MANAGEMENT ACCOUNTING SUBJECT CODE: CCM53

UNIT - IV

MARGINAL COSTING

Definitions of Marginal Cost and Marginal Costing

According to the Terminology of Cost Accountancy of the Institute of Cost and Management Accountants, London, Marginal Cost represents "the amount of any given volume of output by which aggregate costs are changed if the volume of output is increased by one unit". In practice, this is measured by the total variable costs attributable to one unit. In the words of Blocker and Welt more ,"Marginal Cost is the increase or decrease in total cost which results from producing or selling additional or fewer units of a product or from a change in the method of production or distribution such as the use of improved machinery, addition or exclusion of a product or territory, or selection of an additional sales channel." Analysing the definitions given above, we find that with the increase in one unit of output, the total cost is increased and this increase in total cost from the existing to the new level is known as Marginal Cost. For example, the cost of production of 1,000 units of radios is Rs. 2,00,000 and that of 1001units is Rs. 2,00,150, the marginal cost is Rs. 150, i.e., 2,00,150 - Rs. 2,00,000.Marginal cost may also be defined as "the aggregate of variable costs" or "prime cost plus variable overheads".

Marginal Costing

The Institute of Cost and Management Accountants, London, has defined Marginal Costing as "the ascertainment of marginal costs and of the effect on profit of changes in volume or type of output by differentiating between fixed costs and variable costs". Marginal costing is not a system of costing such as process costing, job costing, operating costing, etc. but a technique which is concerned with the changes in costs and profits resulting from changes in the volume of output.

Basic Characteristics of Marginal Costing

The technique of marginal costing is based on the distinction between product costs and period costs. Only the variable costs are regarded as the costs of the products while the fixed costs are treated as period costs which will be incurred during the period regardless of the volume of output. The main characteristics of marginal costing are as follows :

1.It is a technique of analysis and presentation of costs which help management in taking many managerial decisions and is not an independent system of costing such as process costing or job costing.

2.All elements of cost—production, administration and selling and distribution are classified into variable and fixed components. Even semi-variable costs are analysed into fixed and variable.

3. The variable costs (marginal costs) are regarded as the costs of the products.

4.Fixed costs are treated as period costs and are changed to profit and loss account for the period for which they are incurred.

5.The stocks of finished goods and work-in-process are valued at marginal costs only.

6.Prices are determined on the basis of marginal cost by adding 'contribution' which is the excess of sales or selling price over marginal cost of sales.

Contribution

Contribution is the difference between sales and variable cost or marginal cost of sales. It may also be defined as the excess of selling price over variable cost per unit. Contribution is also known as Contribution Margin or Gross Margin. Contribution being the excess of sales over variable cost is the amount that is contributed towards fixed expenses and profit.

Contribution can be represented as : Contribution = Sales - Variable (Marginal) Cost (or)Contribution (per unit) = Selling Price-Variable (or Marginal) cost per unit (or)Contribution = Fixed Costs + Profit (- Loss)Advantages of Contribution

The concept of contribution is a valuable aid to management in making managerial decisions. A few benefits resulting from the concept of contribution margin are given below :1.It helps the management in the fixation of selling prices.2.It assists in determining the break-even point.3.It helps management in the selection of a suitable product mix for profit maximisation.4.It helps in choosing from among alternative methods of production; the method which gives highest contribution per limiting factor is adopted.5.It helps the management is deciding whether to Purchase or manufacture a product or a component.6.It helps in taking a decision as regards to adding a new product in the market.

Marginal Cost Equation

For the sake of convenience, a marginal cost equation can be derived as follows :Sales -Variable cost = Contribution or Sales = Variable cost + Contribution or, Sales = Variable cost + Fixed Cost +or- Profit /Loss or, Sales - Variable cost = Fixed cost +or- Profit / Loss or, S – V = F +or- P where 'S' stands for Sales 'V' stands for Variable cost 'F' stands for Fixed cost 'P' stands for Profit/Loss.

Profit /Volume Ratio (P/V Ratio or C/S Ratio)

The Profit/volume ratio, which is also called the 'contribution ratio' or 'marginal ratio', expressed the relation of contribution to sales and can be expressed as follows:

P/V Ratio = Contribution / Sales

Since Contribution = Sales -Variable Cost = Fixed Cost + Profit, P/V ratio can also be expressed as, (Sales - Variable Cost) / Sales ie.,(S – V) / S or P/V Ratio = (Fixed Cost + Profit) / Sales ie., (F + P) / S or P/V Ratio = (Change in profits or Contribution) / Change in Sales

The formula for sales volumes required to earn a given profit is:

P/V Ratio = Contribution / Sales or P/V Ratio = (Fixed Cost + Profit) / Sales or Sales = (Fixed Cost + Profit) / P/V ratio = (F + P) / P/V Ratio.

COST-VOLUME-PROFIT ANALYSIS AND BREAK-EVEN ANALYSIS

Cost-Volume-Profit analysis is a technique for studying the relationship between cost, volume and profit. Profits of an undertaking depend upon a large number of factors. But the most important of these factors are the cost of manufacture, volume of sales and the selling prices of the products. The CVP relationship is an important tool used for the profit planning of a business. The three factors of CVP analysis i.e., costs, volume and profit are interconnected and dependent on one another, For example, profit depends upon sales, selling price to a large extent depends upon cost and cost depends upon volume of production as it is only the variable cost that varies directly with production, whereas fixed cost remains fixed regardless of the volume produced. In cost-volume-profit analysis an attempt is made to analyse the relationship between variations in cost with variations in volume. The cost-volume-profit relationship is of

immense utility to management as it assists in profit planning, cost control and decision making.

