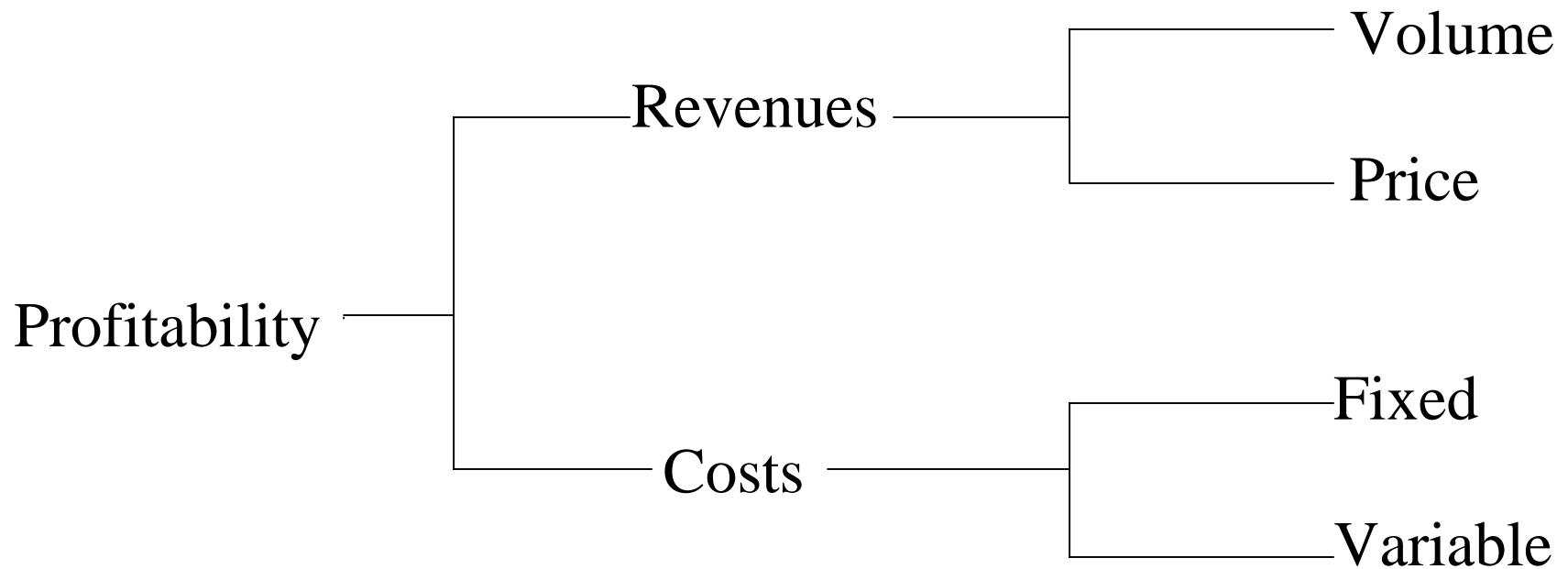


Profitability analysis framework



Terminology

Revenue driver – any factor that causes a change in the total revenue of a product or service

e.g. – volume of units sold, change in selling price

how to measure volume? Differs by type of business – patient days for hospitals, “load” factor for airlines, sales per square feet for retailers

Cost driver – any factor that causes a change in the total cost of a product or service

e.g. - quality of materials, number of parts, skill of production workers, patients treated

More Terminology

Variable cost – cost that changes in total in direct proportion to changes of a cost driver (e.g., materials in production, food in restaurant)

Fixed cost – cost that does not change in total despite changes in a cost driver (e.g., facility rent, restaurant property taxes)

Contribution margin – Sales (\$) – total variable costs (product and period costs)

vs.

Gross profit margin – Sales (\$) – total cost of goods sold (variable and fixed product costs)

Cost-Volume-Profit Analyses

Breakeven level – point of volume where total revenues = total costs ->
no profit or loss

$$\underbrace{\begin{pmatrix} \text{Unit} & \text{Number} \\ \text{sales} & \text{of} \\ \text{price} & \text{units} \end{pmatrix}}_{\text{Sales}} \times - \underbrace{\begin{pmatrix} \text{Unit} & \text{Number} \\ \text{variable} & \text{of} \\ \text{cost} & \text{units} \end{pmatrix}}_{\text{Variable costs}} - \text{Fixed costs} = \text{Operating income}$$

$$\Rightarrow \underbrace{\begin{pmatrix} \text{Unit} & \text{Unit} \\ \text{sales} - \text{variable} \\ \text{price} & \text{costs} \end{pmatrix}}_{\text{Contribution margin}} \times \begin{pmatrix} \text{Number} \\ \text{of} \\ \text{units} \end{pmatrix} - \text{Fixed costs} = \text{Operating income}$$

