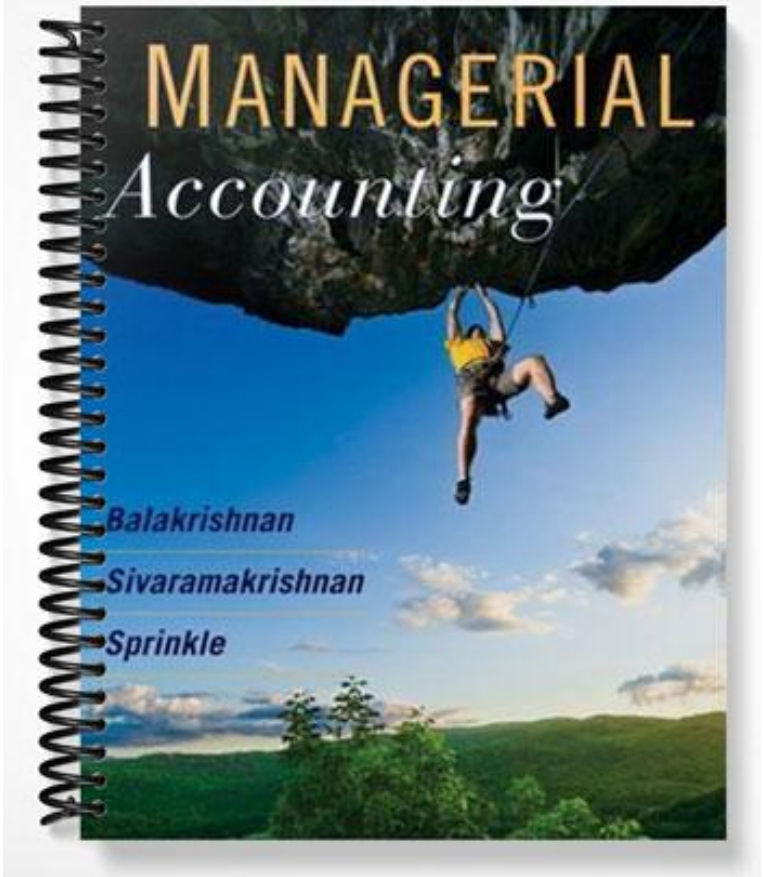
TEST BANK


MANAGERIAL
Accounting
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Sivaramakrishnan
Sprinkle

CHAPTER 2
IDENTIFICATION AND ESTIMATING COSTS AND BENEFITS

TRUE/FALSE

1. The benefits and costs that arise from the decision-maker's choice of a particular option are controllable.

LO1 – True

2. Because they seek to maximize profit, commercial organizations measure the value of a decision option as the change in profit relative to change in revenue.

LO1 – False Commercial organizations measure the value of a decision option as the change in profit relative to current profit.

3. The principle of relevance helps decision makers compare options by focusing on those costs and benefits that matter, and ignoring items that are common and **irrelevant**.

LO1 – True

4. Given a choice of using relevance or controllability to make effective decisions, when one wants to identify the best choice quickly and efficiently, relevance is the operative principle.

LO1 – True

5. Sunk costs influence value because they have already occurred.

LO1 – False Sunk do not influence value because we cannot change the past.

6. A decision maker's control over costs and benefits decreases as the time horizon increases.

LO2 – False A decision maker's control over costs and benefits increases as the time horizon increases.

7. In the short-run, organizations often are **not** able to substantially alter their abilities to deliver products or services, making levels of capacity resources non-controllable.

LO2 – True

8. Few short-term decisions are recurring.

LO2 – False Many short-term decisions are recurring.

9. Changing our minds about our choice for a long-term decision can be difficult and costly.

LO2 – True

10. Many decisions are difficult to classify as they contain elements of both the short- and long-term.

LO2 – True

11. The core idea underlying estimation is that costs and benefits are the result of performing activities.

LO3 – True

12. The principles of timeliness and traceability underlie the estimation of costs and benefits.

LO3 – False The principles of variability and traceability underlie the estimation of costs and benefits.

13. A fixed cost does **not** change as the volume of activity changes.
LO3 – True

14. If only a portion of the cost or revenue pertains to a particular decision option, then it is referred to as a traceable cost or traceable revenue.
LO3 – False If only a portion of the cost or revenue pertains to a particular decision option, then it is an indirect cost or an indirect benefit.

15. The principle of variability means that, when estimating costs and benefits, the first step is to estimate the change in activity.
LO3 – True

16. Step costs change in proportion to the volume of activity.
LO4 – False Step costs stay at the same level for a certain activity range, but jump to a higher amount if the volume of activity increases beyond the range.

17. Classifying all costs as fixed or variable with respect to sales volume is practical and frequently used, but the assumption often results in imprecise measurements.
LO4 – True

18. Costs that do **not** vary at the unit level, the batch level, or the product level are administrative costs.
LO4 – False Costs that do not vary at the unit level, the batch level, or the product level are facility-level costs.

19. Step costs relate only to variable costs.
LO4 – False Step costs relate to fixed costs and variable costs.

20. The cost hierarchy divides costs into unit-, batch-, product-, and facility-level costs.
LO4 – True

MULTIPLE CHOICE

21. Controllable costs are:
    A. Costs that a decision maker chooses to incur, relative to doing nothing.
    B. The incremental expenditures relative to current expenditures.
    C. Not relevant.
    D. Both A and B.
    E. A, B and C.

