

## Chapter 6

### CONCLUSION

This research objectives are to projected demand of car fabric product for the next 5 years by forecasting the sales volume of passenger car & one-ton pick up truck then related to car fabric volume, and to determine the optimum production capacity and to allocate budget and planning financial statement for manufacturing the mentioned product.

Demand forecasting processes start with data collection, the sales record of passenger car & one-ton pick up truck under my study are summarized by Thai Automotive Industry Club, The Federation of Thai Industry, and Toyota Motor Thailand Co., Ltd. The historical data are then analyzed by using a line-graph and time-series model coupling with economic situation. The situation of economic activity in the forecasting interval from 1997 to 2001 likely to occur as the same pattern as from 1985 to 1989 based on the forecasting assumption that :

1. The two macroeconomic indicators -GDP-growth rate and lending interest rate summarizes the economics situation.
2. Without consideration of the external factors which be unpredictable such as political changed influence, episodes in the international financial markets, etc.

After that the demand forecasting process is done by using the comparative analysis method with economics environment concerned. Therefore, the future demand of the car fabric product can be projected to production volume appropriately as following table :

Year	Projected Fabric Production Volume (m.)
1997	308,200
1998	292,026
1999	372,740
2000	518,226
2001	705,156

To determine the optimum production capacity level, the total costs of factory overhead placed and the production cost per unit can be calculated. The total costs for production placed are the sum of the factory overhead cost and the direct material cost and the direct labor cost. The cost of production per unit for producing the car fabric that give the lowest cost is then be found. Capacity investment timing decision is determined from the profit margin variable to the investment alternatives which can be selected to achieve higher result in term of average profit margin value over 5 years period.

The optimum capacity planning for car fabric production is known as for the next 5 years. And the important things that should be inevitably considered in this research are the budget allocation through financial planning of decided capacity investment at the projected volume production of each period.

After all of the processes are executed, it is found that the optimum production capacity of car fabric production during the period of 1997-2001 is 750,000 metre per year and this capacity should be invested at the beginning of the project.

The financial plans of this study case are estimated from the outcome of allocating budget at each production elements. The budgeted of each is calculated from the total cost of each elements which must be incurred to serve the volume demand for a period of time. The financial planning of this research is

presented in 3 statements; Income Statement, Cash Flow Statement, and Balance Sheet Statement which must be found that suitable to plan and control the car fabric production from 1997 to 2001.

### Sensitivity Analysis

The Cost-Volume-Profit model specifies a relation among selling prices, unit costs, volume sold, and profits. It starts with the basic equation relating profits to revenues less costs :

$$OP = TR - TC,$$

where OP = operating profit for the period, TR = total revenues for the period, and TC = total costs for the period.

The cost-volume-profit equation in more detail is

$$\begin{aligned} OP &= TR - TC \\ &= PX - (F + VX), \end{aligned}$$

where P = unit selling price, X = number of units sold in the period, F = fixed operating costs for the period, and V = unit variable costs.

#### *Cost-Volume-Profit Data for Car Fabric Production*

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Selling price per sq.m..... 420 bht.

Cost classification	Variable cost (per unit)	Fixed Cost (per year)
- Direct Labour	16.250	-
- Direct Material	157.430	-
- Manufacturing Overhead	<u>2.865</u>	<u>26,540,052</u>
Total Cost	<u>176.545</u>	<u>26,540,052</u>

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Substitute the data appear in table above in the cost-volume-profit equation,

$$OP = 420X - (26,540,052 + 176.545X)$$

### Breakeven Point

The point where total costs equal total revenues is the breakeven point. Cost-volume-profit analysis is sometimes called breakeven analysis. Finding the breakeven point for this study, at the breakeven point, profit (OP) must be zero. Specifically the breakeven sales volume of the car fabric product, which is represented by  $X$  in the preceding equation, is found as follows :

