CHAPTER I   INTRODUCTION

I.1   Background

Warehouse has a very important role in the supply chain. Typically, warehouses play a role in several stages of activity such as procurement, production and distribution. Warehouses are usually used to store raw materials, work-in-progress, and finished goods. The warehouse aims to increase the level of customer satisfaction by facilitating the movement of goods from the supplier to the end consumer. (Rushton, 2010).

The company that being analyzed is PT XYZ, which is a multinational pharmaceutical company and grow to be as an agent and distributor, not only in pharmaceutical products but also FMCG, chemical material, cosmetic and medical equipment. PT XYZ provides the storage and delivery services located in Bandung City. PT XYZ cooperates with several vendors to store and deliver vendor's goods to consumers. PT XYZ handles various types of products divided into several directorates, each directorate represents a particular product type. One of the directorates owned by PT XYZ is the directorate of pharma, which is the directorate that handles pharmaceutical drug products. The warehouse at PT XYZ have some mutual supportive process to create the warehousing system. Some of detail activities are grouped into main activities based on Frazelle (2002).

PT XYZ faces many problems and one of the is 0-pick in piece picking area or forward area, which is because they store their products in two different areas. In the storing activity, PT. XYZ receives large quantities of goods. However, in the order picking activity, the goods mostly delivered to the customer in small quantity, so the goods are stored in 2 types, the products that stored on the pallet that been placed on the rack (reserve area) and the product in the form of retail that came from bulky and placed into the bin by the replenishment operator (forward area). According to Gu et al. (2010), one of the strategies to speed up order picking and to deal with small quantities in the order lines is to operate a forward area from which the most demanded products can be picked quickly.

Due to time pressure, many warehouses perform order picking and replenishment operations simultaneously, and in practice it sometimes happens that an order picker has to pick a product before the replenishment crew has had time to replenish it, and thus faces a stockout (which we will call a 0-pick). According to de Vries (2014), stockouts or 0-picks reduce the productivity of picking operations, because the missing products can only be picked once the restock has taken place. This causes delays in shipping and unproductive travel of the picking crew, since the orders with missing products are completed outside the optimal picking routes. Even worse, lost sales can be happened because of the 0-picks.

One of the problem that PT XYZ faced is not only when the product doesn't exist, but also when the product is not replenished to the forward area. There are so many products that haven't been replenished as shown in the Table I.1 and Figure I.1.

Table I.1 Demand, Stock, Stock in Reserve Area, and Stock in Forward Area Data Comparison.

Item	Product	Demand	Stock	Stock in Reserve Area	Stock in Forward area
TACVA	Acyclovir 200 Mg 5X10 Tab	6	439	386	53
TACVB	Acyclovir 400 Mg 5X10 Tab	78	518	341	177
KALBB	Albiotin 150 Mg 30 Caps	82	173	117	56
KALBE	Albiotin 300 Mg 30 Caps	130	280	168	112
TALLA	Allohex 5 @ 10 Tablet/box	2	42	14	28
TALOA	Allopurinol 100 mg 10 x 10	266	575	552	23
TALOB	Allopurinol 300 mg 10 x 10	531	799	729	70
TALCA	Alluric 100 Mg 5 Str @10Tab	33	86	34	52
TALCB	Alluric 300 Mg 5 Str @10 Tab	19	43	38	5
DAMXA	Amoxicillin Ds 125 Mg/5Ml	281	929	913	16

Table I.1 Demand, Stock, Stock in Reserve Area, and Stock in Forward Area Data
Comparison (Continued)