LO1 – D

22. Relevant benefits are:
    A. The controllable benefits that differ across decision options.
    B. Past expenditures that cannot be changed.
    C. Benefits that do not change as the volume of activity changes.
    D. Always created by variable costs.
    E. None of the above.

LO1 – A

23. A sunk cost is:
    A. A cost that can be directly traced to a decision option.
    B. A past expenditure that cannot be changed.
    C. A cost that does not change as the volume of activity changes.
    D. A controllable cost.
    E. None of the above.

LO1 – B

24. The principle of relevance helps decision makers compare options:
    A. By focusing on those cost and benefits that matter.
    B. By ignoring items that are common and irrelevant.
    C. By reducing the number of costs and benefits to consider.
    D. Both A and B.
    E. A, B, and C.

LO1 – D

25. Which of the following statements relating to relevance and controllability is **not** correct?
    A. Using the concept of relevance does not reduce the number of costs and benefits to consider.
    B. If the status quo is a feasible option, then all controllable costs and benefits are relevant.
    C. When using the principle of controllability to identify the incremental costs and benefits relative to the status quo, calculate the value of each option, and choose the one with the lowest value.
    D. Both A and C are incorrect.
    E. A, B, and C are incorrect.

LO1 – C

26. Steve Johnson has decided to lease a vehicle as opposed to purchasing it. The lease agreement calls for a monthly payment of $400. Any mile driven above 1,000 per month will cost an additional $.10 per mile. If Steve drives 1,240 miles in the month of January his total cost will be:
    A. $400
    B. $640
    C. $524
    D. $424

LO1 – Self-Test – D

27. Steve Johnson has decided to lease a vehicle as opposed to purchasing it. The lease agreement calls for a monthly payment of $400. Any mile driven above 1,000 per month will cost an additional $.10 per mile. Steve's lease cost in January can be considered to be:
    A. Fixed.
    B. Variable.
    C. Mixed.
    D. Both B and C.

LO1 – Self-Test – C

28. Jason is going to play golf this afternoon and has to choose between two different golf courses. The greens fees to play each are both $18, the cart fees at each course is $9. One course, however, is located 20 miles further than the other. Therefore it would cost approximately an additional $4 in gas to play the course that is further away. Relevant costs total:
    A. $18
    B. $27
    C. $9
    D. $4

LO1 – Self-Test – D

29. The Rich Company leases its copier on an annual basis. The lease fee is $1,600 per year plus $.01 per copy for any copies made over 750,000. If the company made 800,000 copies in 2008, its total cost was:
    A. $1,600
    B. $2,100
    C. $2,400
    D. $1,650

LO1 – Self-Test – B

30. The Criders Company has 12,000 units of obsolete inventory. The units originally cost $6,000. The company can either sell them for scrap at $.20 per unit or they can invest $2,000 to be able to sell them at a price of $.60 per unit. With regard to this decision, relevant costs or benefits include:
    A. $6,000 only.
    B. $2,000 and $.20 per unit only.
    C. $.20 per unit, $.60 per unit, and $2,000.
    D. $2,000 and $6,000 only.

LO1 – Self-Test – C

31. Which one of the following best represents a controllable benefit for a manufacturing plant?
    A. Reduce the number of security guards during holiday periods.
    B. Increasing the selling price of the company's best selling product by $1.00 per unit.
    C. Reduce the medical benefit coverage for employees.
    D. Eliminate one copy machine for the human resources department.

LO1 – Pre-Test - B

32. Which of the following best represents a controllable cost for a manufacturing plant?
    A. Reducing the number of pages in a product brochure.
    B. Increasing the price of two of the best selling products.
    C. Billing customers for delivery fuel surcharges.
    D. Charging customers for additional production runs of a special ordered product.

LO1 – Post-Test – A

33. Assume you are the owner of a video-rental store. Which of the following would be classified as a long-term decision?
    A. Purchase of children's video inventory.
    B. Purchase of cleaning supplies.
    C. Deciding whether to purchase a new building.
    D. Deciding whether to hire a new hourly employee for the summer.
    E. None of the above is a long-term decision.

LO2 – C

34. A decision maker's control over costs and benefits:
    A. Decreases as the time horizon increases.
    B. Increases as the time horizon increases.
    C. Does not change regardless of the time horizon.
    D. Changes in proportion to the volume capacity.
    E. None of the above.

LO2 – B

35. An example of a cost that may be non-controllable in the short-run, but controllable in the long-run is:
    A. Salaries.
    B. Office lease.
    C. Both A and B.
    D. Neither A nor B.

LO2 – C

36. It is important to keep the time horizon in mind when making decisions because:
    A. Short term decisions are generally more costly than long term decisions.
    B. We always want to identify choices quickly.
    C. When making future decisions, costs incurred in the past must be considered.
    D. The horizon affects whether a cost or benefit is controllable for the decision.
    E. All of the above are important.

LO2 – D

37. Which of the following is a **not** a correct statement?
    A. A decision maker's control over costs and benefits decrease as the time horizon increases.
    B. A decision maker's control over costs increases as the time horizon increases.
    C. A decision maker's control over benefits increases as the time horizon increases.
    D. Both B and C are incorrect statements.

