

INVENTORY POLICY TO MINIMIZE THE INVENTORY COST AT PT NUTRICIA INDONESIA SEJAHTERA

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Abstract. The research is done based on the PT. Nutricia Indonesia Sejahtera, a company that produces a formula milk located in Ciracas, Jakarta Timur. Nowadays, formula milk has become a complementary nutrition in the community and even as a substitute for ASI (Air Susu Ibu). PT. Nutricia Indonesia Sejahtera produces milk that is not only for the baby but also pregnant women and toddler. Since we know that the formula milk is really needed for all people, knowing the amount of inventory level is a must for company. The company experienced some problems related to the inventory management. This research will be analyse about the stock policy in the PT. Nutricia Indonesia Sejahtera. The company has a problem with an overstock problem for the raw material in the inventory. The objectives of this research is overcome the overstock problem in the warehouse and minimize the cost production in order to provide solutions to the company issues. In this research the author focus on the local and import raw material data products, the methods that will be used in this research is using Cycle Counting and ABC Classification Analysis. In the other hand, this research also provide the comparison between company and author calculation in order to compare which methods that gives advantages to the company. The calculation for this research will involve Safety Stock, Re-order Point, Economic order quantity, Average Inventory Level in Rupiah and ABC Classification Analysis. In the ABC Classification analysis, the author also provide how to maintain the product by each classification. Analysis will give an advantages for the company such as overcome the overstock problem in the inventory and minimize the cost that have to be spend in one month. The author calculation and analysis is for import and local product. After calculate the data using Cycle Counting method, the author also calculate the ABC Classification Analysis to separate which product that is need more attention and maintenance. Knowing each classification by using ABC Classification will also reduce the cost that have to spend in one month, because the company will know which the product that has an expensive cost and lower cost, the author also provide how to keep the quality of each raw material based on their classification.

Keywords : PT. Nutricia Indonesia Sejahtera, Overstock, Inventory, Economic Order Quantity.

Introduction

Indonesian formula milk consumption reached the second largest country in the world after China with 5.2 billion and Indonesia 1.1 billion. Related to that number Indonesia has a high consumption of infant milk, stock for inventory in every manufacturer will greatly affect to the purchasing power of consumers. The company have to be extra careful when producing a product, they must exactly know when the time to produce and also stop to produce. In the other hand, the companies have to consider the product that have to be in the warehouse and also how to maintain it, the products have to in a good quality. To make a product in a good quality, the companies have to make sure that the ingredients or raw material is in a good quality too.

When producing a product the companies exactly need a high quality raw material to use. The raw material also need extra attention to keep it in a good quality, so the outcome will be satisfy. In addition, the companies have to know the quality of the raw material is. The raw material that has a

high cost have to be separated with the raw material with low cost and the maintaining for each classification will be different too. This research will be focus on infant milk formula in PT. Nutricia Indonesia Sejahtera.

Nutricia has existed since 100 years ago, was originally established in the Dutch town of Zoetermeer in 1901. To fulfill the market demand they create a factory in foreign countries such as Netherland, Belgia, Denmark, Taiwan, Italia, Spanyol, Portugal, Finland, France, German, Panama, Sweden, Hongkong, America and Indonesia. At first, all of product is imported from Netherland, but in 1988 they started to build a factory, the name is PT. Nutricia Indonesia Sejahtera. Nutricia was acquired by Danone in 2007 and now Nutricia is a part of the Danone Group, a global company engaged in the field of nutrition. In addition to having global network, Nutricia also has a research centers in the Netherlands and Singapore.

PT. Nutricia Indonesia Sejahtera has an issue with their stock (stock policy). This research will be focus on how to overcome the overstock within a system of production and also to create the production plan to be precise and accurate. This issue have to be solve because stock is one of obstacles for the company due to the overstock will give a bad impact to the company such as loss.