Break-even Analysis

The study of cost-volume-profit analysis is often referred to as “break-even analysis’ and the two terms are used interchangeably by many. This is so, because break-even analysis is the most widely known form of cost-volume-profit analysis. The term “break-even analysis’ is used in two senses—narrow sense and broad sense. In its broad sense, break-even analysis refers to the study of relationship between costs, volume and profit at different levels of sales or production, In its narrow sense, it refers to a technique of determining that level of operations where total revenue equal total expenses, i.e., the point of no profit, no loss.

Break-even Point -

The break-even point may be defined as that point of sales volume at which total revenue is equal to total cost. It is a point of no profit, no loss. A business is said to break-even when its total sales are equal to its total costs. The break-even point refers to the at level of output which evenly breaks the costs and revenues and hence the name. At this point, contribution, i.e., sales minus marginal cost, equals the fixed costs an d “hence this

point is often called as ‘Critical Point’ or ‘Equilibrium Point’ or ‘Balancing Poi nt’ or no profit, no loss.

Break-even point can be stated in the form of an equation :

Sales revenue at break-even point = Fixed Costs + Variable Costs.

Computation of the Break- Even Point

The break-even point can be computed by the following methods :(i) Algebraic Formula Method (ii) Graphic or Chart Method.

Algebraic Formula Method for Computing the Break-even Point

The break-even point can be computed in terms of : (a) Units of sales volume,(b) Budget total or in terms of money value. (c) As a percentage of estimated capacity.

(a)Break-even Point in Units -

As the break-even point is the point of no profit no loss, it is that level of output at which the total contribution equals the total fixed costs. It can be calculated with the help of following formula :Break-Even Point = Fixed Cost / (Selling Price per unit - Variable Cost per unit)=Fixed Cost /Contribution per unit

(b)Break-even Point in terms of budget-total or money value

At break-even point: Total Sales = Total Fixed Cost + Total Variable Cost Or S=F+V (where S = Sales, F = Fixed Cost and V = Variable cost)or S –V = F or (S-V)/(S-V) = F / (S-V) (dividing both sides by S – V)or I= F/(S-V)or S x I = (F

x S)/ (S-V) (Multiplying both sides by S)Hence, break-even sales = [Fixed Cost/ (Sales — Variable Cost)] x Sales= [Fixed Cost/ Contribution] x Sales With the use of P/V Ratio, B.E.P = Fixed Cost/ P/V ratio As [Contribution /Sales] = P/V Ratio.

Margin of Safety

The excess of actual or budgeted sales over the break-even sales is known as the margin

of safety. It is the difference between actual sales minus the sales at break-even point. It

represents the amount by which sales revenue can fall before a loss is incurred. As at break-even point there is no profit no loss, sales beyond the break-even point represent margin of safety because any 'sales above the break-even point will give' some profit. Thus,

Margin of Safety = Total Sales — Sales at Break-even Point.

Say, actual present sales are Rs. 5,00,000 and the break-even sales are Rs. 4,00,000,

thenmargin of safety is equal to Rs. 1,00,000, ie.5,00,000 - 4,00,000.Margin of

Safety can also be expressed in percentage. For example, if a company can break-even at 60 per cent of the expected sales ; then it has a margin of safety of (100 — 60) 40 % .In the previous example, margin of safety in percentage can be calculated as.(1,00,000) / 1,50,000) x 100 = 20%.Margin of safety calculated in percentage is also known as Margin of Safety Ratio and can be expressed as:

M.S. Ratio = (M.S/ Sales) x 100= [(Actual Sales - Sales at B.E.P)/Sales] x 100

Margin of safety can also be calculated with the help of the following formula :

Margin of Safety (M/S) =Profit / P/V Ratio

This is so because margin of safety is the volume of sales beyond break-even point and all sales above the break-even point give some profit which can be calculated as :

Profit = Margin of Safety x P/V ratio or M.S. = Profit / P/V Ratio Advantages of Marginal Costing .

The following are the important advantages of marginal costing :1, The technique of marginal costing is very simple to operate and easy to understand. Since, fixed costs are kept outside the unit cost, the cost statements prepared on the basis of marginal cost are much less complicated.2.It does away with the need for allocation, apportionment and absorption of fixed overheads and hence removes the complexities of under absorption of overheads.3.Marginal cost remains the same per unit of output irrespective of the level of activity. It is constant in nature and helps the management in production planning.4.It prevents the carry forward of

current year's fixed overheads through valuation of closing stocks. Since fixed costs are not considered in valuation of closing stocks, there is no possibility of fictitious profits by over-valuing stocks.

5.It facilitates the calculation of various important factors, viz., break-even point,expectations of profits at different levels of production, sales necessary to earn a predetermined target of profit, effect on profit due to changes of raw materials prices, increased wages, change in sales mixture, etc.

6.It is a valuable aid to management for decision-making and control. It helps management in taking many crucial decisions, such as fixation of selling prices, selection of a profitable product/sales mix, make or buy decision, problem of key or limiting factor, determination of the optimum level of activity, close or shut down decisions, evaluation of performance and capital investment decisions, etc.7.It facilitates the study of relative profitability of different product lines,

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