LO2 – A

38. Variable costs per unit are as follows:
    Raw materials $2.15
    Direct labor $1.45
    Fixed costs are $5,000 per month
    If the company produces 4,000 units in the month of March their total costs will be:
    A. $14,400
    B. $19,400
    C. $13,600
    D. $18,000

LO2 – Self-Test – B

39. The owner of Mom & Pop's Hardware Store purchased a knife sharpener last year in order to allow the store to offer services in sharpening all types of blades. The cost of the equipment was $5,200 but Pop now feels that the store needs to generate additional revenue of $200 per month in order to have made the purchase worthwhile. With regard to making the decision of whether to continue to offer the service, the original cost of the sharpener can be considered:
    A. Controllable.
    B. Mixed.
    C. Sunk.
    D. Relevant.

LO2 – Self-Test – C

40. When making decisions, a general rule would be:
    A. Fixed costs are always relevant.
    B. Variable (unit-level) costs are always irrelevant.
    C. Future costs and revenues are always relevant.
    D. Future costs and revenues which differ are always relevant.

LO2 – Self-Test – D

41. Which one of the following is the best example of a long-term decision for management of a manufacturing company?
    A. Increasing the amount of caffeine in the company's soft drink products.
    B. Eliminating excessive use of company supplies.
    C. Building an assembly line for its energy drinks.
    D. Removing manufacturing byproducts that are deemed hazardous for storage.

LO2 – Pre-Test – C

42. Which of the following is the best example of a long-term capacity cost for a trucking company?
    A. Performing tune-ups on older trucks.
    B. Installing a GPS unit in each truck to monitor efficient routes and fuel efficiency in order to serve more customers on a daily basis.
    C. Changing the oil annually in each delivery truck.
    D. Replacing torn seats in several of the trucks in which truckers have complained

LO2 – Post-Test – B

43. Variability deals with:
    A. The degree to which we can directly relate a cost or benefit to a specific option.
    B. How activities influence costs and benefits.
    C. The result of performing activities.
    D. The difference across decision options.
    E. None of the above.

LO3 – B

44. Traceability is:
    A. The degree to which we can directly relate a cost or benefit to a specific option.
    B. How activities influence costs and benefits.
    C. The result of performing activities.
    D. The difference across decision options.
    E. None of the above.

LO3 – A

45. A cost that is proportional to the volume of activity is a:
    A. Mixed cost.
    B. Fixed cost.
    C. Variable cost.
    D. Volume cost.
    E. Break-even cost.

LO3 – C

46. Organizations frequently refer to indirect costs as:
    A. Volume costs.
    B. Variable costs.
    C. Common costs.
    D. Special costs.
    E. Fixed costs.

LO3 – C

47. Which of the following items is **not** an example of a direct cost in the production of a refrigerator?
    A. Raw materials.
    B. The cost of a machine used only for manufacturing this line of refrigerators.
    C. Salary of factory assembly line workers.
    D. Maintaining the sales office.
    E. All of the above could be direct costs.

LO3 – D

48. Variable (unit-level) costs per unit:
    A. Increase as production increases.
    B. Decrease as production decreases.
    C. Stay the same at any level of production.
    D. Increase as production decreases.

LO3 – Self-Test – C

49. During the month of March the Richards Company, which operates one factory location and one administrative location, reported the following costs:

Postage on bills sent to customers	$100
Rent on its factory building	$3,800
Depreciation used on administrative office computers	$600
Bonuses paid to the Vice-President of Sales	$1,500

    Indirect costs total:
    A. $700
    B. $3,800
    C. $2,200
    D. $2,100

LO3 – Self-Test – C

50. Considering only controllable costs and benefits in an analysis:
    A. Always reduces the number of costs and benefits needing to be measured.
    B. Never reduces the number of costs and benefits needing to be measured.
    C. Reduces only the number of costs to be measured if they are controllable.
    D. Will not reduce the number of costs and benefits to be measured if the status quo is an available option.

LO3 – Self-Test – D

51. Which of the following is the best example of a variable cost?
    A. Monthly loan payment on a plant generator.
    B. Labor cost for plant employees.
    C. Lease payment for the office copy machine.
    D. General manager's salary.

LO3 – Pre-Test – B

52. In June, Ace Manufacturing Plant produced 100 units of propane canisters for sale. The total variable costs were $5,000 and the fixed costs for the plant amounted to $3,000. How much is the unit variable cost for canisters if 120 canisters are produced?
    A. $50.00
    B. $66.67
    C. $80.00
    D. $41.67

LO3 – Pre-Test – A

53. Which of the following will **least** likely be a variable cost for Pizza Hut?
    A. Dough, sauce, and cheese.
    B. Boxes for 'to go' pizza orders.
    C. Cooking ovens.
    D. Cashiers' hourly wages

LO3 – Post-Test – C

54. During May, Mayer Company's total fixed costs were $5,000 and variable costs were $7,000 when 500 units were produced. How much is total cost for June if 600 units are produced?
    A. $13,400
    B. $12,000
    C. $7,000
    D. $14,400

LO3 – Post-Test – A

55. Which of the following is the best example of product-level costs?
    A. Property taxes of a factory.
    B. Cost of plastic for bottled water.
    C. Research and development costs.
    D. Setup of machine drivers

LO3 – Post-Test – C

56. Which of the following statements describes how step costs relate to fixed and variable costs?
    A. A step cost behaves more like a variable cost as the step size decreases.
    B. A step cost behaves more like a fixed cost as the step size decreases.
    C. A step cost behaves like a variable cost, but not like a fixed cost.
    D. A step cost behaves like a fixed cost, but not like a variable cost.

