

CHAPTER 1 INTRODUCTION

1.1 RESEARCH BACKGROUND

In human's life there is a concept that has been known since ancient civilization called stock or more known as inventory nowadays. The concept of inventory had been used by ancient civilization as mean to survive by making stock of food and goods for daily needs. Even now the concept of inventory has been used by many people with many purpose whether daily activity purpose or business activity purpose. The concept is still the same with the way ancient civilization use it, but the purpose and the activity become more complex when inventory used for business activity purpose.

One example of inventory usage is inside hospital and public medical care center. The main goods circulated within the process usually fall in kind like drug and medical consumable. Drug and medical consumable fall in pharmacy category to distinguish with other goods that hospital may stocked like food ingredient, chores consumable, and general maintenance consumable. Pharmacy inventory become important as hospital offer a medical service to the patient or customer using drug and medical consumable as tools and material to deliver the service. The importance increase when demand for certain pharmacy goods increase or the availability must be high because the vital needs of a certain pharmacy goods have. Those example are several nature or character that pharmacy goods have inside the hospital which is relatively different with inventory inside manufacture such as finished goods and raw material.

To stock goods in advance may be good for prevention and minimize risk for sudden needs but to overstock means hospital has increase in inventory cost. Inventory cost can be interpreted as restrained investment which means investment that has not become sales and revenue. The second event that may occur is out of stock. Out of stock happens when there are no stock available at the moment when they are needed. This may occur cost of lost sales.

This research is done in one of government-owned hospital in Bandung. The hospital is one of biggest referring to the province referral capability the hospital has. The

hospital named hospital XYZ located in Bandung and the research based on data and activity that occur around inventory for pharmacy category goods. Hospital XYZ has one pharmacy warehouse for place to stock all pharmacy goods. Hospital XYZ itself has fifteen depot that serve customer for their needs of pharmacy goods. Customer buy their drug from each depot and depot replenish their stock and inventory by requesting new replenishment order to the pharmacy warehouse. The research is being carried in one depot named Intensive Care Unit (ICU). ICU depot serve the customer with intensive status when being admitted to the hospital XYZ. The category of drug and the medical consumable inside ICU depot is consumable even the medical consumable is consumable. The medical consumable which has economic life (such as surgery and operation consumable) are categorized as investment medical goods

The ICU depot also managing their own inventory level based on the demand they have and replenish their stock by ordering to the pharmacy warehouse. There are total 945 SKUs on ICU depot consist of drug and medical consumable. To fully understand about the condition on ICU depot below is the graph of stock and sales during July-December 2014.

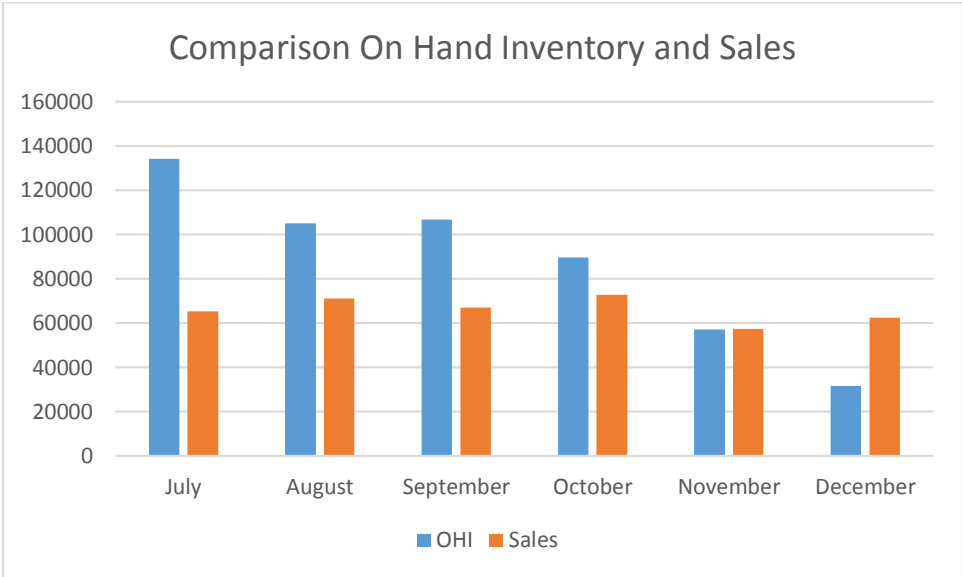


Figure 1.1 Comparison OHI and Sales

The graph show us the sales and on hand inventory level of ICU depot and can be seen ICU depot try to stock in high number at the start of July and low on stock happen during December thus out of stock occur. The graph have to be remembered as aggregate representation of inventory planning and the disaggregate condition for each month will be explained on the next paragraph.

