

CHAPTER I

INTRODUCTION



Retail business recently is highly competitive among the market. Retailers, therefore, need to improve their business to be more efficient in cost control in order to maintain the competitiveness in the same market. The computer-based technology is the way to enhance the competitiveness in the retail management. The computer is the state of art that helps retail enterprises to exploit their resources more productively, for instant, reducing in cost and responding the customers' need effectively. Inventory control is the key task of business management for managers and owners have to concern and prioritize this task in the top level because inventory is the asset, which has value to business performance.

H. Ford Dickie (General Electric) had developed the categorizing method to manage the inventory level by studying the quantity of each product, which has the highest value and prioritizing the importance of each product into three main groups; A, B, and C. The important order is arranged from A to C by considering on their values.

- **A** items as expensive and needing special care
- **B** items as ordinary ones needing standard care
- **C** items as cheap and needing little care

ABC analysis is sometimes called Pareto analysis or the "rule of 80/20". This originated

With the observation by Pareto, who was a nineteenth-century Italian sociologist, that 20 percent of the population owned 80 percent of the wealth. This observation is widely applicable, and in inventory control terms it means that 80 percent of inventory items need 20 percent of the attention, while the remaining 20 percent of items need 80 percent of the attention.

However, if the inventory level is too low, it can make the problem to owner such as customers may discredit the supplier when he or she cannot deliver required products on time because they are out of stock. Therefore, inventory control is the challenging task for new entrepreneurs to manage it optimizedly.

Inventory control techniques can assist in answering the following questions:

- When should new stock be ordered?
- How many items should be ordered?

In order to answer questions above, a range of inventory control models have been

developed. The standard inventory control models assume knowledge of a number of attributes including the following:

Demand. The requirements of customers may, in practice, be difficult to estimate. Simple models assume that the demand is constant, though in general, probabilistic estimates of demand may need to be used.

Lead time. The time taken for supplier to deliver the goods following placement of an order is called the lead time.

Stockouts. A stockout occurs when demand exceeds the available stock. In this situation the demands of customers cannot be immediately satisfied.

Holding costs. Costs involved in the storage of goods include the costs of staffing, rental, lighting and heating of storage facilities. Such costs can often be stated in terms of the cost per item of goods over a given time period.

Ordering costs. These costs are the costs of placing an order for goods and are considered to be independent of the size of order.

Purchasing costs. These are costs incurred relating to the individual items being ordered. These costs are stated per unit item.

Stockouts costs. If a stockout occurs for a given item, additional costs may be incurred.

1.1 Business background

XYZ Electric Limited Partnership is the selected organization that the researcher attempts to study and develop its business. It was located in Suphanburi Province about 135 kilometres from Bangkok and established since 1980. Moreover, there are many interesting information of XYZ as follows.

1. An official dealer of Sony, Panasonic, National, LG, Sharp, Philips, Whirlpool, Hitachi, Mitsubishi, Pioneer, Distar and Soken
2. Turnover around 80 million bath per year
3. There are eleven workers including the owner.
4. Location: center point area in the city
5. Three inventory warehouses, each of them is located in independent area and has different size; 2,500, 1,500, 400 square metre respectively.

The researcher started working at XYZ since 1999 as the General Manager. The first thing that the researcher aimed to do was how XYZ to increase the sales revenue and made customers return to buy the products more one time. Advertising and promoting activities were applied to XYZ, these made sales revenue increase since 2000 to 2001. However, when the owner considered the financial report of XYZ, the profit was not raised parallelly with the trend of sales revenue. In the financial report, it showed the figure of remaining inventory in each year increasing from year 2000 to 2001. Because obsolete products and over-demanded inventory were the one cost of business, they can reduce the net profit of XYZ. According to Table 1.1 and 1.2, they show an amount of stocks in each year from 2000 to 2001 respectively.