LO4 – A

57. Suppose fixed costs are $500, variable cost is $5 per unit, and step costs are $50 for every 20 unit produced. What is the total cost of producing 25 units?
    A. $675
    B. $688
    C. $725
    D. $800
    E. $625

LO4 – C $500 + ($5 x 25) + ($50 x 2) = $725

58. Factory rent is an example of:
    A. Product-level cost.
    B. Facility-level cost.
    C. Unit-level cost.
    D. Batch-level cost.
    E. None of the above.

LO4 – B

59. Production planning required to prepare the production process for the next product is an example of:
    A. Product-level cost.
    B. Facility-level cost.
    C. Unit-level cost.
    D. Batch-level cost.
    E. None of the above.

LO4 – D

60. Advertising and research and development costs are examples of:
    A. Product-level cost.
    B. Facility-level cost.
    C. Unit-level cost.
    D. Batch-level cost.
    E. None of the above.

LO4 – A

61. The HomeAmour Company operates their production and administrative activities from a single facility. Which of the following would be an example of a facility-level cost?
    A. Salary of the Chief Operating Officer.
    B. Raw materials used to produce units.
    C. Depreciation on the equipment used in the factory.
    D. Freight paid on finished units shipped to customers.

LO4 – Self-Test – A

62. If a production facility increases its production by 1,500 units, its:
    A. Variable (unit-level) cost per unit will increase.
    B. Fixed cost per unit will increase.
    C. Total fixed costs will decrease.
    D. Fixed cost per unit will decrease.

LO4 – Self-Test – D

63. During the month of September the Gaffney Company, which operates one factory location and one administrative location, reported the following costs:

Repair costs for the factory's air conditioning system	$3,500
Property taxes on its administrative office building	$ 900
Rent on factory building	$1,400
Bonuses paid to a factory manager	$ 500

Facility costs total:
    A. $5,300
    B. $5,400
    C. $2,800
    D. $4,900

LO4 – Self-Test – B

64. A direct cost can be:
    A. Only fixed.
    B. Only variable (unit-level).
    C. Either fixed or variable (unit-level).
    D. Neither fixed nor variable (unit-level).

LO4 – Self-Test – C

65. Which one of the following is the best example of a step cost for Ace Manufacturing?
    A. Paying a higher factory utility bill for the month of June.
    B. Cutting back health care coverage for employees.
    C. Terminating the manufacturing quality control employees.
    D. Opening a new assembly line for one of the company's most popular products as a result of its original assembly line continually operating at capacity.

LO4 – Pre-Test – D

Problems

1. The following table lists five decisions you might encounter as owner of a dance studio when determining whether to add a class of South American steps to their offerings.

   Required:
   Indicate by placing an "X" in the appropriate column whether each of the following items describes a controllable or non-controllable cost.

	Controllable	Non-controllable	Type of Cost
a.	_____	_____	Increase in instructors' salaries.
b.	_____	_____	Increase in selling price per lesson.
c.	_____	_____	Lease payment on building.
d.	_____	_____	Depreciation on office computer.
e	_____	_____	Liability insurance premiums.

2. A decision's horizon significantly influences the controllable costs and benefits we need to consider. The following table lists five items you are likely to encounter during your college career.

   Required:
   Indicate by placing an "X" in the appropriate column whether each of the following items describes a short-term or long-term decision.

	Short-Term	Long-Term	Decision
a.	_____	_____	Choosing to attend a two-year technical college or a four-year traditional university.
b.	_____	_____	Choosing an Art Appreciation or Music Appreciation to fulfill your general education culture requirement.
c.	_____	_____	Deciding whether to change majors.
d.	_____	_____	Deciding whether to purchase a Dell or IBM laptop computer for use in class next semester.
e	_____	_____	Choosing whether to eat lunch in the cafeteria or off-campus.

3. Julie's Baby Creations makes heirloom party dresses and smocked play clothes for children. Although each item is made to order, Julie uses the same sewing machines and supplies for both products. The following table lists five costs incurred by Julie to make a party dress.

   Required:

   Indicate by placing an "X" in the appropriate column whether each of the following items describes a direct or indirect cost.

Direct	Indirect	Item
a. _____	_____	Eight yards of French lace for trim.
b._____	_____	Three yards of silk dupioni material for dress.
c._____	_____	Use of sewing machine.
d._____	_____	Supplies: needles, thread, pins.
e_____	_____	Commission of 5% of selling price to local seamstress for smoking yoke.

4. Deluxe Yard Art manufacturers and sells high-end metal lawn statues. The selling price per statue is $200. Fixed costs include insurance of $300 and administrative cost of $800, direct costs of $82 per unit ($47 direct material; $35 direct labor), and step costs of $420 for every 30 units. Deluxe expects to produce 53 units.

   Required

a. Indicate the following total costs for producing 53 units.

   Total Fixed Costs _____

   Total Variable Costs _____

   Total Step Costs _____

   Total Costs _____

b. If Deluxe anticipates increasing volume by 10 units, what is the net effect of the additional sales?

Problem Solutions

1. Controllable Costs (LO1)
   a. Controllable.
   b. Controllable.
   c. Non-controllable.
   d. Non-controllable.
   e. Non-controllable.

2. Classifying Decisions According to Time Horizon (LO2)
   a. Long-term.
   b. Short-term.
   c. Long-term.
   d. Short-term.
   e. Short-term.

3. Classifying costs as direct or indirect (LO3)
   a. Direct.
   b. Direct.
   c. Indirect.
   d. Indirect.
   e. Direct.

