# Hilton chapter 14

**Answers to Assigned End of Chapter Exercises, Problems, Cases**

# ANSWERS to Review Questions

* 1. The seven steps in the decision-making process are as follows:

Clarify the decision

Specify the criterion

Identify the alternatives

Develop a decision model

Collect the data

Select an alternative

Evaluate decision effectiveness

* 1. The managerial accountant’s role in the decision-making process is to participate as a proactive member of the management team, and, in particular, to provide information relevant to the decision.
  2. A quantitative analysis is expressed in numerical terms. A qualitative analysis focuses on the factors in a decision problem that cannot be expressed effectively in numerical terms.
  3. A decision model is a simplified representation of the choice problem. Unnecessary details are stripped away, and the most important elements of the problem are highlighted.
  4. The result of a quantitative analysis is that one alternative is preferred over the next-best alternative by some numerical amount, such as profit. The amount by which the best alternative dominates the second-best alternative establishes a “price” on the sum total of the qualitative characteristics that might favor the second-best alternative. Suppose, for example, that a hospital’s board of directors is considering establishing an outpatient clinic in one of the two suburban communities. The quantitative analysis of the decision suggests that site A will be more cost effective for the clinic than site B. Assume that the annual cost of running the clinic at site A will be $50,000 less than the annual cost of running the clinic at site B. Now suppose that the board of directors feels that various qualitative considerations indicate that it would be preferable to locate the clinic at site B. For example, site B might be in an economically depressed area, where it is important to bring better-quality health care to the community. Now the board of directors can put a price on these qualitative advantages to locating the clinic at site B. If the board of directors believes that the qualitative benefits at site B outweigh the $50,000 quantitative advantage at site A, then they should locate the clinic at site B.
  5. Relevant information is pertinent to a decision problem. Accurate information is precise. Timely information is available to the decision maker in time to make the decision. Objective information need not be relevant or accurate. For example, several people may agree that the interest rate in the coming year in a local community will be 10 percent. However, this information may not be accurate, since that prediction may prove to be wrong. Moreover, information about the interest rate may not be pertinent to a decision about where to locate a new branch bank within the community.
  6. Two important criteria that must be satisfied in order for information to be relevant are as follows:

1. Relevant cost or benefit information must involve a future event. In other words, the information must have a bearing on the future.
2. Relevant information must involve costs or benefits that differ among the alternatives. Costs or benefits that are the same across all of the available alternatives have no bearing on the decision.
   1. The book value of an asset is its acquisition cost less its accumulated depreciation. The book value is not a relevant cost because it is a sunk cost. It occurred in the past and has no bearing on the future.
   2. The book value of inventory, like the book value of any asset, is not a relevant cost. The inventory’s book value is based on its acquisition cost or its production cost and is, therefore, a sunk cost. It has no bearing on any future course of action.
   3. Managers sometimes exhibit a behavioral tendency to inappropriately consider a sunk cost in making a decision, because they believe that their original decision to incur the sunk cost, such as when an asset is acquired, will appear to have been a bad decision if the manager subsequently disposes of the asset. This perceived need by managers for their past decisions to appear to have been good ones may result in their inappropriate emphasis on sunk costs in making a decision.
   4. An example of an irrelevant future cost is a cost that will occur in the future but does not differ among the alternatives. For example, a bank may be considering several sites for the location of a new branch office. If the cost of hiring an architect to design the new building will not differ among the alternatives, it is an irrelevant future cost.
   5. An opportunity cost is the potential benefit given up when the choice of one action precludes a different action. For example, one opportunity cost associated with getting a college education is the student’s forgone wages from a job that might have been held during the educational period.
   6. People often exhibit a behavioral tendency to ignore or downplay the importance of opportunity costs in making a decision. Since an opportunity cost often is not a cash flow, people tend to think it is less important than costs that are represented by cash flows. This behavioral tendency can result in faulty decision making.
   7. If a firm has excess production capacity, there is no opportunity cost to the acceptance of a special order. On the other hand, if the firm is already at capacity and there is no excess production capacity, the opportunity cost associated with accepting a special order involves the contribution margin from the products that would have been manufactured with the resources devoted to the special order.
   8. In a differential-cost analysis, the decision maker determines the difference in each cost or revenue item that will occur under each of the alternatives under consideration. Then the decision maker focuses on the differences in the costs and revenues in making the decision.
   9. In making a decision about adding or dropping a product line, the decision maker should consider the avoidable expenses if the product line is not carried as well as the impact of the decision to add or drop the product line on the firm’s other operations.
   10. A joint production process is one in which the processing of a common input results in two or more distinct products known as joint products. A special decision that commonly arises in the context of the joint production process is the decision whether or not to process further one of the joint products into a different product. The proper approach for making this type of decision is to compare the incremental benefits from further processing with the incremental costs.
   11. The allocated joint processing costs are irrelevant when making a decision as to whether a joint product should be sold at the split-off point or processed further. The total joint cost will not change as a result of the decision to process further, and therefore it is irrelevant to the decision.
   12. The proper approach to making a production decision when limited resources are involved is to maximize production of the product that has the highest contribution margin per unit of scarce resource. When two or more resources are limited, the technique of linear programming may be appropriate.
   13. The contribution margin per unit of scarce resource is a product’s unit contribution margin divided by the number of units of the scarce resource required to produce one unit of the product. For example, if a product’s contribution margin per unit is $5 and it requires two hours of labor to produce one unit, the contribution margin per direct-labor hour is $2.50.
   14. Sensitivity analysis may be used to cope with uncertainty in decision making by analyzing how sensitive a decision problem is to the estimates of certain parameters. One important question that can be answered is: How much can a particular parameter estimate change before the optimal decision changes?
   15. There is an important link between decision making and managerial performance evaluation, because managers typically make decisions that maximize their perceived performance evaluations and rewards. If we want managers to make optimal decisions by properly evaluating the relevant cost and benefits, then the performance evaluation system and reward structure must be consistent with that goal.
   16. Four potential pitfalls in decision making that represent common errors are the following:
3. Paying too much attention to sunk costs.
4. Basing the analysis on unitized fixed costs rather than total fixed costs. Using unitized fixed costs is dangerous because the fixed cost per unit changes as activity changes.
5. Not identifying avoidable costs. In some kinds of decisions, it is important to identify the avoidable costs. It is critical that the decision maker make a distinction between the amount of the fixed costs that will be avoided and the amount that may have been arbitrarily allocated to a particular cost object.
6. Overlooking opportunity costs or treating them as less important than out-of-pocket costs. In a decision analysis, it is important to pay special attention to identifying and including opportunity costs.
   1. Unitized fixed costs can cause errors in decision making because the fixed cost per unit changes as the activity measure changes. For this reason, it is better to include fixed costs in the analysis in their total amounts.
   2. Sunk costs are irrelevant in decision making because they have already occurred in the past and will not change under any future, alternative course of action. Two examples of sunk costs are the book value of equipment and the book value of inventory on hand.
   3. This remark fails to recognize the fact that the identification of relevant information depends on the decision. Data that are relevant to one decision may be irrelevant to another one. Therefore, it would be impossible for the managerial-accounting system to produce only information that is relevant to all decisions.
   4. The concepts underlying a relevant-cost analysis remain valid both in an advanced manufacturing environment and in a situation where activity-based costing is used. However, when an ABC system is used, the decision maker typically is able to more accurately determine the relevant costs than when a traditional, volume-based costing system is used.
   5. Five ways to relax a bottleneck constraint are as follows:

