**Chapter 4**

**CREATIVE PROBLEM SOLVING AND DECISION MAKING**

Chapter Outline

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2. Problem-Solving and Decision-Making Interrelationships
3. Decision-Making Styles
4. Decision Making in the Global Village
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21. VROOM’S PARTICIPATIVE DECISION-MAKING MODEL
22. Using the Participative Decision-Making Model
23. Participation Decision Styles

Changes From 5e to 6e Chapter 4

* The chapter has been updated, and 94 percent of the references are new to this edition.
* The opening case has been updated and some of the questions have been changed.
* The first major section has been reorganized. The first two sections have been combined as Problem-Solving and Decision-Making Interrelationships, and the Decision Making in the Global Village section has been moved up, moving the Decision-Making Model section last.
* The section on selecting the appropriate level of participation, advantages and disadvantages of using groups in decision making, is now combined in a table.
* The section Generate Creative and Innovative Alternatives has been reorganized with a new subsection, Creativity and Innovation Killers.
* There is a new section, Intuition, to discuss its role in decision making.
* The section Vroom’s Participative Decision-Making model has been reorganized and condensed.
* There is a new case and the Coke case has been updated.

Lecture Outline

**Note:** The textbook supplements include a PowerPoint presentation for each chapter, which can be used rather than or in addition to this lecture outline.

1. PROBLEM SOLVING AND DECISION MAKING: AN OVERVIEW

Recall that decision making is one of the three critical management skills. Managers make many decisions as part of their daily work on how to use the firm’s resources, and some decisions have significant consequences for firm performance.

1. **Problem-Solving and Decision-Making Interrelationships**

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| Learning Outcome (LO) 4–1. Explain the relationship among objectives, problem solving, and decision making.  Managers are responsible for setting and achieving organizational objectives. When managers do not meet objectives, a problem results. When a problem exists, decisions must be made about what, if any, action must be taken. |

1. **The Relationship Among Objectives, Problem Solving, and Decision Making**

When you do not meet objectives, you have a problem. The better you can develop plans that prevent problems before they occur, the fewer problems you will have and the more time you will have to take advantage of opportunities and respond to competitive threats.

A **problem** exists whenever objectives are not being met.**Problem solving** is the process of taking corrective action in order to meet objectives. **Decision making** is the process of selecting a course of action that will solve a problem. Decisions must be made when you are faced with a problem. Use of appropriate resources is essential in problem solving.

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| **Communication Skills Question (CSQ) 4–1. Are problem solving and decision making really all that important? How do you rate your decision-making ability?**  Answers will vary, but students should realize that the success (or failure) of a business is based on the decisions it makes. |

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| WORK APPLICATION Example student answer  4–**1. Describe a situation in which a job objective was not met. Identify the problem created and the decision made in regard to this problem.**  I was working on an order to be shipped to a customer that day by mail. However, the order was not ready on time for the 3:00 p.m. mail pickup. At around 4:00 p.m. it was ready, so the manager told me to stop working and drive to the post office so that the order would go out that night. |

1. **The Relationship Among the Management Functions, Problem Solving, and Decision Making**

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| LO 4–2. Explain the relationship among the management functions, problem solving, and decision making.  When managers perform the functions of planning, organizing, leading, and controlling, they make decisions and solve problems. |

All managers perform the same four functions: planning, organizing, leading, and controlling. While performing these functions, managers must make decisions and solve problems.

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| **Review Question (RQ) 4–1. What is the relationship among the management functions, problem solving, and decision making?**  All managers perform the same four functions: planning, organizing, leading, and controlling. While performing these functions, managers must make decisions and solve problems. |

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| WORK APPLICATION Example student answer  4–**2. Give an example of a poor decision made by a manager performing a management function. Explain the management function and the problem created by the poor decision.**  Bill came to work around 5 minutes late one day. The manager decided not to say anything to him, rather than to use the controlling function. Since the manager did not say anything, the next day Bill and Karen were both late. They figured that the boss wouldn’t say anything to them. However, the boss told them both in front of the group not to be late again. |

1. **Decision-Making Styles**
2. **Reflexive Style**

A reflexive decision maker likes to make quick decisions (“shooting from the hip”) without taking the time to get the information that may be needed and without considering alternatives. On the positive side, reflexive decision makers are decisive; they do not procrastinate. On the negative side, making quick decisions can lead to waste and duplication if the best possible alternative is overlooked.

1. **Reflective Style**

A reflective decision maker likes to take plenty of time to make decisions, gathering considerable information and analyzing several alternatives. On the positive side, the reflective type does not make hasty decisions. On the negative side, the reflective type may procrastinate, lose opportunities, and waste valuable time and other resources.