PT. Nutricia Indonesia Sejahtera has several problems related to the inventory management system which are forecast accuracy, changes in production plans, stock policy, and warehouse space. The problem that will be the main focus of this final project is related to the entire data of its raw material for all products that has been produced by PT. Nutricia Indonesia Sejahtera. In the previous year the company had an overstock problem in their inventory, whereas this year the company also has the same problem. Stock is an important issue in a production line because by knowing the amount of product that company should produce will avoid overstock while the producing process. Overstock will give a bad impact such as expired. To keep the product in a good quality, the also have to spend more holding cost.

PT. Nutricia Indonesia Sejahtera not only meet the demand in Indonesia but also they produced the product for foreign countries such as Australia, Malaysia, United States. The infant formula that is sold in Indonesian market are Bebelac and Nutrilon, whereas the product they sold for foreign countries are SGM, Cow and Gate Formula, Dugro, Dumex, Dupro, Karicare soybeans, Mamex Gold, Hi Q Formula. This product is not manufactured for baby only but there are also product made for nursing mothers, pregnant women, toddler and baby.

This project indicates whether the ABC Classification can be implemented for this company's problem; To overcome the overstock for raw material in the inventory, Minimize cost production and provide solutions to companies issues

Literature Review

Inventory Management is the study of how a company can determine the amount of inventory that fits the needs of the market, the objective of the inventory management is to minimize cost of production. All the company have their own type of inventory, pharmacies would have to sufficient supplies of drugs when the buyer need, as well as PT. Nutricia Indonesia Sejahtera have to know the exact amount of inventory to avoid overstock or understock. Inventory can be defined as a stock that organization used as a resource. An inventory system as a set of policies and also as a monitor control in order to determine what levels should be maintained, replenishment and how large order quantity should be (Jacobs & Chase, 2014). The form of inventory can be divided into 6 main point which are raw materials, purchased parts and supplies, partially complete work in progress, items being transported, tools, and equipment (Russel & Taylor III, 2011). One of objectives of inventory management is to keep enough inventory to meet customer demand and also be cost effective (Russel & Taylor III, 2011). In the other hand by managing inventory an organization also determine

the amount of inventory to keep in stock, how much to order and when to replenish, or order (Russel & Taylor III, 2011).

Inventory Costs

There are three basic of cost which are carrying cost, holding cost and shortage cost (Russel & Taylor, 2011)

Carrying Cost

When an organization has a holding item in their inventory it is called Carrying costs or Holding Costs (Russel & Taylor III, 2011). Carrying costs are included facility storage (rent, depreciation, power, heat, cooling lighting, security, refrigeration, taxes, insurance, etc.), material handling (equipment), labor, record keeping, borrowing to purchase inventory (interest on loans, taxes, insurance), product deterioration, spoilage, breakage, obsolescence, pilferage (Russel & Taylor III, 2011).

Ordering Cost

According Russel and Taylor ordering cost is "*Ordering costs are the costs associated with replenishing the stock of inventory being held*" (Russel & Taylor III, 2011). The costs that have to be pay when an organization make an order to their supplier, the costs are requisition and purchase orders, transportation and shipping, receiving, inspection, handling, and accounting and auditing costs. (Russel & Taylor III, 2011)

Shortage Cost

Shortage costs also referred to as stock out costs occur when customer demand cannot be met because of insufficient inventory (Russel & Taylor III, 2011). When an organization has a problem related to the shortage costs for a long term it will give a negative impact to their customers such as customer dissatisfaction and a loss of goodwill that can result in a permanent loss of customers and future sales (Russel & Taylor III, 2011)

Reorder Point

Decided how much to order and when to order. Assume that a firm will place an order when inventory level for that particular item is reaches zero and that it will receive the ordered items immediately. When inventory shows the number for reoder point then it is time to place an order (Heizer & Reinder, 2014).

Economic Order Quantity

Basically, Economic order quantity is determines the point at which the combination of order costs and inventory carrying costs are the least. The differences between EOW in purchasing is in the purchasing known as order quantity, while in the manufacturing known as production lot size. The result of the EOQ is cost-effective quantity to order (Piasecki, Dave, 2001: 30-39).

