

CHAPTER 1

INTRODUCTION



1.1 Background of the Research

In the present, many industries used computer to control many system. A computer has a lot of role in an industry but computer cannot give extreme efficiency if it lack of right information. A part of information involves inventory control. This study involves raw material control in a colour paint industry. This industry is quite a small manufacturing and less investment. It has a few hundred of worker in this industry. Raw materials are like the source of process. Therefore if an industry manages not suitable, it will effect to the whole process such as shortage of product. The process of this industry is makes to stock. To make it smooth process and more effectively, an industry has to find out the right planning of demand and stock that means an industry has to understand uncertainly demand so it has to forecast demand in order to estimate the right demand that fluctuation through the year. Moreover, it has to find out the optimal level with the constraint of limited area in order to save the holding cost. The storage area is consisted of three shelves in one bank. There are two banks the width of bank around one meter and length around 15 meters. Moreover, the others storage area is lay on around the empty area and around the pillars.

1.1.1 Product processes

This industry has two products types that are oil colour and watercolor paint. For the watercolor paint, the process is shown in Figure 1.1. It started from order raw material from suppliers. The next is mixing step. It uses these raw materials mixing in a big pail. The step of mixing is depended on the formula in each brand name of a company but, normally, it used all 5 categories types that solvents, additives, extenders, pigments, and binders. After mixing, it is the let down step. This step is used some types of chemical in binder group. The next is tinting step. This step used pigment group to tint color and it's also depended on company formula. The last step is packing and keeps it into stock for waiting to sell.

For oil colour paint process, it is shown in the Figure 1.1. The process is similarly like a watercolor paint but it has the step of grinding after mixing. For grinding step, it uses the glass ball to grind the oil paint in order to make to thick and sticky.

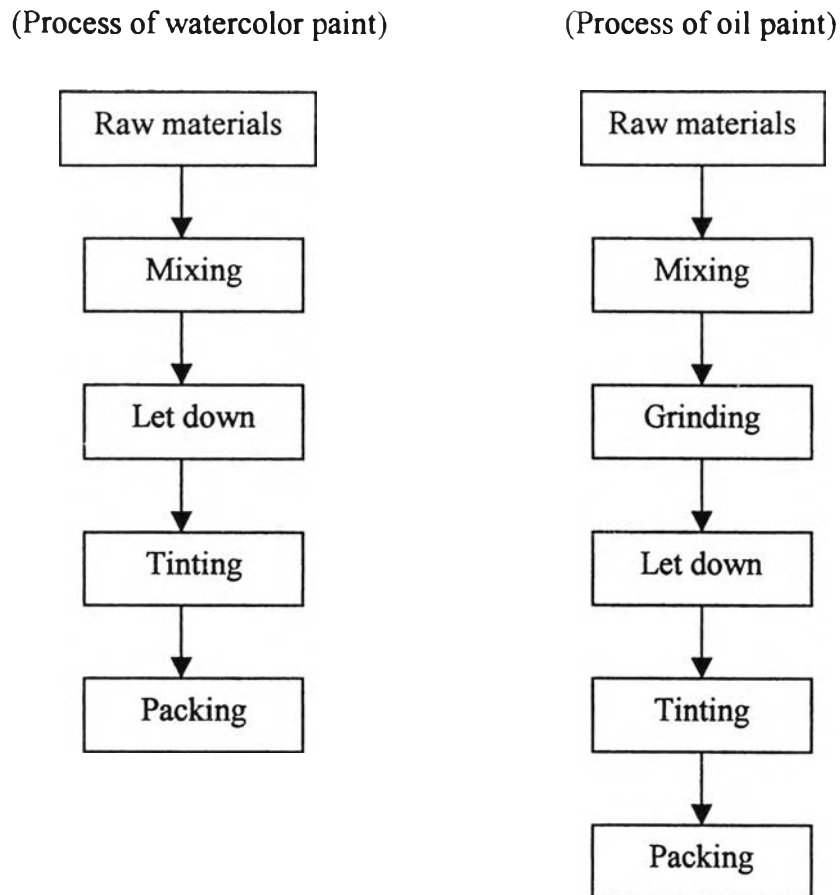


Figure 1.1: Production process flow (left figure is process of watercolor paint and right figure is process of oil paint)