* Working *overtime* at the bottleneck operation.
* *Retraining* employees and shifting them to the bottleneck.
* Eliminating any *non-value-added activities* at the bottleneck operation.
* *Outsourcing* (subcontracting) all or part of the bottleneck operation.
* *Investing in additional production equipment* and employing *parallel processing*, in which multiple product units undergo the same production operation simultaneously.

# SOLUTIONS to ASSIGNED EXERCISES

## Exercise 14-38

|  |  |  |
| --- | --- | --- |
| Sales revenue for one jar of silver polish |  | $8.00 |
| Less: Sales revenue for 1/4 pound of Grit 337 |  | 1.00 |
| Incremental revenue from further processing |  | $7.00 |
| Incremental costs of further processing: |  |  |
| Processing costs | $5.00 |  |
| Selling costs | .60 | 5.60 |
| Incremental contribution margin from further  processing into silver polish (per jar) |  | $1.40 |

Indifference point in units = 

=  = 8,000 jars

If more than 8,000 jars of silver polish can be sold, Juarez Corporation should process the required amount of Grit 337 further into the polish.

## Exercise 14-39

|  |  |  |  |
| --- | --- | --- | --- |
| 1. | The relevant cost of the theolite to be used in producing the special order is the 21,750*p* sales value that the company will forgo if it uses the chemical. This is an example of an opportunity cost. | |  |
|  |  |  |  |
|  | *p* denotes Argentina’s peso. |  |  |
|  |  |  |  |
| 2. | (a) 21,750*p* sales value: Discussed in requirement (1). |  |  |
|  |  |  |  |
|  | (b) 24,000*p* book value (8,000 kilograms × 3*p* per kilogram): Irrelevant, since the book value is a sunk cost. | |  |
|  |  | |  |
|  | (c) 28,800*p* current purchase cost (8,000 kilograms × 3.60*p* per kilogram): Irrelevant, since the company will not be buying any theolite. | |  |

# SOLUTIONS to ASSIGNED PROBLEMS

**PROBLEM 14-49**

1. **Per-unit contribution margins:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Standard** | | **Enhanced** | |
|  |  | |  | |
| **Selling price…………………………………..** |  | **$375.00** |  | **$495.00** |
| **Less: Variable costs:** |  |  |  |  |
| **Direct material…………………………** | **$42.00** |  | **$67.50** |  |
| **Direct labor……………………………..** | **22.50** |  | **30.00** |  |
| **Variable manufacturing overhead …** | **36.00** |  | **48.00** |  |
| **Sales commission** |  |  |  |  |
| **$375 x 10%; $495 x 10%………….**  **Total unit variable cost……………….** | **37.50** | **138.00** | **49.50** | **195.00** |
| **Unit contribution margin……………………** |  | **$237.00** |  | **$300.00** |

1. **The following costs are not relevant to the decision:**

* **Development costs—sunk**
* **Fixed manufacturing overhead—will be incurred regardless of which product is selected**
* **Sales salaries—identical for both products**
* **Market study—sunk**

1. **Martinez, Inc. expects to sell 10,000 Standard units (40,000 units x 25%) or 8,000 Enhanced units (40,000 units x 20%). On the basis of this sales forecast, the company would be advised to select the Standard model.**

|  |  |  |
| --- | --- | --- |
|  | **Standard** | **Enhanced** |
| **Total contribution margin:** |  |  |
| **10,000 units x $237; 8,000 units x $300….** | **$2,370,000** | **$2,400,000** |
| **Less: Marketing and advertising………………** | **195,000** | **300,000** |
| **Income……………………………………………...** | **$2,175,000** | **$2,100,000** |

1. **The quantitative difference between the profitability of Standard and Enhanced is relatively small, which may prompt the firm to look at other factors before a final decision is made. These factors include:**

**- Competitive products in the marketplace**

**- Data validity**

**- Growth potential of the Standard and Enhanced models**

**- Production feasibility**

**- Effects, if any, on existing product sales**

**- Break-even points**