Overstock

Overstock causes the excessive costs in the inventory, if the company has lack of stocks it will stop the production or sales, which mean economic sanctions such as penalty interests (Lamatic, Mihai, 2009: 205-209).

Safety Stock

If the demand in the organization exceeds the available inventory in stock than the safety stock will be occurred. When demand is uncertain, a safety stock of inventory is frequently added to the expected demand during lead time. Safety stock is a buffer added d to the inventory on hand during lead time (Russel & Taylor III, 2011).

ABC Classification Analysis

Activity Based Costing (ABC) classification is a method that provides an information about its costs, operations, activities, outputs and cost objects. It is usually used to calculate the costs of a particular cost object (Bajus, Radoslav; Lenka Hudáková Stasová, 2014: 228-244). Basically, Activity Based Costing Classification model is divided into the class which are A,B and C. The class is separated by the rank of its annual cost of goods sold for each item (Peterson and Silver, 1979, chapter 3). ABC classification used as a method for classifying inventory for several criteria including its dollar. In general, about 5 to 15% of all inventory items account for 70 to 80% of the total dollar value of inventory. These are classified as A, or Class A, items. B items represent approximately 30% of total inventory units but only about 15% of total inventory dollar value. C items generally account for 50 to 60% of all inventory units but represent only 5 to 10% of total dollar value. There will be different levels class of inventory which are monitoring and control—the higher the value of the inventory, the tighter the control (Russel & Taylor III, 2011).

Methodology

Problem Formulation

This chapter provide the first step of research. After a couple of weeks the researcher have meet the interviewees and give some information that the current problem inside the company such as forecast accuracy, changes in production plans, stock policy, and warehouse space and at the end the author decided to choose stock policy to overcome the understock in the inventory. The author gather the data from the interviewees and also internet for the company's background. As the author explained before in chapter 1 the company has a problem with their stock policy, after the author make an interview with the company parties the author know that the company has a long waiting time for lead time and also the classification for the products.

Research Objectives

The objectives of the problem is to avoid the overstock problem by using ABC Classification Analysis and also Pivot analysis by comparing the company result with the propose method by the author. With analyzing the data from April 2015- April 2016 the authors could determine the problems that occur inside the company. The data that have been gathered from the sources; primary data and secondary data. Primary data: The data that collected by doing an observation to PT. Nutricia Indonesia Sejahtera, interview with the interviewees and also by email. Secondary data: The data that collected by read the company information from the internet and also the sources related to the company.

3.3 Data Analysis

After all the data have been gathered the author start to analyze the data to solve the ompany problem that occur inside the company. By using the theoretical foundation that have been created in chapter II and also after analyze the data, the other can discussed deeper with the knowledge that have been got. After the author have done doing the analysis the author start to calculate the data in order to give a new purpose by using pivot analysis and also ABC Classification Analysis to overcome the overstock problem. The author is use Pivot analysis by excel to sort the data from a huge data to a simple data. After the author make an analysis by using Pivot analysis, the author start to calculate the data by using EOQ Model, ROP, inventory cost and also make a classification by using ABC Classification Model

Findings

There are two kind of product which is import and local product. The amount of local is slightly higher than import with 52 and 51 respectively. After the author compare the data between company and author calculation actually the company can reduce the amount of several number such as their safety stock, ROP, Average inventory level in Kg, Average level in Rupiah. After the author analyse and calculate the data the conclusion for this research are;

Company Calculation	Total Average
Safety Stock	42.159 Kg
ROP	90.733 Kg
All (Kg)	44.965 Kg
AIL (Rupiah)	Rp5.699.504.749

Author Calculation	Total Average
Safety Stock	35.676 Kg
ROP	84.250 Kg
All (Kg)	38.481 Kg
AIL (Rupiah)	Rp1.876.896.309

Company Calculation	Total Average
Safety Stock	486.940 Kg
ROP	1.919.550 Kg
All (Kg)	491.191 Kg
AIL (Rupiah)	Rp19.648.742.398