4. Calculating Fixed, variable, and step costs (LO4)

a. Total Fixed Costs $1,100 ($300 + $800)
   Total Variable Costs $4,346 ($82 x $53)
   Total Step Costs $840 ($420 x 2)
   Total Costs $6,286

b. Revenue $2,000
   Variable costs 820
   Step costs 420
   Net effect $ 760 additional profit.

END OF CHAPTER HOMEWORK CONTENT

Short Answer

1. What does it mean for a cost or benefit to be controllable?
2. How is value related to controllable costs and benefits?
3. What does it mean for a cost or benefit to be relevant?
4. When is a controllable cost relevant? When is a controllable cost not relevant?
5. Why does time influence the controllability of costs and benefits?
6. What is the key difference between a long-term and a short-term decision?
7. Why is it not possible to sharply distinguish between short- and long-term decisions?
8. What is the central principle underlying the estimation of revenues and costs?
9. Are revenues usually variable, mixed, or fixed? Why?
10. What are variable, fixed, and mixed costs?
11. What is traceability?
12. What are direct and indirect costs?
13. What is a step cost?
14. How many kinds of costs are there in the cost hierarchy? List these kinds of costs.

Solutions to Short Answer

1. (LO-1) Controllable benefits and costs are, respectively, the incremental revenues and expenditures relative to current revenues and expenditures.

2. (LO-1) Value equals controllable benefits less controllable costs.

3. (LO-1) Relevant costs and benefits are controllable costs and benefits that differ across decision options.

4. (LO-1) A controllable cost is relevant when the status quo is an option or when the amount differs for at least one option. A controllable cost is not relevant when the status quo is not an option and when the cost does not differ across viable options.

5. (LO-2) Because previously made commitments and contractual obligations expire with the passage of time.

6. (LO-2) The ability to change the levels of capacity resources related to plant, equipment, and salaried staff.

7. (LO-2) Because many decisions contain elements of both the short- and long-term. Consider sleeping through a test – this has both immediate and, perhaps, long-term consequences.

8. (LO-3) Costs and benefits are the result of performing activities.

9. (LO-3) Revenues typically vary with sales volume.

10. (LO-3) Variable costs are proportional to the volume of activity, whereas fixed costs do not change as the volume of activity changes. Mixed costs contain both fixed and variable components.

11. (LO-3) Traceability is the degree to which we can directly relate a cost or revenue to a decision option.

12. (LO-3) A cost or revenue that we can uniquely relate to a decision option is a direct cost or a direct benefit. If only a portion of the cost or revenue pertains to a particular decision option, then it is an indirect cost or an indirect benefit.

13. (LO-4) Step costs stay at the same level for a certain activity range, but jump to a higher amount if the volume of activity increases beyond this range.

14. (LO-4) There are four kinds of costs in the cost hierarchy – unit, batch, product, and facility.

Short Essay

1. We know that the controllable benefits less the controllable costs of an option equal its value. Can focusing only on relevant costs and benefits ever give us value?

2. Many decisions often involve qualitative factors. How can you reconcile this fact with the concept of relevant costs?

3. Every relevant cost is controllable. However, not all controllable costs are relevant. Why are both statements correct?

4. When might the magnitude of a sunk cost be relevant for a decision? How do you reconcile this answer with the maxim that a sunk cost is not relevant for decision making? (*Hint*: Consider taxes or a decision maker's reputation.)

5. Television manufacturers such as Pioneer, Sony, Toshiba, and Mitsubishi introduce new models constantly. In your judgment, how long is the short-term horizon for such television companies? Identify two short-term decisions that these companies might make to improve their profit.

6. Consider the decision to purchase an automobile to commute to school and/or to work. What costs do you commit to/do not commit to when making your choice?

7. If a firm drops a product line, it will lose the revenue from that product. This loss is controllable and direct with respect to the decision to keep or drop the product. Dropping a product might also affect the sales of the firm's other products. Give two examples—one in which the spillover effect increases the revenue from other products and one in which the spillover effect decreases the revenue from other products. Are these spillover effects controllable and direct to the decision to drop the product?

8. We can think of a cost or revenue estimate as a draw from many possible values of some distribution. Evaluate the following statement, "Variability is helpful in assessing the mean of the probability distribution while traceability speaks to the variance."

9. Some companies impose a minimum charge for services. For example, a caterer may charge $12 per person, with a minimum charge of $120 to host a small dinner party. What is the rationale for a minimum charge? (*Hint*: Think about the caterer's costs in terms of the cost hierarchy).

10. Batch- and product-level costs are not relevant for decisions that only affect the volume of production. Do you agree with this assertion? Why or why not.

Solutions to Short Essay

1. (LO-1) When we define the value of an option as the controllable benefits from that option less the controllable costs of the option, we are implicitly defining value relative to the *status quo* of not doing anything (i.e., not taking any of the options associated with the decision being considered). Such a definition allows us to equate the value of the option with net cash flow associated with it. However, focusing on relevant costs and benefits will not give us the same value because some costs and benefits may be common across all options. The only exception when focusing only on relevant costs and benefits will give us the same value is when status quo of not doing anything is a feasible option. In this case, *all* costs and benefits associated with any option are relevant because there are no costs or benefits associated with the status quo.

2. (LO-1) Factors are as relevant as cash flows. Consider the decision of buying fruit in a local grocery store. Let us say that your favorite grocery store is selling fresh grapes $3.99 a pound, but in an adjacent store grapes are available for $1.99 a pound but they are not as fresh. The decision to make is whether you are willing to pay the extra $2.00 a pound to enjoy fresh grapes. You may well decide to do so. How did you make the trade-off? Clearly, the additional benefit that you get from fresh grapes is not quantifiable. Yet, you are able to use your judgment to make the trade-off.

