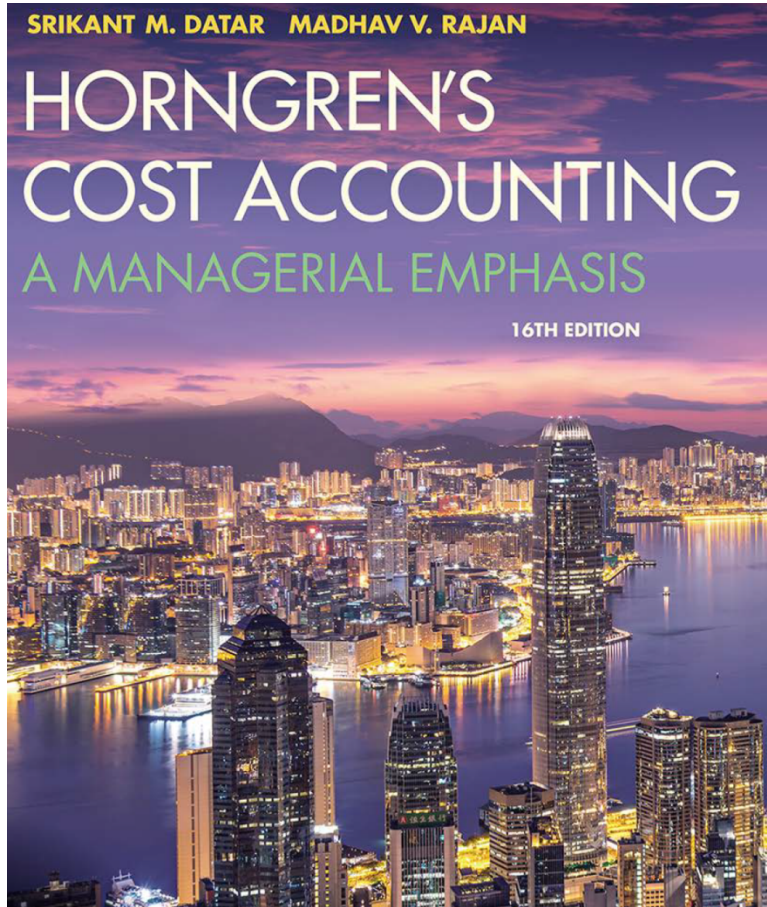


Cost Accounting

Sixteenth Edition



Chapter 11

Decision Making and Relevant Information

Information and the Decision Process

Managers usually follow a decision model for choosing among different courses of action.

- A decision model is a formal method of making a choice that often involves both quantitative and qualitative analyses.
- Management accountants analyze and present relevant data to guide managers' decisions.
- Managers use the five-step decision-making process presented in Chapter 1 to make decisions.

The Concept of Relevance

- Relevant information has two characteristics:
 - It occurs in the future
 - It differs among the alternative courses of action.
- Relevant costs are expected future costs.
- Relevant revenues are expected future revenues.
- Past costs (historical costs) are never relevant and are also called sunk costs.

Qualitative and Quantitative Relevant Information

Managers divide the outcomes of decisions into two broad categories: quantitative and qualitative.

- Quantitative factors are outcomes that are measured in numerical terms.
- Qualitative factors are outcomes that are difficult to measure accurately in numerical terms, such as satisfaction.

Although quantitative nonfinancial factors and qualitative factors are difficult to measure in financial terms, they are important for managers to consider.

Relevant Cost, Illustration

Exhibit 11.2 Determining Relevant Revenues and Relevant Costs for Precision Sporting Goods

	All Revenues and Costs		Relevant Revenues and Costs	
	Alternative 1: Do Not Reorganize	Alternative 2: Reorganize	Alternative 1: Do Not Reorganize	Alternative 2: Reorganize
Revenues ^a	\$6,250,000	\$6,250,000	—	—
Costs:				
Direct materials ^b	1,250,000	1,250,000	—	—
Manufacturing labor	640,000 ^c	480,000 ^d	\$ 640,000 ^c	\$ 480,000 ^d
Manufacturing overhead	750,000	750,000	—	—
Marketing	2,000,000	2,000,000	—	—
Reorganization costs	—	90,000	—	90,000
Total costs	<u>4,640,000</u>	<u>4,570,000</u>	<u>640,000</u>	<u>570,000</u>
Operating income	<u>\$1,610,000</u>	<u>\$1,680,000</u>	<u>\$(640,000)</u>	<u>\$(570,000)</u>
	\$70,000 Difference		\$70,000 Difference	