$$OP = 420X - (26,540,052 + 176.545X)$$

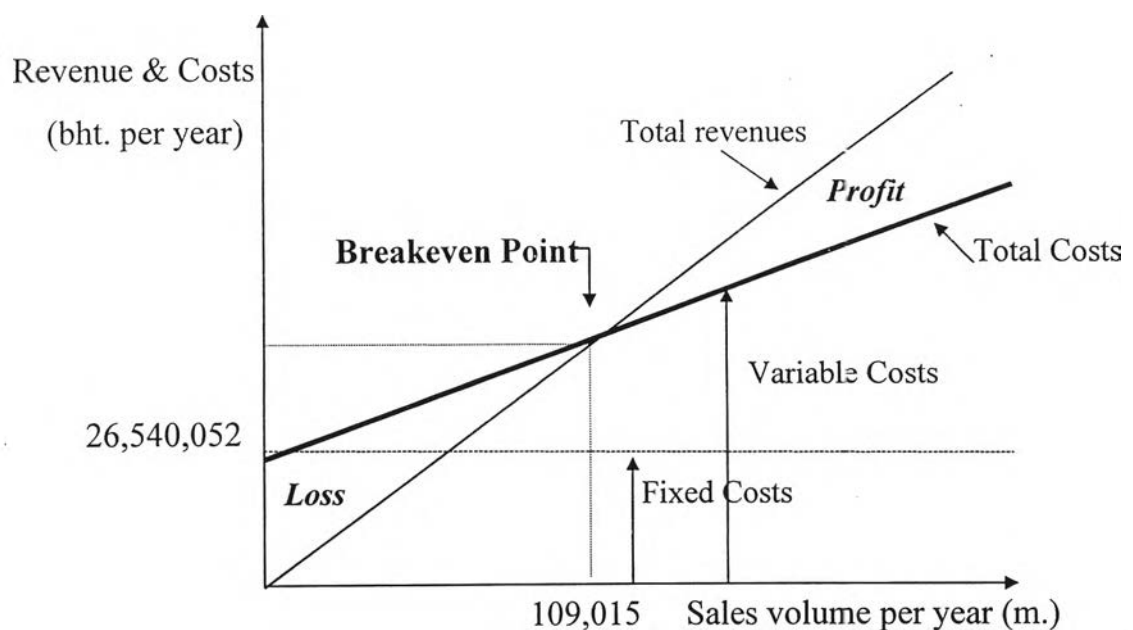
$$0 = 243.455X - 26,540,052$$

$$X = 109,014.2$$

or,

the Breakeven Sales Volume of the car fabric product = 109,015 metre

A graphical presentation of the cost-volume-profit relation for the car fabric production including its breakeven point is illustrated as below.



This cost-volume-profit graph shows the breakeven point or provides a rough idea of profit or loss at various sales levels. In other words, the vertical axis shows the amount of revenue and cost for the period -1 year in the study case. At zero sales volume, the loss equals the fixed cost  $F$ , of 26,540,052 b.t. At the breakeven point, 109,015 metre, the profit is zero. Thus, it could be interpreted as the profit can be occurred in the annual sales of at least 109,016 m.

In particular, the breakeven volume is the volume that provides a contribution that just covers the cost of production or zero profit. That means, at the breakeven volume sales of 109,015 m., it is projected to market share percentage of each year during 1997-2001 as shown in table below :

Year	Total Sales Projection (metre per year)	Breakeven Volume (metre per year)	Market Share (%)
1997	880,570	109,015	12.38 ⇨ <b>13</b>
1998	834,359	109,015	13.07 ⇨ <b>14</b>
1999	1,064,970	109,015	10.24 ⇨ <b>11</b>
2000	1,480,646	109,015	7.36 ⇨ <b>8</b>
2001	2,014,730	109,015	5.41 ⇨ <b>6</b>

The percentage of market share represents the minimum market share in which the company must be maintain for survival fundamentally. Particularly in the study case, in presenting sensitivity assessment , a situation was posed at 35 % market share. Presumably in the severe competition of upholstery market, the company losing market share to competitors. The outcome of sensitivity analysis states that the project is not sensitive due to it would be difficult to lose market share from 35% to 14%.