1. **Consistent Style**

Consistent decision makers tend to make decisions without either rushing or wasting time. They know when they have enough information and alternatives to make a sound decision.

1. **Decision Making in the Global Village**

People from different cultures don’t necessarily make decisions the same way. Decision-making styles often vary based on time orientation. In some countries, decisions are made more quickly than in others. In countries that are less time conscious, decision styles are more reflective than in time-conscious countries, where decision styles are more reflexive. In countries where managers use participative decision making, decisions take longer than in countries where managers use autocratic decision making.

Managers in some countries are more oriented to problem solving, whereas those in others tend to accept things the way they are. Culture influences the selection of problems to solve, the depth of analysis, the importance placed on logic and rationality, and the level of participation in decision making.

1. **The Decision-Making Model**

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| LO 4–3. List the six steps in the decision-making model.  The steps in the decision-making model are (1) classifying and defining the problem or opportunity, (2) setting objectives and criteria, (3) generating creative and innovative alternatives, (4) analyzing alternatives and selecting the most feasible, (5) planning and implementing the decision, and (6) controlling the decision. |

The **decision-making model** is a six-step process for arriving at a decision and involves (1) classifying and defining the problem or opportunity, (2) setting objectives and criteria, (3) generating creative and innovative alternatives, (4) analyzing alternatives and selecting the most feasible, (5) planning and implementing the decision, and (6) controlling the decision. Exhibit 4–1 lists these steps.

Notice that the steps do not simply go from start to finish. At any step, you may have to return to a prior step to make changes.

Following the steps in the model will not guarantee that you will make good decisions. However, using the model will increase your chances of success in problem solving and decision making.

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| APPLYING THE CONCEPT Answers  AC 4–1—Steps in Decision Making  f 1. Step 6. The manager is controlling by checking to see if the problem is solved.  b 2. Step 2. The objective is not clear.  a 3. Step 1. When defining the problem, you distinguish symptoms from causes of the problem.  d 4. Step 4. Probability theory is a technique used to analyze alternatives.  c 5. Step 3. Brainstorming is a technique used to generate creative and innovative alternatives. |
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1. CLASSIFY AND DEFINE THE PROBLEM OR OPPORTUNITY

To improve your odds of successful problem solving, follow the steps in the decision-making model. The first step in the model is to classify and define the problem, which may sometimes take the form of an opportunity.

1. **Classify the Problem**

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| LO 4–4. Describe the differences between programmed and nonprogrammed decisions and among the conditions of certainty, uncertainty, and risk.  Programmed decisions are recurrent, routine, and nonsignificant. Nonprogrammed decisions are nonrecurring, nonroutine, and significant. The difference in decision-making conditions is based on the degree of certainty of the outcome of the decision. Under conditions of certainty, you know the outcome of alternatives. Under conditions of risk, you can assign probabilities to the outcomes, but you do not know the outcomes of alternatives. Under conditions of uncertainty, lack of information or knowledge makes the outcome of each alternative unpredictable, so you cannot determine probabilities. |

Problems may be classified in terms of the decision structure involved, the conditions under which a decision will be made, and the type of decision made using the decision-making model.

1. **Decision Structure**

For **programmed decisions**, those that arise in recurring or routine situations, the decision maker should use decision rules or organizational policies and procedures to make the decision.

For **nonprogrammed decisions**, significant decisions that arise in nonrecurring and nonroutine situations, the decision maker should use the decision-making model. To be significant, a decision must be expensive and/or have major consequences for the department or organization. Nonprogrammed decisions tend to take longer to make than programmed decisions.

1. **Decision-Making Conditions**

The three **decision-making conditions** are certainty, risk, and uncertainty. When making a decision under the conditions of *certainty*, you know the outcome of each alternative in advance. When making a decision under the conditions of *risk*, you do not know the outcome of each alternative in advance but can assign probabilities to each outcome. Under conditions of *uncertainty*, lack of information or knowledge makes the outcome of each alternative unpredictable, so you cannot determine probabilities.

Most management decisions are made under conditions of risk. However, upper-level managers tend to make more uncertain decisions than lower-level managers do.

