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Accounting for Costs

Unit 4:
Cost-Volume-Profit Analysis

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The Behavior of Costs

CFI (Corporate Finance Institute) defines cost behavior analysis as:

"…management's attempt to understand how operating costs change in relation to a change in an organization's level of activity. These costs may include direct materials, direct labor, and overhead costs that are incurred from developing a product. Management typically performs cost behavior analysis through mathematical cost functions."

Activities

Think of activities as any process or operation where costs can vary as the activity level changes.

For this discussion, we will consider the costs to be analyzed as:

- **variable costs**
- **fixed costs, or**
- **mixed costs**

Variable Costs

Costs that change directly as a result of changes in volume are *variable costs*. For example:

A component part for product 'A' costs the firm $10.00 each. If the firm produces 10 units, the resulting cost is $100.00. If the volume increases to 15 units, the total cost will be $150.00.

Note: the cost per unit is the same ($10.00).

Fixed Costs

Costs that do not change directly as a result of changes in volume are *fixed costs*. For example:

The firm is paying $1,000.00 each month in rent for their facility. This cost does not change if the volume of units produced changes.

Note: the cost per unit is the total cost / quantity.
$1,000 / 10 = $100.00 per unit.
$1,000 / 15 = $66.67 per unit. Cost per unit decreases as the volume increases.

Mixed Costs

As the name implies, *mixed costs* include elements of both variable and fixed costs. Example:

The firm outsources a portion of their manufacturing needs. The contract with their supplier contains provisions that call for a monthly charge of $200.00, plus a charge of $5.00 per product supplied. In this case, the fixed cost is $200.00, and the variable cost is $5.00.

Cost-Volume-Profit Analysis

Management has an interest in making decisions that will result in improving the financial performance of the business. By studying the effects that changes in activity have on costs, they are in a better position to improve the firm's profitability.

This is one of the critical reasons that a companies will have specific goals and targets for their cost management efforts. For example, reduce purchase cost by 3%, lower inventories by 5%, improve manufacturing personnel efficiencies by 2%...

Components of CVP Analysis

1. Volume of various activities
2. Selling prices per unit
3. Variable cost per unit
4. Total fixed costs
5. Mix of products being sold

CVP Income Statement Contribution Margin

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ABC Company, Income Statement		
	Total	**Per Unit (10,000)**
Sales	$ 1,500,000	$ 150.00
Variable Costs	$ 380,000	$ 38.00
Contribution Margin	$ 1,120,000	$ 112.00
Fixed Costs	$ 700,000	
Net Income	$ 420,000	

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Contribution Margin

The contribution margin represents the money available to cover your fixed costs and contribute to your earnings.

selling price per unit – variable cost per unit = contribution margin per unit

$150.00 per unit - $38.00 per unit = $112.00 contribution margin per unit

Contribution Margin Ratio

CM per unit / selling price per unit = contribution margin ratio

\$112.00 per unit / \$150.00 per unit =
75% contribution margin per unit

This CM ratio says that 75% of every dollar in sales can be applied toward fixed costs and profits.

Next…

Unit 5: Break-Even Analysis