CHAPTER 1

INTRODUCTION

1.1 General Background of the Thesis

Inventory management involves with many companies. Operations managers have to consider because inventory is one of the most expensive assets. It has also a high value in current assets. So good inventory management is crucial part of any companies. They may have some types of inventory planning and control system. A bank has methods to control its inventory of cash. Manufacturing company has methods used to control inventories: raw materials, work in process, and finished goods. Retailers and wholesalers are also concerned with inventory planning and control.

The company understudied is a distributor of construction materials. The company is located in the city of Burirum (north-east of Thailand) and has been managed from generation to generation since 1939. The distributor was initially a grocery and hardware store. The distributor sells several different construction materials products. The product range is mainly included cement, iron and steel, bathroom accessories, pipe, wall and floor tiles, and sanitary ware. The distributor also established Cement-Thai Home Mart. There are about four distributors in Burirum areas. At the same time, there are also many retailers selling construction materials. They have high competition in selling construction material business. Many construction materials' distributors and other retailers try to provide and control construction materials in order to meet the needs of customers. However demands of customer are uncertain. They vary all of the time. Demands of customer may be depended on salary economic, seasonal, values, and so on. For inventory control, the distributor checks available stock level of items everyday and ordered by using past experiences. Sometimes the distributor does not have enough materials to meet customer needs. There are shortage inventories. Customers can go to buy materials from other distributors and retailers. For transportation, the distributor has to consider a loading capacity of ordered items that should not exceed the maximum truck loading capacity. If loading capacity is available, the distributor will check less available stock level of items and order in order to fill up the maximum loading capacity of truck. Ordered items are transported from manufacturing plant to distributor.

The distributor realizes the essential of good inventory management and loading capacity for transportation. It wants to plan and control inventories to meet customer demands Holding inventory is good to protect shortage inventory. On the other hand, high holding inventory can cause high holding cost. This study supports group ordering policy to control inventories effectively and efficiently.

1.2 Statement of Problem

Controlling inventory of many construction materials' distributors like the distributor understudied bases on experience of selling. The distributor will predict customer demands from data in previous year. If customer demands on January are greater than on February in previous year, expected customer demands on January may be greater than on February in current year. However customer demands are uncertain. In addition, the distributor has many construction materials products. Each product has several types and sizes. For example, concrete roof tile product has several type of color such as red, oyster grey, and earth tone. Cement has tiger and elephant brands. Each brand has different sizes of weight (50 kgs and 25 kgs). Pipe drinking water has three types: class 5, class 8.5, and class 13.5. Each type or class of pipe drinking water has several different sizes such as ½, ¾, and 1 inch. When the distributor orders each product that is composed of several types and sizes, it does not operate on suitable what items should be stocked, when stock should be replenished, and how large orders should be. Sometimes out of stocks can be occurred leading to have shortage costs. Customer may have to wait for back orders while some customers transfer to buy materials from other distributors and retailers. At the same time, the distributor has to consider truck loading capacity for transportation. Ordered items are derived from both the same supplier and the different supplier. Ordered items are combined by the different suppliers that have manufacturing plants in the same area. Ordered items are calculated the total weights that should not exceed the maximum loading capacity. If the loading capacity is available, the items from the same supplier or different supplier are considered by less available stock levels for ordering. Ordered items are often combined by the different suppliers that may cause to high transportation cost. Total weight of ordered items sometimes is not exceed the maximum loading capacity. Sometimes total weight of ordered items exceeds the maximum loading capacity. The distributor does not have a system, method to control inventory and consider truck loading capacity for transportation. High total cost and unsatisfactory customers can definitely be occurred. Therefore, inventory management system concerning on group ordering policy of construction materials and truck loading algorithm concerning on loading capacity of ordered items that must not exceed the maximum truck loading capacity are needed.

1.3 Objectives of the Study

1. To determine suitable inventory policy considering order of product of the same types and natures as a group.
2. To develop a heuristic model that properly utilizes loading capacity of truck for lower transportation cost.

1.4 Scope of the Study

1. Consider only major construction and decorative materials of the distributor.
2. Study a group ordering of each major construction and decorative materials for suitable inventory management system.
3. Study a capacity of truckload and set the decision rules for improving inventory policy.
4. Consider only weight of truck loading (not volume).

1.5 Methodology

1. Study related literatures
2. Collect data from construction materials' distributor.
3. Analyze data and classify each type, size of product as a group
4. Define inventory management system
   4.1 define ordering system policy
   4.2 define inventory levels and quantity of product groups
   4.3 illustrate suitable inventory levels and quantity as tables
5. Study a set of decision rules for truck-loading of each product groups
6. Evaluate the results (comparison between before and after changing procedures).
7. Summarize information and thesis
8. Write up thesis and submit thesis form
9. Final examination

1.6 Expected Results

1. Get effective inventory management
2. Improve cash flow and return on investment of inventory
3. Be useful for any distributors in managing inventory