

# CHAPTER 1

## INTRODUCTION

### 1.1. Background

Pharmaceutical is a challenging market nowadays. The demand and competitors for big companies are increasing from year to year. Companies are pushed to produce new products to survive in this market. The global pharmaceuticals market is worth US\$300 billion a year, a figure expected to rise to US\$400 billion within three years (World Health Organization, 2013). This movement is also because local government keeps updating the regulations for licensed drugs. New product movement means a modification to the production plants or schedules. Some companies use a new schedule to make more products than before, but the others are building new plants.

The production plant for pharmaceutical develops faster and more complicated. The production rate of one type of product can be about 500 drugs per hour. These products are stored to the warehouse to fulfill the customer demands. Drugs have several types of form, but it can be divided into two classifications based on how to store it in the warehouse. First is an Over-The-Counter (OTC) drugs that can be kept in all places and sold without a prescription, second is therapeutic drugs that contain restricted substances that can only be sold with a prescription and must be stored in a special locked place. This fast market is proven with Asia's market share as high as 14% in the worldwide pharmaceutical sales on 2012 (EFPIA, 2013).

On the other hand, the packaging of those drugs must suit the needs of the drugs. Every year the drugs produced are becoming more and more sensitive, so the packaging demand is increasing to protect those drugs (Raumedic, 2013). If it needs to be stored in room temperature, the packaging section will stock the boxes and other packaging needs in the right section, so the packaging warehouse of a pharmaceutical company is usually divided into 3 sectors, cold section, goods section (for goods needing no special temperature), and brochure section. These sectors are very important to have a good supply chain to ensure the goods do not disturb the production process. The packaging of the goods stored is essential for the product because they could keep both the physical and

the chemical stability of the medicine from several factors such as light, moisture, and bacteria (Mills, 2010). The change of both physical and chemical stability could damage the drugs, which damaging people's body when they consume medicines (Konrad, 2011).

Cold storage has made a large demand nowadays, such as PT. Bernofarm as one of the pharmaceutical companies in Indonesia. Most pharmacies use cold storage either for taking samples or storing their goods (Bry-Air, 2010). The increasing demand for products inside the cold storage reaches about 1.5% each month. While the demand increases rapidly, the storage cannot keep up with it. Cold storage is one of the problems in having a warehouse for consumer goods according to Clasbey and Garone (2000). The room temperature in particular isolation is being used to maintain the packaging, which affect the drugs packed later (American Chemistry Council, 2013). During the interview and survey in the company, the space of the cold storage of PT. Bernofarm is about 32% or 138 pallets of the total space available inside the warehouse, and the stored demand for the cold goods is 12.8% higher than the expected space. Supervisor of the packaging warehouse also becomes vital when he shows documents of the company such as Standard Operational Procedure and Business Process in the interview.

Because of the capacity problem, there is no lift truck which can go inside the cold storage in the office hours. No lift truck could be caused by the inventory system also. One pallet is used by several types of products because it has not enough pallets. This is one of the causes of the poor management of the warehouse that makes the business process of the company reduce the expectation.

The problems mentioned cause employees to only focus on storing the products in place, utilizing the space available inside the warehouse. Furthermore, the effect of the problem is overstock. The supervisor of company's packaging warehouse said that overstock is caused by the inadequate inventory level for now, that is 12.8% higher. This inventory level is caused by the racking system that cannot maximize the space of one room of cold storage.

The cold storage has been using an old selective pallet rack system since 2009. The current system cannot handle the number of goods stored which is 12.8% higher than the space of the current cold storage. The demand increase

percentage is about 1.5% each month, PT. Bernofarm increases the number of goods in the packaging warehouse by 1.5% to 2% each month depending on the marketing department's schedule. The total pallets can be stored are 138 pallets and the pallets need to be stored nowadays are about 160 pallets. This shows that the cold storage has a low inventory accuracy making the redundant processes are disturbed, moreover the picking route is not optimized and the time is wasted while every year the drug manufacturer is pushed to increase the inventory accuracy because of the growing market (Consafe Logistics, 2012).

The cold storage is set at 20.1 degrees of Celsius, but according to the supervisor, temperature is not shared well for some goods placed in the corner because of the excessive capacity. This overstock is causing several issues such as poor management and the use of pallet for several types of products. Standard Operational Procedure (SOP), which read while the survey is being done, in its warehouse also shows that the rule of one pallet for one product is written. The fact that pallet is used and not according to its SOP becomes a point of effect due to the capacity needs. Change of rack system is needed to rack up the pallet moving in to the packaging warehouse, so the company hopes to store more pallets, as low as 600 pallets.

## **1.2. Problem Formulation**

The cold storage of PT. Bernofarm has insufficient capacity to store goods because the racking system is old and not maximized to the building layout. Can the company increase its current capacity as minimum as 600 pallets with both a new racking system design and a low investment cost?

## **1.3. Objectives**

The objective of this project is to answer the question stated above by comparing and evaluating pallet racking alternatives that are available in the packaging warehouse to maximize the number of pallets stored, reach the target of 600 pallets in capacity, and to refine the flow of goods from and to packaging warehouse.

#### **1.4. Scopes and Limitations**

The scopes and limitations of this project are described below.

- a. This project is being done in the warehouse that stores packaging type of goods only.
- b. This project is being done in the cold storage that takes place inside a warehouse, not in a full cold warehouse.
- c. The pallets are using standard type of pallet.
- d. The price of the racking system is using fall 2013 price list.
- e. The cost determined is only the investment cost, excluding operational cost.
- f. The work progress can only be done in the warehouse area only without influencing the other department.

#### **1.5. Report Outline**

This final project consists of 6 chapters, which are described below.

a. Chapter 1: Introduction

Introduction will bring readers into the general overview about the current research. Introduction consists of background, problem statement, objectives, scopes and limitations of research, and report outline.

b. Chapter 2: Literature Review and Theoretical Background

Literature review explains about previous researches that have relationship with the final project topic. This chapter also explains about the basic theory of facility planning and material handling analysis to get a proper method in finishing the problem in PT. Bernofarm.

c. Chapter 3: Research Methodology

This chapter consists of systematic steps of the final project to finish the objectives.

d. Chapter 4: Data

This chapter explains about all related data which had taken to solve the problem found in the company.

e. Chapter 5: Analysis

This chapter consists of explanation, design, and calculation of the data gathered, then summarizing the overall analysis to get a solution for the company.

f. Chapter 6: Conclusion and Suggestion

This chapter summarizes the analysis and suggests the company to be better in running the business processes.