3. (LO-1) Suppose you have decided to buy a car. You have set your heart on buying a Cadillac Escalade. There are two Cadillac dealers nearby, and both offer exactly the same price. In this case, the price of the car is controllable because you may choose not to buy the car (i.e., the status quo). However, given that you have already made the decision to buy, the price of the car is not relevant in deciding which dealer to buy from! This example establishes that not all controllable costs are relevant *unless* the status quo is also an option. But every relevant cost is controllable because, by definition, relevant costs are costs that differ across decision options. The fact that they differ means that they are controllable. Refer to Exhibit 2.3 in the text for an illustration of these concepts.

4. (LO-1) Generally speaking, sunk costs are not relevant for decision making because these are costs incurred (or committed to) in the past, and, therefore, do not vary across decision options. But, in some instances, there are future tax considerations that may arise from past decisions, and that may be relevant. For example, consider a company that had invested $10 million dollars five years ago to buy an important piece of equipment. The company enjoys a tax deduction for depreciation for this equipment over the 20 year life of this equipment. Since five years have gone by, 15 years of depreciation tax deduction remain. Let us say, now, the company is contemplating selling this asset and moving into some other new business. While the $10 million original cost of the equipment is a sunk cost for this decision, the company has to take into account the fact that it will be foregoing the remaining 15 years of tax benefit from depreciation by selling the equipment (the sale price has to be adjusted because the purchaser will now get the tax benefit). Reputation is also another consideration. Let us say a builder implicitly commits to donate his time to building affordable houses in a suburban community for a charity organization. Halfway into the project, the builder gets a lucrative commercial contract from a local real estate developer. While it may not seem financially wise to continue to devote time to the charity cause, switching has potential long-term reputational consequences in the community. The builder must take these consequences into account before pursuing more profitable avenues.

5. (LO-2) Product life-cycle is relatively long--extending over several years--in some industries and relatively short—sometimes just a year or two years—in other industries. Consumer electronics is an example of the latter, television being a good example. For companies such as Pioneer, Sony, Toshiba, and Mitsubishi, advertising, promotion, and pricing are short-term decisions that have to be made almost on a weekly basis to stay ahead of the competition.

6. (LO-2) Assuming that you have decided which automobile to buy, you are committing to the price of the automobile, the cost of car insurance, and the cost of expected routine maintenance. You are not committing to driving the car every day or to buying gasoline on a weekly basis because you can control these expenditures through your usage of the car.

7. (LO-3) Yes, spillover effects are controllable and must be considered in making decisions. Consider an automobile company like GM which offers two similar SUVs but under different brand names. The decision to drop one of these brands is likely to *increase* the revenues from the other brand (but may *decrease* the total revenues from the two brands). On the other hand, consider an auto repair shop that decides to stop doing simple brake jobs. Such a decision is likely to have negative spillover effects because it will lose revenues from performing other maintenance services that typically surface when cars are brought in by their owners to get their brakes serviced.

8. (LO-3) When costs or revenues vary, using many possible realizations helps us in estimating with greater statistical confidence what these costs or revenues are going to be *on average*. That is, we can estimate their *means* more reliably. On the other hand, inability to trace costs accurately introduces measurement error or "noise" in our estimation. Such measurement increases the variance because we now have to deal with the randomness in this error as well i.e., the error can assume different values as well.

9. (LO-4) The minimum charge for a service represents the opportunity cost to the company for committing resources for that service. By not providing that service, the company can use its resources to make a profit by providing the same service to someone else. Consider the caterer example. Let us say you have agreed to pay $120 to the caterer to host a small dinner party for 10 friends. The caterer charges $12 per person because s/he has to arrange for food items for each individual and make some profit as well. In this case, the number of persons attending the dinner is a good basis to estimate costs. That is, the caterer's costs and charges are proportional to the number of persons s/he is asked to serve.

10. (LO-4) This assertion is correct as long as the number of batches produced does not increase, and the number of different products made does not increase. If the volume of production increases because the number of units produced within each batch increases, then batch- and product-level costs will not increase and are therefore not relevant.

Exercises

1. Sarah is not currently using the fitness loft, a special area of the gym that houses state-of-the-art cardio and strength training equipment. Based on a visit as a friend's guest, Sarah has decided to enroll in the loft. She is deciding between buying a pass to the fitness loft (cost: $120 per semester) and buying a pass for each use (cost: $4 per visit). She wants to work out at least three times a week, which translates to 45 times for the semester. Towel rental at the loft is $0.50 per use. Sarah pays a facilities fee of $175 per semester with her tuition; this fee entitles her to "free" use of one locker.

   Required:
   a. Is the facilities fee of $175 relevant or controllable for Sarah's decision?

   b. Is the towel rental of $0.50 per visit controllable or relevant for this decision?

   c. Is the per-use fee controllable or relevant for this decision?

2. Sam Walters is leaving tomorrow for a three-day business trip and is trying to decide the most economical way to get to and from the airport and his home. Sam could either drive (using his own car) or take the shuttle. If Sam drives, then he estimates that it will cost $0.30 per mile driven in operating costs (e.g., for gas and oil) and $7.50 per day for parking. The one-way cost of the shuttle is $25. Sam's home is exactly 30 miles from the airport.

