Rockefeller College
of Public Affairs & Policy
University at Albany State University of New York

Department of Public Administration & Policy
albany.edu/rockefeller

Module 2 Cost Management

PAD 501

Gang Chen

Copyright © Slides and Script by Gang Chen. Narration powered by Google Text-to-Speech (Chirp 3, HD voice: en-US-Chirp3-HD-Achird)

Overview

- Required Reading: Chapter 4
- Understand the definitions of these concepts and identify these costs:
  - Direct cost,
  - Indirect cost,
  - Total cost,
  - Fixed cost,
  - Variable cost,
  - Marginal cost,
  - Average cost
- Understand these skills:
  - Conduct break-even analysis

Concepts

- Cost Objective is the term used for the focus of the cost analysis.
- Total Cost is the sum of all costs associated with the cost objective.
- Direct Costs
  - Costs incurred within a cost objective;
  - Costs directly used to produce a good or service.
- Indirect Costs (also called overhead)
  - Costs that are assigned to a cost objective from outside
  - Costs not used directly to provide service.

Examples of indirect costs

- Staff support for a research project
- Administration cost of nonprofit organizations
- Marketing costs for a company
- Utility costs

- Allocation of indirect costs can be based on
  - Service units
  - Time
  - Others

Concepts

- **Fixed Costs** are those costs which remain (relatively) unchanged in total for some time period as the volume of services changes over a relevant range of activity.
- **Variable Costs** are those costs that vary directly with changes in the volume of service units over a relevant range of activity.
- **Mixed Costs** are costs that contain both fixed and variable costs.
- **Step-Fixed or Semi-Variable Cost** are costs that are fixed over ranges of activity that are less than the relevant range.

Concepts

- **Average Cost** is the full cost of a cost object divided by the number of units of service provided.

- **Marginal Costs** are the “additional” costs incurred as the result of providing one more unit of service (incremental costs).

Break-Even Analysis

- Break even: the point where total revenues exactly equal its total expenses.
- Total Revenues = price (P) ×quantity (Q)
  - P is price per unit
  - Q is the total units
  - Example: if we charge $5 per student and we have 20 students, total revenues are 5*20=100
- Total Expenses = variable cost (VC) + fixed cost (FC) = (VC × Q) + FC
  - VC is variable cost per unit; Total variable cost is VC × Q
  - FC is total fixed cost, which doesn't change with Q
  - Example: if book cost per student is $5 and we have 20 students, total variable cost is 5*20=100

Break-Even Equation

$$BEQ = \frac{FC}{P - VC}$$

- Why?
- Because when break-even, we have: total expenses (costs) = total revenues
- We know that total expenses include (VC × Q) + FC
- And total revenues are P ×Q
- So we can write: (VC × Q) + FC = P ×Q
- Simple algebra gets us Q = FC / (P − VC), Q is the break-even quantity (BEQ)

Contribution Margin

- (P - VC) is often called the **Contribution Margin**, or just **Margin.**
- When the margin (price minus variable cost) is positive, each unit contributes toward covering fixed costs. Once enough units are sold to fully cover fixed costs, the organization reaches break-even.

Weights in break-even analysis

- Weighted variable costs: when units have different variable costs, so they need to be weighted in the calculation
- Weighted price: when units have different prices, so they need to be weighted in the calculation
- Weighted contribution margin: when units have different margins, so they need to be weighted in the calculation

- Weighted VC = proportion 1 (%) * VC 1 + proportion 2 (%) * VC 2 + …