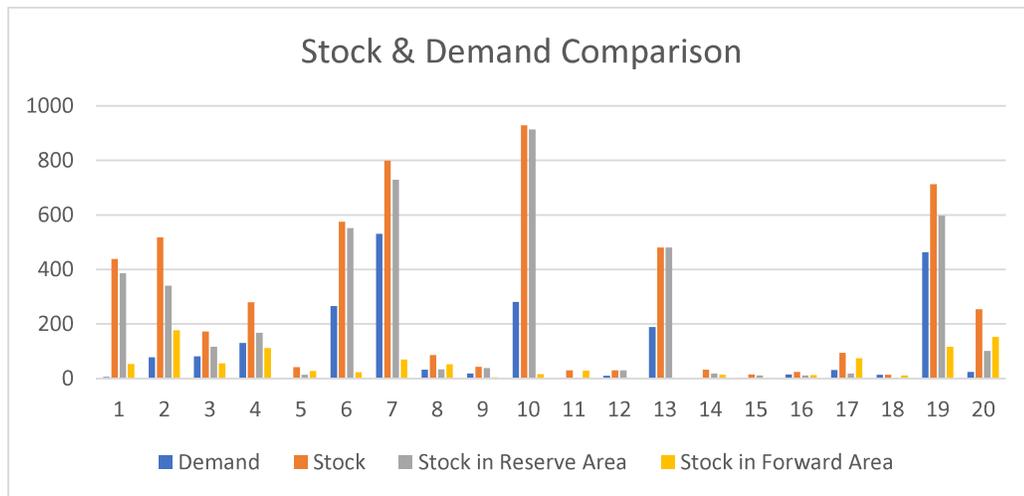| Item	Product	Demand	Stock	Stock in Reserve Area	Stock in Forward area
TAFTB	ANFLATFORTE 10 STR@10TAB	0	30	1	29
CAFXA	Anfuhex Cream 5 Gram	10	30	30	0
TAGNA	Angioten 50 Mg 3X10 Tab	189	481	481	0
AATNA	ASAM TRANEXAMAT 10 AMP@5ML	0	33	19	14
IATDA	Atp Dankos 10 Amp @ 2 Ml	3	15	12	3
TATDA	Atp Dankos 10 X 10 Tablet	15	24	11	13
TBTSK	Bactesyn 375 Mg 30 Tab	31	94	19	75
31824	BedSide Cabinet 31824	14	14	2	12
LBENB	Benacol Expect 100 Ml	463	713	597	116
TBTOA	BETA ONE 2,5 MG 5X10 TAB	24	254	101	153

Figure I.1 Demand, Stock, Stock in Reserve Area & Stock in Forward Area – Bar Chart

Figure I.1 & Table I.1 shows the amount of the SOH (Stock on Hand), stock in Reserve Area, stock in Forward Area, and the demand of April 2017 at Pharma Directorate in Warehouse of PT XYZ. The data above just shows the 20 of the total of 363 SKU.

There is so much product left in the reserve area and haven't been replenished to the forward area because there is lack of coordination between the replenishment operator and the picker. The products that haven't been replenished have to be replenished first in order to pick and deliver it. Of course, if the product have to be replenished first from reserve area, there can be a delays in the delivery, and even worse, if the demand is not fulfilled and can become lost sales. Figure I.2 show how much 0-Pick occurred in the working days of April 2017.