The first problem is overstock value. High overstock value is caused when sales rate or output rate is lower than the stock level.

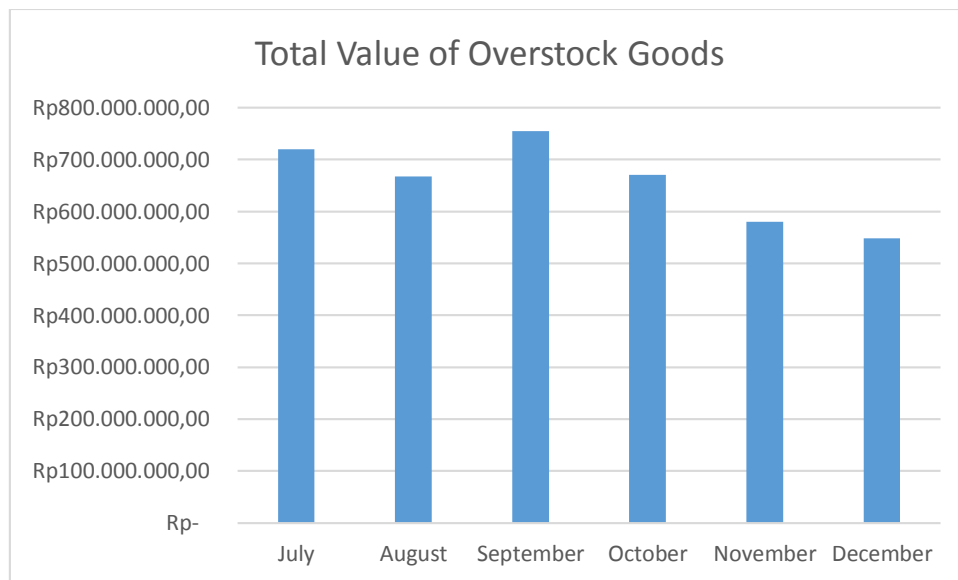


Figure 1.2 Total Value of Overstock Goods

The graph above show us the total value of overstock cost. For each month contributed a significant value of overstock cost. Not all SKU is on overstock condition, there are 362 SKU that has overstock value and 33 of them has value equal more than (\geq) Rp.4.000.000,-. The overstock case will have great impact on ICU depot because they will be unable to circulate the investment back to profit. The investment they did to but those overstock pharmacy goods will not turn into money as the sales rate is not higher than the overstock value. This restricted or bottled investment must be minimized in order for ICU depot smoothing the money circulation thus minimize the investment cost and maximize the profit.

The second problem is out of stock problem. Out of stock happen when certain inventory level is less than sales rate or level. Hospital XYZ has their own policy about out of stock case for each depot. When there are a certain demand for drug as example and there currently no available stock for the drug, the depot can order the demanded drug to another depot that has it. This case also applicable for medical consumable. Because of this policy whenever a depot request goods to another depot it will cause a damage to another depot's stock and of course inventory planning. Because of this policy it is decided to refer out of stock as shortage because depot still be able to sell the goods even though they do not have the goods at their own inventory and still be able to sell. The graph represent the shortage quantity.