^a25,000 units × \$250 per unit = \$6,250,000

^b25,000 units × \$50 per unit = \$1,250,000

^c20 workers × 2,000 hours per worker × \$16 per hour = \$640,000

^d15 workers × 2,000 hours per worker × \$16 per hour = \$480,000

Sunk Costs are Irrelevant in Decision Making

- Costs that have already occurred and cannot be changed are classified as sunk costs.
- Sunk costs are excluded because they cannot be changed by future actions.

Terminology

- Incremental cost—the additional total cost incurred for an activity.
- Differential cost—the difference in total cost between two alternatives.
- Incremental revenue—the additional total revenue from an activity.
- Differential revenue—the difference in total revenue between two alternatives.

Now, let's look at some types of decisions that need to be made.

Types of Decisions that Need to be Made: (1 of 4)

- One-time-only special orders (Slide #15)
- Short-run pricing decisions (Slide #19)
- Insourcing vs. outsourcing (Make-or-Buy) (Slide #20)
 - Outsourcing and Idle Facilities (Slide #21)
 - Strategic and Qualitative Factors (Slide #21)
 - International Outsourcing (Slide #22)
 - The Total Alternatives Approach (Slide #22)
 - The Opportunity-Cost Approach (Slide #23)
 - Carrying Costs of Inventory (Slide #23)

Types of Decisions that Need to be Made: (2 of 4)

- Product-mix decisions with capacity constraints (Slide #24)
 - These are decisions that managers make about which products to sell and in what quantities. These decisions usually have only a short-run focus because they typically arise in the context of capacity constraints that can be relaxed in the long run.

Types of Decisions that Need to be Made: (3 of 4)

Bottlenecks, Theory of Constraints, and Throughput-Margin Analysis (Slide #26)

- The theory of constraints describes methods to maximize operating income when faced with some bottleneck and some bottleneck operations. To implement TOC, we define and use three measures:
 - Throughput margin
 - Investment equals the sum of materials, R&D costs and capital costs of equipment and buildings
 - Operating costs equal costs of operations (other than direct materials)

Types of Decisions that Need to be Made: (4 of 4)

- Customer profitability and relevant costs (Slide #29)
 - Managers must make decisions about adding or dropping a product line or business segment, but if the cost object is a customer, managers must decide about adding (Slide #32) or dropping customers (Slide #31).
- Branch/segment: adding or discontinuing (Slide #31)
- Equipment replacement (Past costs are irrelevant) (Slide #34)

One-Time Only Special Orders

- Decision: To accept or reject special orders when there is idle production capacity and the special orders have no long-run implications.
- Decision rule: Does the special order generate additional operating income?
 - Yes—accept
 - No —reject
- Compares relevant revenues and relevant costs to determine profitability.

Special Orders Decisions

Exhibit 11.5 One-Time-Only Special-Order Decision for Surf Gear: Comparative Contribution Income Statements

	A	B	C	D	E	F	G	H	
1		Without the Special Order				With the Special Order		Difference: Relevant Amounts	
2		30,000				35,000		for the	
3		Units to be Sold				Units to be Sold		5,000	
4		Per Unit		Total		Total		Units Special Order	
5		(1)		(2) = (1) x 30,000		(3)		(4) = (3) – (2)	
6	Revenues	\$20.00		\$600,000		\$655,000		\$55,000 ^a	
7	Variable costs:								
8	Manufacturing	7.50		225,000		262,500		37,500 ^b	
9	Marketing	5.00		150,000		150,000		0 ^c	
10	Total variable costs	12.50		375,000		412,500		37,500	
11	Contribution margin	7.50		225,000		242,500		17,500	
12	Fixed costs:								
13	Manufacturing	4.50		135,000		135,000		0 ^d	
14	Marketing	2.00		60,000		60,000		0 ^d	
15	Total fixed costs	6.50		195,000		195,000		0	
16	Operating income	\$ 1.00		\$ 30,000		\$ 47,500		\$17,500	
17									
18	^a 5,000 units x \$11.00 per unit = \$55,000.								
19	^b 5,000 units x \$7.50 per unit = \$37,500.								
20	^c No variable marketing costs would be incurred for the 5,000-unit one-time-only special order.								
21	^d Fixed manufacturing costs and fixed marketing costs would be unaffected by the special order.								

