processes of the supply chain PT. Premier Donut Indonesia, starting from the production process to distribution. In addition to showing product flows, these mappings can also later be used to analyze activities that are not well connected. After doing level 2 mapping, the next step is to determine which process causes the maximum POF not to be achieved and the OFCT which is still far from the target set by PT. Premier Donut Indonesia.

Based on the analysis and interview with the Production Manager of the Krispy Kreme Indonesia Commissary, Mr. Mandohar, it can be seen that there are obstacles in the production (Make to stock) and product delivery sections, which will be discussed in more detail at level 3 analysis.

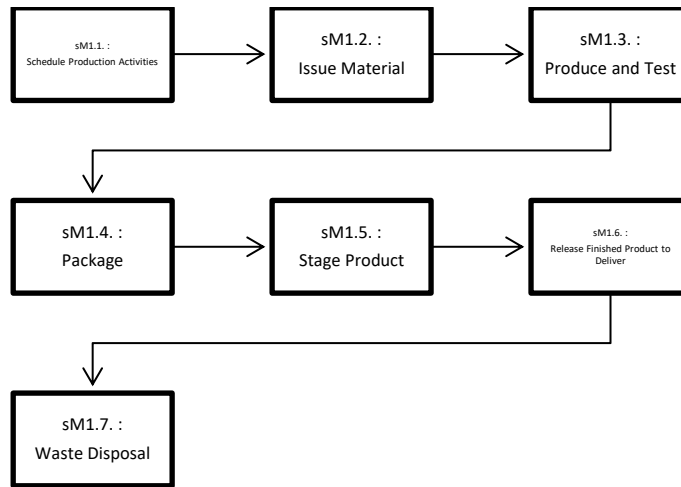


Picture.5. Analysis level 2 Krispy Kreme Indonesia

G. SCOR analysis level 3

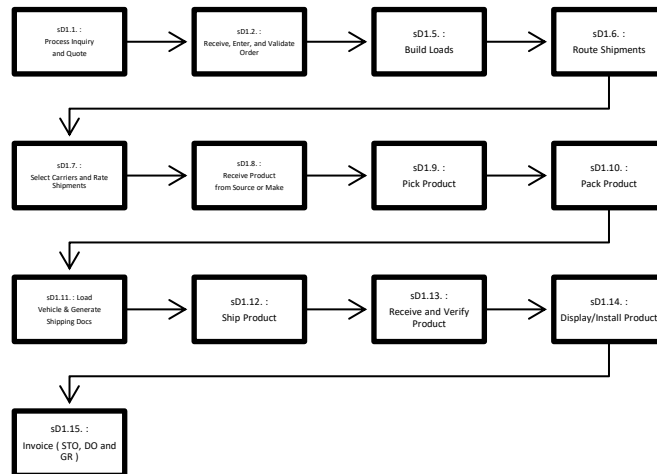
The analysis at level 3 is carried out to see in more detail the production process (Make to Stock) and deliver, because from the analysis results, the POF and OFCT metric values have not reached the company's target.

a. Make to stock process



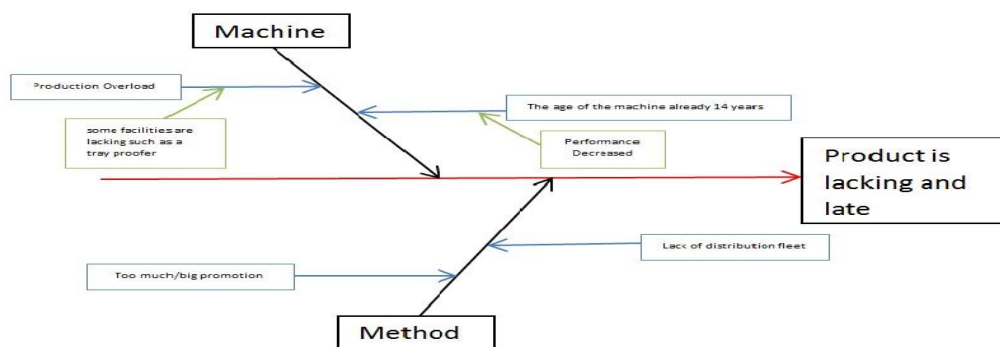
Picture. 6. sM1 process

b. Delivery Process



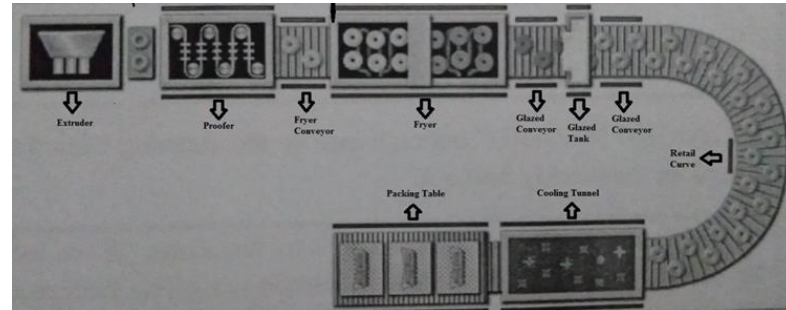
Picture. 7. sD1 Process

Based on the results of observations and interviews that have been carried out, information is obtained that the problem is part of the sM1.3 and sD1.11 processes, namely related to product production and product loading to trucks, and then will be analyzed further with the help of fish bone diagrams.



Picture. 8. Analysis with Fishbone Diagram

On the machine factor, the problem that occurs is due to the old age of the machine, resulting in not optimal production performance, which should be able to produce 50 dozen per batch, but currently can only produce 45-47 dozen. Not to mention the limited number of tray proofers (Parts on Production Machines) (Figure 9) which resulted in the production process being hampered.



Picture. 9. Production Line Machine

In the method factor, it can be seen from the too large promo that is held not balanced with the maximum number of production and distribution fleets, with the existence of 4 existing truck fleets, where the maximum truck fleet carries 2,240 dozen (560 dozen/truck), but when the promotion is held, orders of all shops can touch the figure of 5,000 dozen, while the machine capacity is only 4,800 dozen/day.

CONCLUSION

Based on the analysis that has been done with SCOR analysis with POF and OFCT indicators, it can be concluded that the cause of the delay and lack of delivery of donuts to Krispy Kreme Indonesia stores is due to the decline in the performance of production machines and the lack of a delivery fleet. The total maximum production of machines and the carrying capacity of the distribution fleet is not proportional to the total number of orders from all stores when marketing carries out attractive promotions such as 50% discount promos, promos buy 1 dozen get 1 dozen free and other interesting promotions, coupled with some lacking facilities such as tray proofers, causing production activities to be obstructed.

SUGGESTION

The suggestion from this research is that Krispy Kreme Indonesia should rejuvenate its production machines, considering the age of the machine which is already 14 years old, besides that the company must dare to invest more for the long term in order to be able to make / add mini kitchens in each store, so that the production workload namely processing can be done in every store, so that some of the shortcomings of the flavor variants can be covered. The next suggestion is to maximize commissioner 2 in Harapan Indah, Bekasi, to help production when the promotion will be carried out and increase the fleet of delivery trucks. If this can be done, it is likely that production shortages and delivery delays will be reduced, and can reduce short-term costs.

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