Breakeven analyses example

Example – sales volume at retail shoe store needed to breakeven –

- selling price per pair of shoes = \$30;
- cost per pair of shoes = \$21;
- fixed costs (rent, salaries, advertising, etc) = \$360,000;

$$\left(\begin{array}{l} \text{Unit} \\ \text{sales -} \\ \text{price} \end{array} \quad \begin{array}{l} \text{Unit} \\ \text{variable} \\ \text{costs} \end{array} \right) \times \left(\begin{array}{l} \text{Number} \\ \text{of} \\ \text{units} \end{array} \right) - \text{Fixed costs} = 0$$

$$= (\$30 - \$21) \times N - \$360,000 = 0$$

$$\Rightarrow N = \frac{\$360,000}{\$9 \text{ per pair}} = 40,000 \text{ pairs of shoes}$$

What if?

What if we desire operating profit of \$135,000?

$$\Rightarrow (\$30 - \$21) \times N - \$360,000 = \mathbf{\$135,000}$$

$$\Rightarrow N = \frac{\$360,000 + \$135,000}{\$9 \text{ per pair of shoes}} = 55,000 \text{ pairs of shoes}$$

What if?

What if we change our compensation scheme?

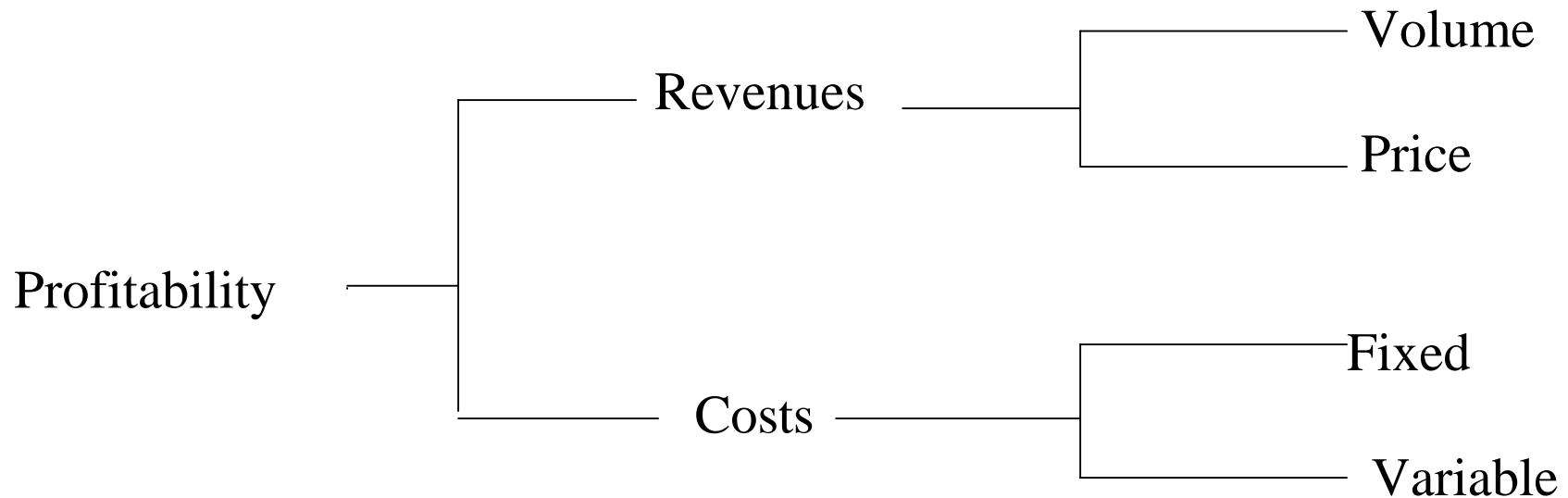
Current pay structure -> 2 employees with salaries of \$25,000

Proposed pay structure -> 2 employees with base salaries of \$10,000 plus \$1 per pair of shoes sold

$$\Rightarrow [\$30 - (\$21 + \mathbf{\$1})] \times N - (\$360,000 - \mathbf{\$30,000}) = \mathbf{\$0}$$

$$N = \frac{\$330,000}{\$8 \text{ per pair of shoes}} = 41,250 \text{ pairs of shoes}$$

Profitability analysis framework



Revenue issues

- specific to firm
- market-wide

Cost issues

- components of cost structure – by function, product line, geographic
- impact of strategy/positioning on cost structure (low cost vs. high quality)

Profitability analysis framework

Sample Bank Profitability Issue Tree