Table 1.1: *Sales Performance in Year 2000*

Month	Purchasing volume (Baht x 1,000)	Sold Volume (Baht x 1000)	Remaining Stock (Baht x 1000)
January	6,851.67	6,546.53	(305.14)
February	8,844.00	6,702.27	(2,141.73)
March	6,017.78	7,861.17	1,843.39
April	7,857.45	6,349.46	(1,507.99)
May	6,444.96	6,408.29	(36.67)
June	5,251.83	5,546.15	294.32
July	7,703.05	6,350.07	(1,352.98)
August	6,122.27	5,196.17	(926.1)
September	5,961.61	5,783.88	(177.73)
October	7,675.47	6,231.25	(1,444.22)
November	5,482.30	5,700.34	(218.04)
December	5,691.23	6,050.65	359.42
Total	79,903.62	74,726.23	(5,613.47)

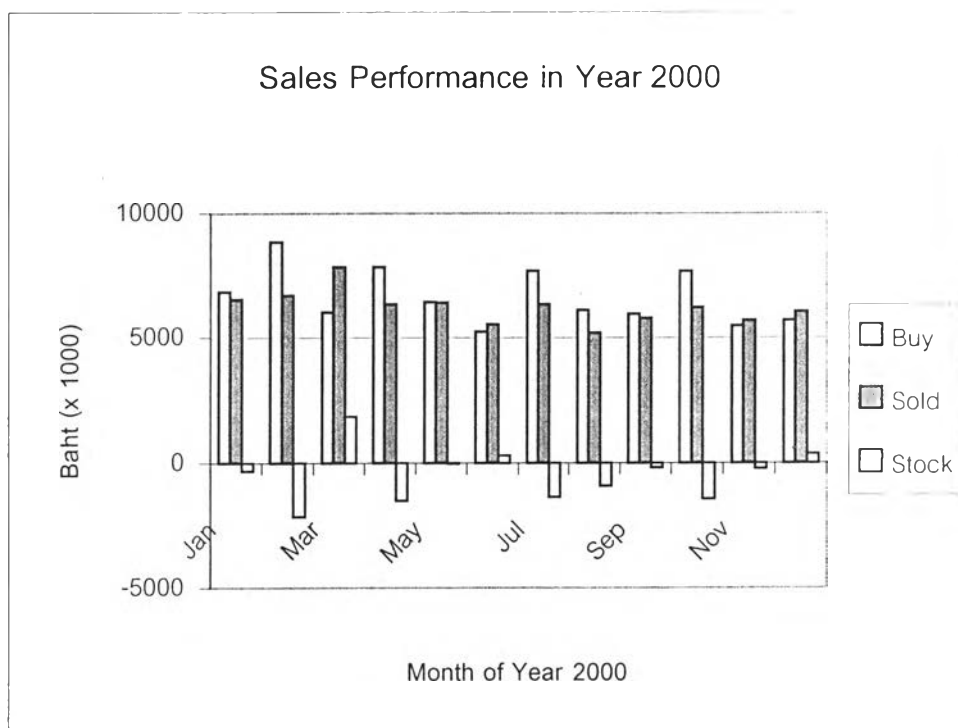


Figure 1.1: Sales performance in Year 2000

Table 1.2: Sales Performance in Year 2001

Month	Purchasing Volume (Baht x 1,000)	Sold Volume (Baht x 1,000)	Remaining Stocks (Baht x 1,000)
January	6,008.87	6,794.61	785.74
February	5,398.34	5,967.22	568.88
March	6,760.34	6,586.20	(171.14)
April	8,834.57	8,191.28	(643.29)
May	6,505.77	6,801.76	295.99
June	7,450.97	5,399.56	(2,051.41)
July	6,117.83	7,249.48	1131.65
August	5,579.95	6,421.13	841.18
September	7,144.99	5,463.94	(1,681.05)
October	8,007.84	7,365.41	(642.43)
Total	67,809.47	66,243.59	(1,565.88)