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| **RQ 4–2. Why is it necessary to determine the decision structure and decision-making conditions?**  These are the determinants of how much time and effort you should expend on making a decision and when and when not to use the decision-making model. |

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| WORK APPLICATION Example student answer  4–**3. Give an example of a programmed and a nonprogrammed decision faced by an organization you work for or have worked for, and describe the decision condition in each case.**  A nonprogrammed decision at Costco Wholesale where I work was when it put in new checkout counters with computers that scan the products. Before the new scanners, one person would read off the numbers while another punched them into the cash register. As a stock person, I walk around and made programmed decisions by determining what products need to be placed on the shelves. |

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| APPLYING THE CONCEPT Answers  AC 4–2—Classify the Problem  e 6. Nonprogrammed, uncertainty. This is a first-time decision. With a new business, it is very difficult to determine the chances of success. Nonprogrammed, risk (f) is also a good answer because it is difficult to draw a clear line between risk and uncertainty.  c 7. Programmed, risk. This is a recurring situation—high turnover. When hiring new employees, there is a chance that the new hires will not work out.  f 8. Nonprogrammed, risk. This is a significant, nonroutine decision. With an established business, there is financial information that gives a probability of success. However, there is always the chance that the past will not repeat itself.  d 9. Nonprogrammed, certainty. This is a first-time decision. To keep the money liquid, she must go with a savings account, certificate of deposit, or money market type of investment with a set rate of interest.  a 10. Programmed, certainty. This is a recurring decision. With a new car you get a warranty, which makes the investment relatively certain that the car will do the job. |

1. **Decision-Making Models**

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| LO 4–5. Describe when to use rational versus bounded rational decision making and group versus individual decision making.  Use rational decision making with a group when faced with a nonprogrammed decision with high risk or uncertainty. Use bounded rational decision making and make an individual decision when faced with a programmed decision with low risk or certainty. However, this is a general guide; there may be exceptions to the rule. |

There are two primary types of decisions that can be made using the decision-making model: rational decisions and bounded rational decisions. With *rational decisions*, the decision maker attempts to use optimizing—selecting the best possible alternative. With *bounded rational decisions*, the decision maker uses *satisficing*—selecting the first alternative that meets the minimal criteria, which can sometimes lead to suboptimal decisions.

The more complex and unstructured the decision and the higher the degree of risk and uncertainty, the greater the need to spend time conducting research with the aid of the decision-making model. *Optimize* (select the best possible alternative) when you are making nonprogrammed, high-risk, or uncertain decisions. *Satisfice* (select the first alternative that meets the minimum criteria) when you are making programmed, low-risk, or certain decisions.

B. **Select the Appropriate Level of Participation**

As a rule of thumb, the key people involved with the problem should participate. However, the current trend in management favors increased employee participation. Thus, the major question is not whether managers should allow employees to participate in problem solving and decision making but when and how this should be done.

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| **RQ 4–3. What is the current trend concerning the use of groups to solve problems and make decisions?**  The current trend in management favors increased employee participation. |

1. **Potential Advantages of Group Decision Making**

When group members have something to contribute to the decision-making process, six potential advantages accrue:

1. *Better-quality decisions.* Groups usually do a better job of solving complex problems than the best individual in the group would alone. Using groups to solve problems and make decisions is appropriate when an organization faces significant nonprogrammed decisions and conditions of risk or uncertainty.
2. *More information, alternatives, creativity, and innovation.* A group of people usually has more information than an individual does. Creative or innovative ideas (or products) often arise from the combined input of members building on each other’s ideas.
3. *Better understanding of the decision.* When people participate in decision making, they usually understand the alternatives presented and why the one selected was the best alternative. This allows easier implementation of the decision.
4. *Greater commitment to the decision.* Researchers have shown that people involved in making a decision have increased commitment to implementing the decision.
5. *Improved morale and motivation.* Participation in problem solving and decision making is rewarding and personally satisfying to the people involved.
6. *Good training.* Allowing participation in decision making trains people to work in groups by developing group process skills.
7. **Potential Disadvantages of Group Decision Making**

Groups need to be careful to minimize the following disadvantages of group decision making:

1. *Wasted time and slower decision making.* It takes longer for a group to make a decision. With programmed decisions and conditions of certainty or low risk, individual decision making is generally more cost effective than group decision making is.
2. *Satisficing.* Groups are more likely to satisfice than an individual, especially when group meetings are not run effectively. When one person is responsible, that person stands out if a good or poor decision is made. But with a group, usually no one person gets the blame or credit for the decision.
3. *Domination and goal displacement.* One group member or a subgroup may dominate the group decision. *Goal displacement* occurs when an individual or subgroup tries to get the group to accept a particular alternative or dominates the group for personal reasons rather than pursuing the original goal of finding the best solution.
4. *Conformity and groupthink.* Group members may feel pressured to go along with the group’s decision without questioning it out of fear of not being accepted or because they do not want to cause conflict. Groupthinkoccurs when members withhold different views to appear as though they are in agreement.

