Chapter 11:
Decision Making and Relevant Information

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Learning Objective 1: Use the following five-step decision-making process to make decisions:

1. identify the problem and uncertainties,
2. obtain information,
3. make predictions about the future,
4. make decisions by choosing among alternatives, and
5. implement the decision, evaluate performance, and learn

Learning Objective 2: Distinguish relevant from irrelevant information in decision situations. . . only costs and revenues that are expected to occur in the future and differ among alternative courses of action are relevant

Learning Objective 3: Explain the opportunity-cost concept and why it is used in decision making. . . in all decisions, it is important to consider the contribution to income forgone by choosing a particular alternative and rejecting others

Learning Objective 4: Know how to choose which products to produce when there are capacity constraints. . . select the product with the highest contribution margin per unit of the limiting resource

Relevant Cost Analysis

- Relevant costs are costs to be incurred at some future time and that differ for each option available to the decision maker.
- Every decision involves choosing from among at least two alternatives.
- A relevant cost or benefit is a cost or benefit that differs, in total, between the alternatives. Any cost or benefit that does not differ between the alternatives is irrelevant and can be ignored. Relevant costs and benefits are also known as differential costs and benefits.
- Avoidable costs are those costs that can be eliminated in whole or in part by choosing one alternative over another. Avoidable costs are relevant costs.

Two broad categories of costs are never relevant in decisions:
1. Sunk costs.
2. Future costs that do not differ between alternatives.

To make a decision:
1. Eliminate costs and benefits that do not differ, in total, between alternatives.
2. Base the decision on the remaining costs and benefits.

Relevant Costs

The Car Purchase Decision

	Committed, or "Sunk" Costs	Not Committed, Discretionary
Costs That Differ Among Options	*Not Relevant* Example:Purchase of Buyer's Guide for the New Car	*Relevant Cost* Example: Price of new car
Costs That Do Not Differ Among Options	*Not Relevant* Example: Price of old car	*Not Relevant* Example: American Auto Club membership

Relevant Costs

Which costs are not relevant to the decision to keep the old machine or replace it with a new, more efficient one?

- Old machine cost $4,200 when purchased
- Old machine has a book value of $2,100
- Purchase price of a new machine is $7,000
- New machine is expected to last two years
- New machine will have zero salvage value
- Repairs to old machine would be $3,500 and would allow two more years of productivity
- Power for either machine is expected to be $2.50
- New machine will reduce labor costs by $0.50 per hour
- Expected level of output per year: 1,000 units

1. Which of the following should *not* be considered for every option in the decision process?
   a. Relevant revenues
   b. Relevant costs
   c. Historical costs
   d. Opportunity costs

2. What is always the question to ask to determine if revenues or costs are relevant?
   a. What is the time frame for achieving results?
   b. What difference will an action make?
   c. Who will be responsible?
   d. How much will it cost?

3. [CPA Adapted] Mikaelabelle Products sells product A at a selling price of $40 per unit. Mikaelabelle's cost per unit based on the full capacity of 500,000 units is as follows:

Direct materials	$ 6
Direct labor	3
Indirect manufacturing (60% of which is fixed)	10
	$19

A one-time-only special order offering to buy 50,000 units was received from an overseas distributor. The only other costs that would be incurred on this order would be $4 per unit for shipping. Mikaelabelle has sufficient existing capacity to manufacture the additional units. In negotiating a price for the special order, Mikaelabelle should consider that the minimum selling price per unit should be

a. $17.
b. $19
c. $21.
d. $23.

The following data apply to questions 4 and 5.

Troy Instruments uses ten units of Part Number S1798 each month in the production of scientific equipment. The unit cost to manufacturing one unit of S1798 is presented below.

Direct materials	$ 4,000
Materials handling (10% of direct materials cost)	400
Direct manufacturing labor	6,000
Indirect manufacturing (200% of direct labor)	12,000
Total manufacturing cost	$22,400

Materials handling represents the direct variable costs of the Receiving Department that are applied to direct materials and purchased components on the basis of their cost. This is a separate charge in addition to indirect manufacturing cost. Troy's annual indirect manufacturing cost budget is one-fourth variable and three-fourths fixed. Duncan Supply, one of Troy's reliable vendors, has offered to supply Part Number S1798 at a unit price of $17,000.