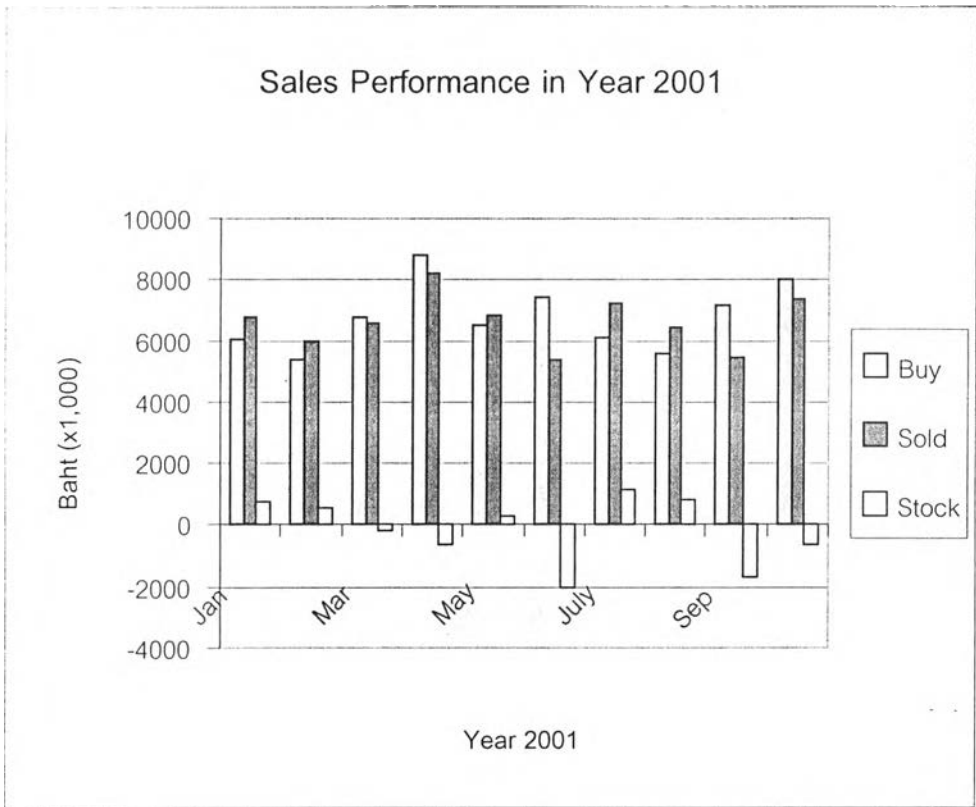


Figure 1.2: Sales performance in Year 2001 (January to October)

In this year, the owner of XYZ will still maintain advertising and promoting activities but the new challenging job is how to manage inventory effectively and reduce the stock level as less as possible.

1.2 Statement of Problems

According to Table 1, in the Year 2000, there was the value of remaining stock an amount of 5.6 million Baht or approximately 7 percent of total purchasing volume. If XYZ can reduce the stock level as much as possible, the net profit will be increased.

Initially, the research was started with selecting the most appropriate supplier to collaborate with XYZ. The researcher collected data of transaction volume of six crucial suppliers as shown in the Table 1.3.

Table 1.3: Transaction volume of each supplier in the Year 2001

	Supplier 1	Supplier 2	Supplier 3	Supplier 4	Supplier 5	Supplier 6
Transaction Volume (Baht x 1,000)	10,804.47	7,850.28	7,528.64	6,335.3	7,218.92	6,654.21
Percentage (%)	23.29	16.92	16.23	13.66	15.56	14.34

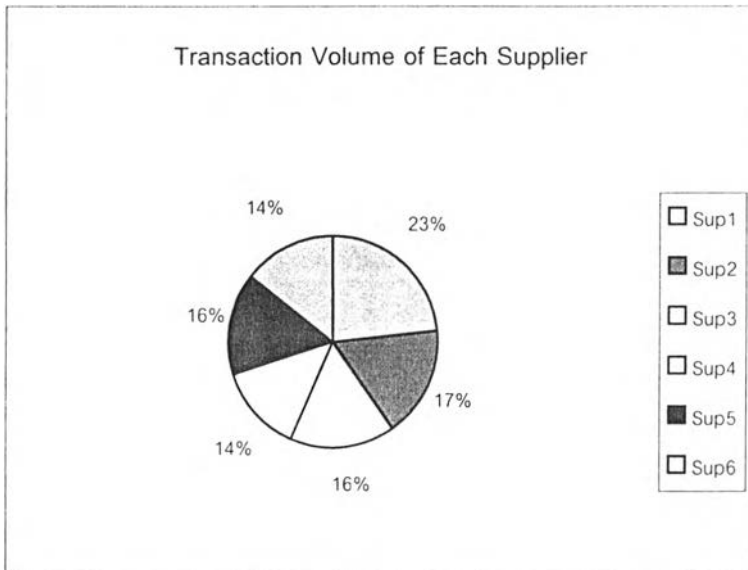


Figure 1.3: Transaction Volume of each supplier in the Year 2001 (January to October)

From the Table 1.3, Supplier 1 has the highest transaction volume during January to October 2001. Therefore, the researcher selected Supplier 1 to collaborate with XYZ. Supplier 1 is the audio and visual manufacturer (AV product); for example, Flat Screen Television, Hi-Fi Component, Digital Camera, Video Camera HandyCam, DVD Player, and so on.