   Required:
   a. What are the controllable costs for Sam's decision?

   b. What are the relevant costs and benefits for Sam's decision?

   c. Are the controllable costs the same as the relevant costs for Sam's decision? If so, why? Can controllability and relevance give the same costs and benefits even when the status quo is not a feasible option?

3. Saburo and Akiko Watanabe have been married for a bit less than three years and just had their first baby. They want to have another child within two or three years and look forward to "settling down" into the classic American dream of a home with a large yard, a dog, and BBQs on lazy summer afternoons. Both Saburo and Akiko have professional degrees and well-paying jobs. Each of them earns roughly $80,000 per year, which has allowed them to save up for a down payment on a nice house. Currently, they are wondering if one of them should take some time off (for say, five to ten years) from work and devote the freed-up time to building a family. They both care deeply about instilling the right mixture of Japanese and American values in their children and are worried that without adequate parental involvement, their children may lose track of their Japanese heritage. The following lists nine decisions that Saburo and Akiko will be facing in the near future:

   1 Reconsidering the decision to give up one income (neither person has quit yet).
   2 Deciding whether to buy a second car (Saburo and Akiko currently only have one car because they live in the city).
   3 Deciding whether to pay this month's mortgage payment by check or electronic transfer.
   4 Deciding whether to hire a housekeeper.
   5 Deciding the type of dog to get.
   6 Deciding whether to spend $10,000 on a 4-week tour to Japan and Southeast Asia.
   7 Deciding whether to have the stay-at-home spouse look for part-time, home-based employment.
   8 Deciding whether to grill steak or fish for their dinner party this coming Saturday.
   9 Deciding which house to buy.

   Required:

   a. Classify each decision according to its time horizon, short term or long term. Provide a brief rationale for each.

   b. As discussed in the text, many short-term decisions have longer-term implications. Given this linkage, what is the benefit from classifying decisions according to their time horizon? (*Hint*: Think about the benefits of breaking down a large assignment into manageable pieces.)

4. The Greek Corporation makes two products: Kappa and Gamma. Although each product uses a different type of raw material, the firm produces both products in its Eastern plant. The products make use of the same equipment as well.
   Greek Corporation produces Kappa during the day shift and Gamma during the night shift. The following list presents six costs incurred by the Greek Corporation to produce Kappa:
   1 Eastern plant rent
   2 Raw materials purchased to produce Kappa
   3 Eastern plant utilities and water
   4 Salary of the Eastern plant manager
   5 Equipment maintenance
   6 Salary of a production employee who works the day shift at the Eastern plant

   Required:
   For each cost, classify whether it is direct (D) or indirect (I) with respect to Greek's decision to produce the Kappa product. Provide a brief rationale for each classification.

5. Sun and Sand Hotels (S&S), an exclusive beach resort, offers all-inclusive vacations—the package price includes the room, food, and access to all facilities. However, alcoholic beverages and special services (e.g., boat tours) are extra. S&S offers many attractions such as an enclosed lagoon within which guests may pet dolphins. The resort also offers snorkeling and diving tours at a nearby coral reef. Sun and Sand is interested in calculating its cost to host a typical member. Customers usually are couples, and the average couple stays for three nights and four days.

   Required:
   Treating the number of couples as a unit of activity, identify a unit-, batch-, product- and facility level cost for Sun and Sand.

Solutions of Exercises

1. **Controllability and Relevance (LO1).**
   a. The amount is **not controllable or relevant**. This is a past expenditure and nothing Sarah could do now will change this sunk cost.

   b. The amount is **controllable**. This is an additional expenditure relative to the status quo of not using the fitness loft. However, the amount is **not relevant**. The amount spent on this item will be the same whether Sarah decides to buy a semester or per-use pass.

   c. The amount is **controllable**. This is an additional expenditure relative to the status quo of not using the fitness loft. The amount also is **relevant**. The amount spent on this item will differ based on whether Sarah decides to buy a semester or per-use pass.

2. **Controllability and Relevance (LO1).**
   a. A cost is controllable if it changes relative to the status quo. Relative to not taking the business trip, Sam expects to incur the following costs under each option:
   Drive – the controllable costs for the round trip are:

Parking	\$7.50 per day × 3 days	\$22.50
Operating costs	\$0.30 per mile × 60 miles (round trip)	\$18.00
Total controllable cost		**\$40.50**

   Shuttle – since a one-way trip on the shuttle costs \$25, the controllable costs for the round trip are \$25 × 2 = **\$50**.
   Thus, we find that Sam prefers driving to taking the shuttle. Sam's preference for driving versus taking the shuttle changes as the length of his trip changes (e.g., for a five-day trip, the shuttle is cheaper as the cost of driving increases by \$15 while the cost of taking the shuttle stays the same). For short trips, driving and parking is cheaper than taking the shuttle. For trips that are longer, taking the shuttle is cheaper than driving. We can link this to students' behavior – for winter break, it is likely that students take the shuttle to avoid 2-3+ weeks of parking costs. For shorter trips, it is likely that many students drive and use the airport parking lot

   b. A cost is relevant if it differs across decision options. We also know that relevant costs are a subset of controllable costs. By examining the controllable costs in part [b], we find that all of the controllable costs are relevant – i.e., the options do not share any common costs.