4. [CMA Adapted] If Troy purchases the S1798 units from Duncan, the capacity Troy used to manufacture these parts would be idle. Should Troy decide to purchase the parts from Duncan, the unit cost of S1798 would
   a. decrease by $3,700.
   b. decrease by $5,600.
   c. increase by $3,600.
   d. increase by $5,300.

5. [CMA Adapted] Assume that Troy Instruments does not wish to commit to a rental agreement to rent all idle capacity but could use idle capacity to manufacture another product that would contribute $60,000 per month. If Troy elects to manufacture S1798 in order to maintain quality control, Troy's opportunity cost is
   a. $(53,000).
   b. $7,000.
   c. $(24,000)
   d. $36,000.

Silver Lake Cabinets is approached by Ms. Jenny Zhang, a new customer, to fulfill a large one-time-only special order for a product similar to one offered to regular customers. The following per unit data apply for sales to regular customers:

Direct materials	$100
Direct labor	125
Variable manufacturing support	60
Fixed manufacturing support	75
Total manufacturing costs	360
Markup (60%)	216
Targeted selling price	$576

Silver Lake Cabinets has excess capacity. Ms. Zhang wants the cabinets in cherry rather than oak, so direct material costs will increase by $30 per unit.

Required:

a. For Silver Lake Cabinets, what is the minimum acceptable price of this one-time-only special order?
b. Other than price, what other items should Silver Lake Cabinets consider before accepting this one-time-only special order?
c. How would the analysis differ if there was limited capacity?

Kirkland Company manufactures a part for use in its production of hats. When 10,000 items are produced, the costs per unit are:

Direct materials	$0.60
Direct manufacturing labor	3.00
Variable manufacturing overhead	1.20
Fixed manufacturing overhead	1.60
Total	$6.40

Mike Company has offered to sell to Kirkland Company 10,000 units of the part for $6.00 per unit. The plant facilities could be used to manufacture another item at a savings of $9,000 if Kirkland accepts the offer. In addition, $1.00 per unit of fixed manufacturing overhead on the original item would be eliminated.

Required:

a. What is the relevant per unit cost for the original part?
b. Which alternative is best for Kirkland Company? By how much?

Norton's Mufflers manufactures three different product lines, Model X, Model Y, and Model Z. Considerable market demand exists for all models. The following per unit data apply:

	Model X	Model Y	Model Z
Selling price	$80	$90	$100
Direct materials	30	30	30
Direct labor ($10 per hour)	15	15	20
Variable support costs ($5 per machine-hour)	5	10	10
Fixed support costs	20	20	20

a. For each model, compute the contribution margin per unit.
b. For each model, compute the contribution margin per machine-hour.
c. If there is excess capacity, which model is the most profitable to produce? Why?
d. If there is a machine breakdown, which model is the most profitable to produce? Why?
e. How can Norton encourage her sales people to promote the more profitable model?

Hackerott Camera is considering eliminating Model AE1 from its camera line because of losses over the past quarter. The past three months of information for model AE1 is summarized below.

Sales (1,000 units)	$250,000
Manufacturing costs:	
Direct materials	140,000
Direct labor ($15 per hour)	30,000
Support	100,000
Operating loss	($20,000)

Support costs are 70% variable and the remaining 30% is depreciation of special equipment for model AE1 that has no resale value.

Should Hackerott Camera eliminate Model AE1 from its product line? Why or why not?

Pat, a Pizzeria manager, replaced the convection oven just six months ago. Today, Turbo Ovens Manufacturing announced the availability of a new convection oven that cooks more quickly with lower operating expenses. Pat is considering the purchase of this faster, lower-operating cost convection oven to replace the existing one they recently purchased. Selected information about the two ovens is given below:

	Existing	New Turbo Oven
Original cost	$60,000	$50,000
Accumulated depreciation	$ 5,000	---
Current salvage value	$40,000	---
Remaining life	5 years	5 years
Annual operating expenses	$10,000	$ 7,500
Disposal value in 5 years	$ 0	$ 0

Required:

a. What costs are sunk?

b. What costs are relevant?

c. What are the net cash flows over the next 5 years assuming the Pizzeria purchases the new convection oven?

d. What other items should Pat, as manager of the Pizzeria, consider when making this decision?