Secondly, the researcher contacted with the representatives of Supplier 1 in order to inform what the problem is and the way to solve this problem including the benefit, which Supplier 1 and XYZ will obtain in the near future if this project is developed completely.

The next step is to study the nature of value chain from Supplier 1 to XYZ. The following diagram is shown the regular transaction module between Supplier 1 and XYZ.

1.3 Current System



Current Procedure:

1. The dealer makes a call to the sales staff in order to purchase required products.
2. This sales staff takes a note of orders and connects to an administration officer.
3. The administration officer makes an invoice and connects to a warehouse staff.
4. When the warehouse staff receives an invoice and then arranges required products following on item by item.
5. Transportation products to the dealer's warehouse.

Problems

1. The required product is normally purchased when it is out of stock or nearly to be shortage. This makes a dealer may throw an opportunity to sell it away if a customer walks in to buy this product. (Shortage)
2. The dealer does not generally apply statistical method to collect and analyze data of sales revenue or obsolete products. This makes a dealer lack of well inventory management, which is the cost reducing net profit of XYZ. (Overstock)
3. The step of a sales staff connecting to an administrative officer has a chance to confront the mistake with non-corrective order.(Errors in process)

According to problems above, the inventory system needs to be developed for informing when should an order be placed and how much should be ordered depending on product usage and needs. Initially, the inventory control of XYZ has been operated on experiences and skills of purchasing workers. Thus, it has no the standard but it depends on each personal experience and skill. In the reality, it is difficult to transfer inventory knowledge and skill to each other when XYZ recruits new employees. Eventually, the stock level exceeds over customer demand dramatically so this research aim is to achieve a specified customer service level at minimum cost. The working style of inventory department in XYZ culture should be changed gradually as followings.

- Collecting all related data on Stock Card such as lead time, purchasing volume
- Setting the system of Order Point – Order Quantity by maximum quantity being double of regular purchasing order
- Installation the information system to link between internal and external area and Point of Sale (POS) for supporting the inventory account

Then, basically, the researcher analyses and develops the inventory system by dividing into two concepts. The first is categorized by the importance of products and the other is the Insurance Item, which is usually employed. For the former concept, the importance of products is prioritized on ABC technique depending on usage value and volume. Product group A is the most important because it has the highest volume and value to business so this group needs to be closely taken care. The development of inventory control for group A also has more precisely and accurately than group B and C.

For this case, XYZ is the official dealer, which has two warehouses for keeping the stocks of Supplier 1. The table 4 is shown the product list and transaction volume of each model during January through June 2002.

1.4 Specific Purpose of the Thesis Study

To develop an on-line inventory management system between Supplier1 and XYZ Electric Limited Partnership to control stock level of AV products, which have 108 items.

- **Scope and Limitations of the Study:**

To study Designed Modular System on the basis of EOQ concept exclusively Supplier 1 - XYZ Electric Limited Partnership through on-line computers for selecting the most appropriate model.

- **Expected Benefit:**

The Identical Modular system for XYZ Electric Limited Partnership in the Thesis could be used a tool for an entrepreneur to control and manage inventory level appropriately although there is more than one warehouse.

Methodology

The approaches to be used for this Thesis are as follows:

1. Studying the nature of entrepreneur (XYZ) and Supplier 1
2. Gathering data of inventory level before applying the Designed System
3. Studying and searching related literatures and the process of connection between business to business (B2B) through on-line computer system
4. Designing the on-line inventory system
5. Gathering data of inventory level after applying the designed system
6. Comparing the inventory level improvement from the current and designed system
7. Develop an appropriate Modular System for inventory management of e-dealer
8. Writing-up the thesis