1.1.2 Raw material stock

Both products are watercolor paint and oil paint that are consisted of a lot of raw materials or around 134 types of raw materials. These raw materials are composed of five categories that are solvents, additives, extenders, pigments, and binders. Solvents are the solution or suspension in a carrier, normally solvent is water. Additives are the catalyst chemical for stimulate the reaction of paint such as protect and extend the life of the paint. Extenders are apart of pigment but it has own quality that is help perform its job and impacts on other properties such as sheen, scrub resistance, etc. Pigments provide the whiteness and color of paint. In general, pigments are the RGB colors that are red, green, and blue. Other specific pigments are

violet, orange, and black. Binders (latex or alkyd) provide the covering for the surface of paint with finished coating of gloss, durability, and resistance.

In each category is also composed of many types of chemical; 16 types of solvents; 46 types of additives; 9 types of extenders; 44 types of pigments; 19 types of binders. From these raw materials, it has a lot raw material to control so the workers may miss to reorder. If an industry use the appropriate method and know the right management, it will easy to control the inventory.

For this study, it's focused on regular raw material. Regular raw material means the raw material of product that can sale all the year or the product that most of customer wants to use, normally, it is the colour base for decoration such as white color, beige color, pale blue, etc. The number of raw materials of regular colour paint is 28 types of raw materials.

1.1.3 Characteristic of raw materials

This industry is the colour paint industry so all compositions of paint involve the chemical such as pigments, solvents, additives, extenders, and binders. The lifetime of all compositions is very long lifetime such as a year. However, an industry doesn't keep the stock a long time so an industry doesn't necessary concern about the perishable.

Ordering system

The ordering system in the moment of this industry is using the worker to count the amount of raw material. It means the workers count the rest of raw material in the stock. If it seems the raw material is not enough, the workers will inform to the purchasing department to order new set of raw material. From this situation, an industry doesn't use any method to control the inventory. Therefore this study will find out this problem.

1.2 Statement of Problems

This study is to find a good solution for colour paint industry. Raw materials are the first state of process line. Sometimes the problem from one point can effect to the whole management system and production system. If an industrial has a good

management in inventory, some problems will cancel out. In this case study, the problems involve the inventory management are:

- Delivery delay occur in sometime because the shortage of raw material
- The existing of inventory plan is not based on theoretical method but it's an independent control. An industrial used the worker experience or intuitive judgment to forecast raw material demand.
- Worker lack of knowledge to manage raw material inventory
- The number of items are larger than storage space
- Raw material shortage in high demand season
- The sink cost of the rest raw material in the lowest demand season
- An industry holds the amount of safety stock of raw material inaccurate and inappropriate for prevent lost sales.

1.3 Objective

The objective in this case study is the improvement of inventory management. In the present, an industry is used intuitive judgment based on own skill and own experience in order to purchasing, and stock management of raw material. Therefore the objective of this study is:

- Design the appropriate inventory system with the optimum inventory level and minimize inventory cost in a constraint of limited area

1.4 Scope of study

The scope of this study is concentrated on designing appropriate method for inventory in term of regular colour paint of raw material that is consisted of 28 types of regular raw materials.

The usage of historical is the document of purchasing department in 24 months for cover the fluctuation of demand.

Spare parts, work in process, and finished goods are not covered in this study.

1.5 Research Procedure

The steps to study are following:

1. Survey more literatures and textbooks
2. Collect the data to analysis (i.e. order in/out) by using ABC analysis
3. Study the methods of forecasting and apply within a suitable method
4. Study the system of inventory control to find the optimum level
5. Apply the result with the constraint (limited area)
6. Evaluate the results
 - Compare between before and after implementation
7. Conclusion and recommendation
8. Prepare the final report

1.6 Expected Result

Right inventory management and suitable for this industry in order to eliminate the effect to process and product.

1.7 Expected Benefit

This study is expected to improve inventory control in term of system and workers. The results to expect are following:

1. Optimum level of inventory
2. Improve workers knowledge
3. The workers use the same direction to manage inventory
4. To eliminate the problems from raw materials shortage and delivery delay
5. To eliminate the unnecessary cost such as holding cost
6. Right management and systematic inventory