Potential Problems in Relevant-Cost Analysis

- Managers should avoid two potential problems in relevant-cost analysis:
 1. Avoid incorrect general assumptions such as that “All variable costs are relevant and all fixed costs are irrelevant.” Even in our simple example, we had irrelevant, variable marketing costs.
 2. Be aware that unit-fixed-cost data can potentially mislead managers in two ways.

(See next slide for details)

Beware: Unit-Fixed-Cost Data

- Unit-fixed-cost data can potentially mislead managers in two ways:
- Fixed unit costs might include irrelevant costs; costs that will not change whether or not the one-time only order is accepted or not.
- If using the same unit fixed costs at different output levels, managers may reach erroneous conclusions. Total fixed costs should be used.

Short-Run Pricing Decisions

- A special order decision is, in many respects, a short-run pricing decision.
- Sometimes, the decision is simply about setting an acceptable price.
- Remember the decision rule?
- Any price above incremental costs will improve operating income; however, consideration must be given to capacity constraints, current market conditions, customer demand, competition, etc.

Insourcing V Outsourcing and Make-or-Buy Decisions (1 of 4)

- Outsourcing is purchasing goods and services from outside vendors.
- Insourcing means you'll produce the good (or provide the service) within the organization.
- Decisions about whether to insource or outsource are called Make-or-Buy decisions.
- Opportunity Costs are the contribution to operating income forgone by not using a limited resource in its next-best alternative use.

Insourcing V Outsourcing and Make-or-Buy Decisions (2 of 4)

OUTSOURCING AND IDLE FACILITIES

- To make a good decision here, managers must consider the difference in relevant costs between the alternatives including the cost of idle capacity and related fixed costs.

STRATEGIC AND QUALITATIVE FACTORS

- Outsourcing decisions invariably have a long-run horizon in which the financial costs and benefits of outsourcing become more uncertain. Almost always, strategic and qualitative factors become important determinants of the outsourcing decision. Weighing all these factors requires considerable managerial judgment and care.

Insourcing V Outsourcing and Make-or-Buy Decisions (3 of 4)

INTERNATIONAL OUTSOURCING

- International outsourcing requires managers to evaluate manufacturing and transportation costs, exchange-rate risks, and other strategic and qualitative factors such as quality, reliability, and efficiency of the supply chain.

THE TOTAL ALTERNATIVES APPROACH

- This approach simply means that managers should consider future costs and revenues for all products. If, for example, one decision will create idle capacity but that idle capacity can be used for manufacture of another product, that should be considered in the overall decision.

Insourcing V Outsourcing and Make-or-Buy Decisions (4 of 4)

THE OPPORTUNITY-COST APPROACH

- Opportunity cost is the contribution to operating income that is forgone by not using a limited resource in its next-best alternative use. Deciding to use a resource one way means a manager must forgo the opportunity to use the resource in any other way. Managers must consider that cost in their decision making.

CARRYING COSTS OF INVENTORY

- Recall that under the opportunity-cost approach, the relevant cost of any alternative is (1) the incremental cost of the alternative plus (2) the opportunity cost of the profit forgone from choosing that alternative. The opportunity cost of holding inventory is the income forgone by tying up money in inventory and not investing it elsewhere.

Product-Mix Decisions with Capacity Constraints

Product-mix decisions are decisions managers make about which products to sell and in what quantities.

- Decision rule (with a constraint):
 - Choose the product that produces the highest contribution margin per unit of the constraining resource (not the highest contribution margin per unit of the product).