Author Calculation	Total Average
Safety Stock	195.068 Kg
ROP	1.627.678 Kg
All (Kg)	199.319 Kg
AIL (Rupiah)	Rp10.697.559.201

To overcome the overstock problem the company have to reduce the safety stock in the inventory. The company average safety stock in one month is 42.159 Kg but after doing an analysis actually the company can reduce the amount of safety stock to 35.676 Kg for local product. If the company can reduce the safety stock they do not have to keep a huge number in the inventory that will be affected to the overstock. The service level number that the author use to calculate the safety stock in the inventory is 95%, based on historical data.

The average inventory level in Kg also have a significant result between author and company calculation. The company calculation for import product is 491.191 Kg and the author calculation is only 199.319 Kg. Actually, the company can save 291.872 Kg in one year. If the company want to reduce the total average inventory level they also have to reduce the safety stock number to reach the 199.319 Kg. Based on the analysis the company has an overstock problem inside the inventory. The company spend almost Rp25.348.247.147 for local and imported product in the average inventory level in prices. After the author calculate the average inventory level it is only Rp12.574.455.510 for both products. In order to minimize the cost production, with the purpose author calculation the company can save up to Rp.12.773.791.637

In ABC Classification analysis the author combine the data between local and imported raw material products. To get the price value the author have to determine the classification for each product. Total raw material product is 103 unit and the classification divided into three part;

The total amount for classification A is 15 unit
 The total amount for classification B is 36 unit
 The total amount for classification C is 52 unit

Table 4.6 ABC Classification for Total Item

TOTAL ITEM	103 unit
Classification A	15 unit
Classification B	36 unit
Classification C	52 unit

The author try to classify the product based on the modal, total item and also the percentage of each price and volume for the A,B,C classification:

Table 478 ABC Classification for Total Value

Classification	Modal	Item	Volume (%)	Price (%)
A	Rp.10.059.564.408	3	3 %	80%
B	Rp.1.886.168.327	11	11%	15%
C	Rp.628.722.776	89	86%	5%
Total Value	Rp.12.574.455.510	103	100%	100%

For classification A, about 3% of all inventory items account for 80% of the total value of inventory. The total item for inventory is 1 and the price is Rp.10.059.564.408

For classification B, about 11% of all inventory items account for 15% of the total value of inventory. The total item for inventory is 1 and the price is Rp.1.886.168.327

For classification C, about 86% of all inventory items account for 5% of the total value of inventory. The total item for inventory is 1 and the price is Rp.628.722.776

The total raw material for this ABC classification about 153 item and the total value for all of raw material for all classification is Rp.12.574.455.510. After knowing the classification, now the next step is to keep the quality based on the classification. The quality for all of raw material have to be considered moreover for the costly item.

Classification A, this class require higher attention than others, it is because the product having expensive price and the quantity in a low scale so the maintenance have to be more special and there must be a strict supervision. The product have to be check for once a month, the checking system is not only for the quality but also the quantity of the product. Classification B, the price of "B" product not as expensive as the first classification and the quantity is not as small as "A" product. In this class, it will be necessary techniques to moderate control, the checking system is every 3 months. Classification C, due to this class has a lot of amount of inventory the classification is doing for every 6 months, the price in this class having a cheap cost than other classification. So, this class not really require high attention.

Conclusion

The solution for PT. Nutricia Indonesia Sejahtera, the company have to reduce the safety stock number in the inventory in order to reduce the cost that have to spend in one month. After the author calculate the data by reducing the safety stock number it will give positive impact to the cost number. With 486.940 kg of safety stock number it will cost Rp19.648.742.398 in one month but by reducing the safety stock number into 195.068 Kg the cost is only Rp10.697.559.201 in a month. Knowing each classification by using ABC Classification will also reduce the cost that have to spend in one month, because the company will know which the product that has an expensive cost and lower cost, the author also provide how to keep the quality of each raw material based on their classification

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