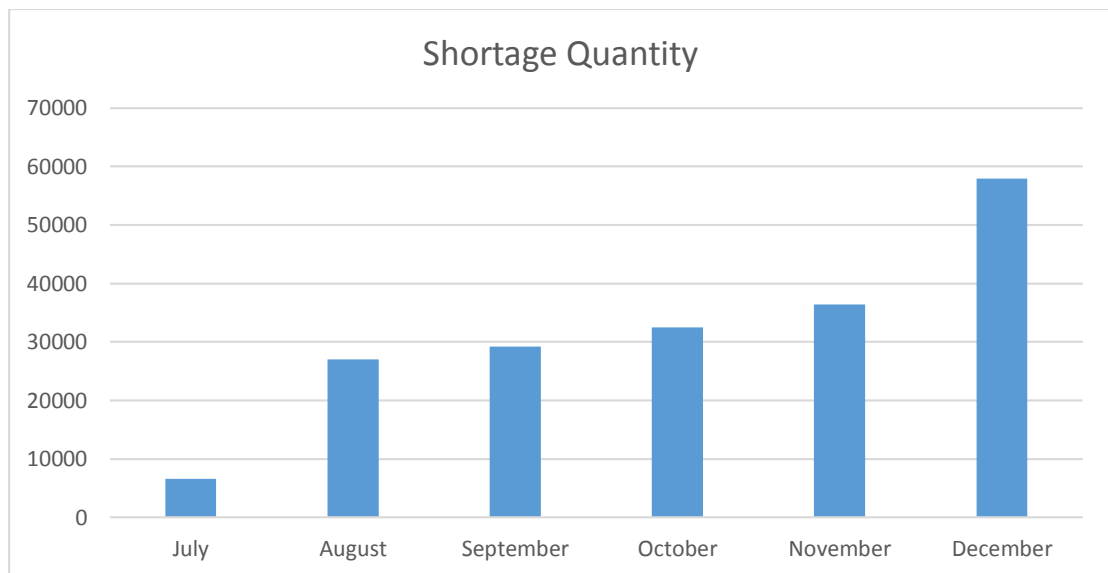


Figure 1.3 Shortage Quantity

Because of the policy stated before, there is no cost of lost sales in each depot inside hospital XYZ. Even though the policy can eliminate cost of lost sales it came with another consequences of unplanned inventory level of pharmacy goods and ICU depot is not an exception. As can be seen on the graph above there are several SKU which even exceed 500 out of stock unit. Those shortage in inventory will cause another depot to share their stock to ICU depot. This is claimed as a problem by the warehouse authorities considering each depot has their own target and plan and unexpected request

for goods from another depot can disturb it. Shortage in ICU depot warehouse can also prove to be fatal. Some drug or medical consumable is not allowed to be unavailable. This happens because they are needed for immediate medical treatment and the unavailability can even lead to death.

The overstock and shortage problem that occurs is based on the stock and sales that we can see on the graph above. The problem occurs because the existing method of planning is not considering forecasting and calculation but based on projection of on-hand inventory and personal judgment only. With this existing inventory planning resulting in those two problem symptoms. Even though with existing planning the ICU depot still will be able to thrive and survive for the business but as a researcher will try to find a more suitable method to decide on the inventory planning so the inventory condition on the ICU depot will be minimum on overstock and shortage. Those problems are the main topic of this research focus on. The main purpose and output for the research is to come up with inventory planning that can eliminate or minimize those two symptoms. The judgment of the betterment of the research for the ICU depot is to give significant value that offers a lower overstock and shortage level. Quoting from (Assauri, 1999) one of the functions of inventory policy is to “Control so the inventory does not occur in over quantity, so the cost incurred from the inventory is minimum” Thus this research will try to find the most suitable solution to minimize the shortage so that medical treatment activity can run smoothly. In summary, this research is done to ultimately reduce the inventory cost as little as possible while maintaining inventory levels where unavailability for some category of drug and medical consumables are not allowed to be shorted.

1.2 PROBLEM IDENTIFICATION

Based on the research background that has been defined above, the problem identification that will become the object are:

1. What is the inventory policy to minimize shortage and total cost of inventory

1.3 RESEARCH OBJECTIVE

The research objective based on problem identification are:

1. Decide on inventory policy to minimize shortage and total cost of inventory.

1.4 SCOPE AND CONSTRAINT

There are several constraint and scope that the research has. They are:

1. The data used are order and sales data from July-December 2014.
2. The research does not consider increase in price and inflation.
3. The price of the goods stated is the price list got from vendor.
4. Lead time is assumed constant.

1.5 RESEARCH BENEFIT

The benefit from this research are:

1. As recommendation material for ICU depot of hospital XYZ Bandung in planning the inventory on pharmacy goods.
2. Consideration for hospital XYZ to minimize the risk of overstock and shortage.

1.6 WRITING SYSTEMATIC

The research is written in systematic such as:

Chapter 1	Research Background
Chapter 2	Base Theory
Chapter 3	Research Methodology
Chapter 4	Data Gathering and Processing

Chapter 5

Analysis

Chapter 6

Conclusion and Recommendation