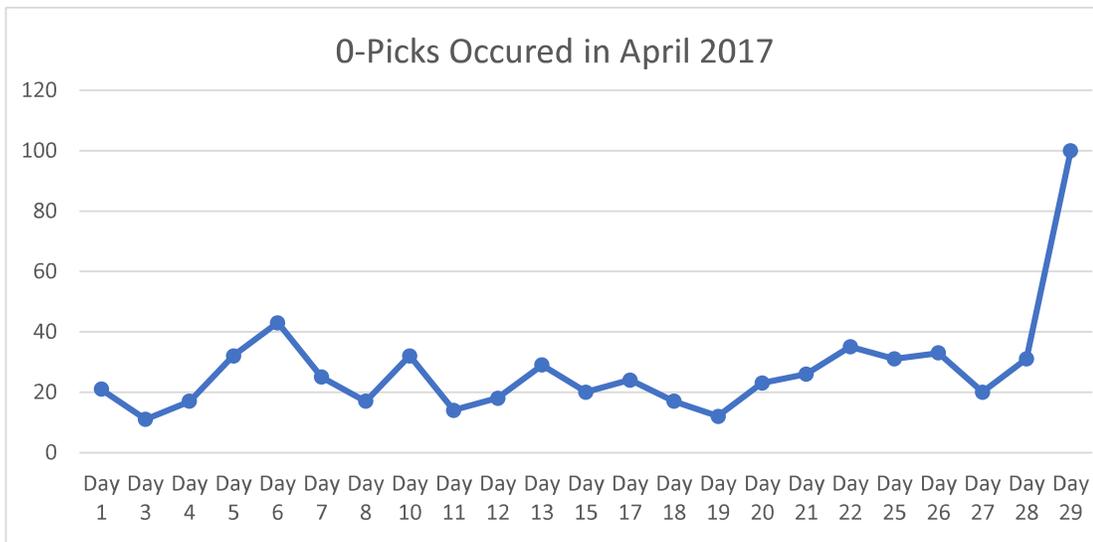**0-Picks Occured in April 2017**

Figure I.2 0-pick occurred on April 2017 graph at the Pharma Directorate in Warehouse of PT XYZ

As Figure I.2 shows the number of 0-picks occurred and the number of successful order or not 0-pick in a April 2017. The total number of the 0-pick is 631 0-picks with the total of 23 working days..

Indubitably, PT. XYZ make efforts to give the best services to their costumer, one of the effort is to distribute the goods to the customer as soon as possible with the right amount. To realize that, the company need an optimal inventory control management plan, if not, it may cause loss to the vendor, costumer, and PT XYZ itself. So, PT XYZ need to take care of this problem.

If the warehouse operators have to replenish the stock to the bin before picking the order, there will be more delay in the order picking activity itself. The order picking activity will be much longer if the warehouse operator keep doing the replenishment process when there is no stock in the bin (forward area) and the order have to be taken from the bulk (reserve area).

This research proposed to use the e-Kanban system for the replenishment with the replenishment priority to reduce the stockout (0-picks) occurred at the pharma

directorate warehouse of PT XYZ by maintaining the stocks so the customer demand fulfillment process can be run smoothly in order to maintain the customer satisfaction.

I.2 Problem Identification

Based on the background that described above, the problem that could be identified as how to reduce stockout (0-picks) by maintaining the stocks and the replenishment prioritizing of piece picking area at pharma directorate in warehouse of PT XYZ?

I.3 Research Objective

The objective of this research is to reduce the stockout (0-picks) by maintaining the stocks using the e-Kanban system and stock priority for the replenishment process at pharma directorate in warehouse of PT XYZ.

I.4 Research Limitations

In order to the research conducted focused on the goal to be achieved, then this research has some of the limitations of research are:

1. The business process & warehouse process of the actual condition at pharma directorate in warehouse of PT XYZ is assumed fixed.
2. This research did not analyze the cost calculation.
3. This research only use the certain replenishment policy, not change the warehouse setting and layout.
4. This research is only up to the proposed phase not until the implementation phase.

I.5 Research Benefits

The benefits of this research is:

1. The stock level in forward area (bin) can be maintained.
2. The order picking process in the warehouse can be run smoothly and the number of 0-pick can be reduced because of the maintained stocks.

I.6   Writing Systematics

This research is described in this writing systematics, which are:

Chapter I   Introduction

In this chapter, there are several descriptions about the background of the research, problem identification, research purposes, research limitations, research benefit, and writing systematics.

Chapter II   Literature Review

This chapter describes the systematic detail of research which is the following: phase of problem identification, data collecting and processing, designing processing and data analyzing, conclusion and recommendations that are to be given to the company.

Chapter III   Research Methodology

This chapter describes the systematic detail of research which is the following: phase of problem identification, data collecting and processing, designing processing and data analyzing, conclusion and recommendations that are to be given to the company.

Chapter IV   Data Collecting and Processing

In this chapter will be conducted general data that required for this research, and other supporting data from the company through various processes such as direct observation, interviews, and the data that has been obtained from the company. Data processing is done in accordance with the method that has been explained on research methodology and problem solving systematic.

Chapter V   Analysis

In this chapter will describe and analyze based on the result of data processing in the previous chapter. On this chapter will do an analysis

of the initial condition and the conditions of proposed improvement and discuss how the effect of the application of the proposal.

Chapter VI   Conclusion

In this chapter, given the conclusions of the research that have been done, then given suggestions as solutions improvement and as input for further research.