Product-Mix Decisions with Capacity Constraint, Example

ITEM	PRODUCT A	PRODUCT B
Selling price	\$10	\$30
Variable Cost per unit	\$ 6	\$15
Contribution Margin/unit	\$ 4	\$15
Contribution Margin %	40%	50%
Machine Hours Required per unit	.5	3
Contribution Margin/Machine Hour	\$ 8	\$ 5

Customer Profitability and Relevant Costs (1 of 4)

- When the cost object is a customer, managers must decide about adding or dropping the customer.
- Decision rule: Does adding or dropping a customer add operating income to the firm?
 - Yes—add or don't drop
 - No—drop or don't add
- Decision is based on incremental income of the customer, not how much revenue a customer generates.

Customer Profitability and Relevant Costs (2 of 4)

Exhibit 11.8 Customer Profitability Analysis for Allied West

	Customer			
	Vogel	Brenner	Wisk	Total
Revenues	<u>\$500,000</u>	<u>\$300,000</u>	<u>\$400,000</u>	<u>\$1,200,000</u>
Cost of goods sold	370,000	220,000	330,000	920,000
Furniture-handling labor	41,000	18,000	33,000	92,000
Furniture-handling equipment cost written off as depreciation	12,000	4,000	9,000	25,000
Rent	14,000	8,000	14,000	36,000
Marketing support	11,000	9,000	10,000	30,000
Sales-order and delivery processing	13,000	7,000	12,000	32,000
General administration	20,000	12,000	16,000	48,000
Allocated corporate-office costs	<u>10,000</u>	<u>6,000</u>	<u>8,000</u>	<u>24,000</u>
Total costs	<u>491,000</u>	<u>284,000</u>	<u>432,000</u>	<u>1,207,000</u>
Operating income	<u>\$ 9,000</u>	<u>\$ 16,000</u>	<u>\$ (32,000)</u>	<u>\$ (7,000)</u>

Customer Profitability Analysis: Relevant-Revenue and Relevant-Cost Analysis of Dropping a Customer (3 of 4)

When a customer doesn't produce positive operating income, managers should attempt to determine why. Some possible reasons might be:

- Low-margin products are ordered
- High sales order costs
- High delivery-processing and other handling costs
- High marketing costs

Once identified, managers could work with the customer to reduce costs so the customer becomes profitable.

Customer Profitability Analysis: Relevant-Revenue and Relevant-Cost Analysis of Adding a Customer (4 of 4)

- There is at least one critical distinction between the relevant costs of adding vs. dropping a customer.
- Depreciation cost is irrelevant in deciding whether to drop a customer because depreciation on equipment that has already been purchased is a past (sunk) cost, but the cost of purchasing new equipment in the future that will then be written off as depreciation IS relevant in deciding whether to add a customer.

Relevant-Revenue and Relevant-Cost Analysis of Closing or Adding Branch Offices or Business Divisions

Sometimes companies must decide about closing or adding branch offices or business divisions.

This analysis is similar to the decision process of adding or closing a customer, with a notable exception:

- Often, branches or divisions are allocated a share of corporate-office costs. If a branch or division is closed, these costs may be allocated differently but they may not actually change.

Irrelevance of Past Costs and Equipment-Replacement Decisions

Some items of cost that are NOT relevant include:

- Cost, accumulated depreciation and book value of existing equipment, and
- Any potential gain or loss on the transaction – a financial accounting phenomenon only.

Some items of cost that MAY BE relevant include:

- Current disposal value of old machine
- Cost of new machine

Decisions and Performance Evaluation

(1 of 2)

- Despite the quantitative nature of some aspects of decision making, not all managers will choose the best alternative for the firm.
- Managers will consider how the company will judge his or her performance after the decision is implemented.
- Many managers consider it unethical to take actions that make their own performance look good when these actions are not in the best interests of the firm.

Decisions and Performance Evaluation

(2 of 2)

- The decision model analysis (step 4) can dictate one decision but in the real world, would the manager want to follow it?

Managers frequently find it difficult to resolve the conflict between the decision model and the performance-evaluation model. In theory, resolving the difficulty seems obvious: managers should design models that are consistent.