   Thus, the relevant costs of driving = \$40.50, and the relevant costs of taking the shuttle = \$50.

   c. Yes, for Sam's decision, the set of controllable costs is the same as the set of relevant costs. Moreover, we find that controllability and relevance give us the same amounts even when the status quo is not part of the opportunity set. How can this happen? The answer is that controllability and relevance will give us the same amounts when decision options do not share any common costs or benefits. When each cost or benefit is unique to a specific decision option.

3. **Classifying Decisions According to their Time Horizon (LO2).**
   a. The following table provides the decision classifications, including comments pertaining to the rationale underlying each classification (please note that there clearly is room for discussion/debate regarding some of the classifications – as discussed in the chapter, the boundaries between the horizons are often fuzzy).

	Classification & Comments
1	**Long-term.** One spouse plans to give up work for 5 to 10 years. This decision clearly has life-long consequences and affects the couple for many years to come.
2	**Long-term**. This decision has multi-year implications. Even so, this decision is relatively easy to reverse as the car can be sold. Moreover, it is likely that Saburo and Akiko will revisit this decision on an ongoing (annual) basis.
3	**Short-term**. This decision affects the timing of the couple's cash flows by a matter of days – the impact of this decision is felt almost immediately.
4	**Short-term/Long-term**. This decision commits the couple for a few months or so, and it is a decision that is relatively easy to reverse. One also might argue for a long-term classification, as most such hires are made with the intent of keeping the arrangement going for several years.
5	**Long-term**. The average life of a dog is about 12 years. Over their life most dogs cost anywhere from $9,000 to $20,000 in food and vet fees.
6	**Short-term.** The decision turns on the couple's available cash and expected cash flow. Saburo and Akiko are likely to experience the benefits and costs of this decision immediately. The decision could have longer-term effects such as the type of house they buy or if they are able to afford a second car.
7	**Long-term/short-term**. This decision commits the couple for at least several months because most hires are made with the intent of keeping the arrangement going for several months, if not longer. The decision can be reversed (the stay-at-home spouse can always give "two-weeks" notice), and one can make a good argument for a short-term classification.
8	The decision is purely **short term**. The decision's horizon only spans several hours on Saturday evening; further, it is unlikely (although not out of the question) that any long-term effects will result from this decision.
9	**Long-term**. This decision has multi-year ramifications as they are likely to live in the home for many years. This decision is like a business deciding where to site the plant. Reversing this decision can be difficult and costly.

b. Many short-term decisions have longer-term implications, and it frequently is not possible to cleanly separate decisions. For example, an expensive vacation to Japan and Southeast Asia may put on hold Saburo and Akiko's plans to have one person stay at home. In the current context, the couple's budget links their decisions. Buying a second car may limit the couple's ability to hire a housekeeper (or vice-versa). **Classifying decisions via their time horizon greatly assists individuals in simplifying decision making – when confronted with a decision, thinking about the time horizon assists in delineating the costs and benefits of the decision options and when they are likely to materialize**. Unfortunately, the potential for making bad decisions arises every time we eliminate an entire class of choices (by, e.g., de-coupling decisions) and /or reduce the number of costs and benefits we consider. Good managers excel at making this tradeoff. They can quickly narrow the choices to the most viable and exciting options; they also excel at figuring out which costs and benefits are easily quantifiable, and at getting a "gut feel" estimate of the hard to quantify costs and benefits.

4. **Traceability (LO3).**

The following table provides the cost classifications, including comments pertaining to the rationale underlying each classification.

	Cost Classification& Comments
1	**I** – This cost is only partly attributable to Kappa as both Kappa and Gamma are produced in the same plant.
2	**D** – This cost is entirely attributable to Kappa. Kappa and Gamma use different raw materials, allowing us to directly trace the materials costs to each product.
3	**I** – This cost is only partly attributable to Kappa as the utilities relate to the entire plant and the production of both Kappa and Gamma.
4	**I** – This cost is only partly attributable to Kappa as the plant manager oversees all activities in the plant (i.e., the production of both Kappa and Gamma).
5	**I** – This cost is only partly attributable to Kappa as the equipment is used to produce both Kappa and Gamma.
6	**D** – This cost is entirely attributable to Kappa as the production employee only works the day shift (when the firm produces Kappa but not Gamma).

5. **Hierarchical Cost Structure: Cost Classifications (LO4).**

Unit-Level. The cost of food and drinks consumed is likely a unit-level activity – the more people, the more food and drink. While it is not possible to predict food costs perfectly, Sun and Sand will consider the number of members in residence when deciding the amount of food to make. From a control perspective, S&S's managers likely track the cost of food per member quite closely.

Batch-Level. S&S incurs many batch level costs. Consider the cost of posting lifeguards on the beach. The number of lifeguards posted is not strictly proportional to the number of members on the beach. Rather, the head lifeguard probably follows some kind of a gut feel (and local regulations) in posting more lifeguards as more people enter the beach. From experience, the head lifeguard may be able to predict usage patterns and will adjust staffing schedules accordingly.

Product-Level. The cost of maintaining the dolphins in good health is a product level cost. S&S needs to incur this cost even when there are only a few members in residence. That said, there is some correlation with the number of members; beyond a certain number, S&S might have to train more dolphins to swim with humans. This point underscores that it is only the step-size that differs between unit-, batch- and product-level costs. Ultimately, a firm's volume of business influences virtually all of its costs.

Facility-level. In addition to rent and executive salaries, the fee charged by the city for erosion control would be an example of S&S's facility level cost. S&S incurs this cost as a part of staying in business. The amount does not depend on the number of members, lifeguards on duty, or program offered.