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| **CSQ 4–2. Which potential disadvantage of group problem solving and decision making do you think arises most frequently?**  Answers will vary. |

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| WORK APPLICATION Example student answer  4–**4. Give an example of a group decision made in an organization you work for or have worked for. Identify the advantages and disadvantages encountered by the group.**  We had a meeting to determine where the company picnic would be, what we would eat, and the activities that would take place. The group did not satisfice, the women tended to dominate, and groupthink was not a problem. I’d say that the major disadvantage was the time wasted. I don’t think the decision was any better; a simple, small committee could have done the whole thing just as well. On the other hand, there were more alternatives offered and people understood the decision. It’s hard to say if people were more committed and motivated because the picnic is on company time and you have to go anyway. |

D. **Define the Problem**

After you have classified the problem, you or the group must define it clearly and accurately. Defining the problem accurately requires conceptual skills.

An important part of defining the problem is to distinguish symptoms from cause.

1. **Distinguish Symptoms From the Cause of the Problem**

Begin by listing the observable and describable occurrences (symptoms) that indicate a problem exists. Only after doing this can you determine the cause of the problem. If you eliminate the cause, the symptoms should disappear. If you don’t eliminate the cause of the problem, the symptoms will reappear.

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| **RQ 4–4. Is a decrease in sales and/or profits a symptom or a cause of a problem?**  They are symptoms that a problem exists; they do not tell you why sales and profits have decreased. |

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| WORK APPLICATION Example student answer  4–**5. Define a problem in an organization you work for or have worked for. Be sure to clearly distinguish the symptoms from the causes of the problem.**  At our supermarket, sales are down. This is a symptom. The cause of the problem is the new supermarket that moved in across the street from us. |

1. SET OBJECTIVES AND CRITERIA

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| LO 4–6. State the difference between an objective and “must” and “want” criteria.  An objective is the result you want to achieve when making the decision. “Must” criteria are the requirements that an alternative must meet to be selected. “Want” criteria are desirable but are not necessary for the alternative to be selected. |

1. **Setting Objectives**

Setting clear objectives helps managers to make better decisions. Objectives drive decisions, and they must state what the decisions should accomplish—whether they will solve a problem or take advantage of an opportunity.

1. **Setting Criteria**

**Criteria** are the standards that an alternative must meet to be selected as the decision that will accomplish the objective.Having multiple criteria helps to optimize the decision. You should distinguish “must” and “want” criteria. “Must” criteriahave to be met in order for an alternative to be acceptable, whereas “want” criteria are desirable but not necessary for the alternative to be acceptable.

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| **RQ 4–5. Would a maximum price of $1,000 to spend on a stereo be an objective or a criterion?**  This is a “must” criterion. The objective would be to buy a stereo. |

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| WORK APPLICATION Example student answer  4–**6. Identify some of the qualification criteria (college degree, years of experience, etc.) for jobs at an organization you work for or have worked for. Distinguish any “must” and “want” criteria.**  I work at Figures and Fitness exercise salon. To be an exercise instructor, you must be a club member. Figures and Fitness always recruits from the members. The manager looks for members who are in excellent condition, are capable of leading efficient exercise classes, enjoy working out, and who interact well with other members—“must” criteria. The manager wants the instructors to be attractive—“want” criteria. |

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| JOIN THE DISCUSSION: ETHICS & SOCIAL RESPONSIBILITY – 4–1  Avoiding Taxes  Answers will vary based on opinion. |

1. GENERATE CREATIVE AND INNOVATIVE ALTERNATIVES

After the problem is defined and objectives and criteria are set, you generate possible alternatives for solving the problem or exploiting the opportunity (step 3 of the decision-making model).

With programmed decision making, the alternative is usually predetermined. However, with nonprogrammed decision making, time, effort, and resources are needed to come up with new creative and innovative ideas.

1. **Creativity and Innovation**

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| LO 4–7. State the difference between creativity and innovation.  Creativity is a way of thinking that generates new ideas. Innovation is the implementation of a new idea. |

**Creativity** is a way of thinking that generates new ideas. Creativity can lead to innovation. **Innovation** is the implementation of a new idea. Two important types of innovation are product innovation (new things) and process innovation (new ways of doing things). *Product innovations* are changes in outputs (goods or services) to increase customer value. *Process innovations* are changes in the transformation of inputs into outputs.

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| **RQ 4–6. Is there really a difference between creativity and innovation?**  Yes. Creativity is a way of thinking that generates new ideas. Innovation is the implementation of a new idea. Creativity can lead to innovation. |

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| **CSQ 4–3. Are creativity and innovation really important to all types of businesses? Is it important to evaluate a creative idea before it becomes an innovation?**  Yes. If businesses want to attract and retain customers, they need continuous creativity and process/product innovations.  Yes. Businesses need to make sure the creative idea will be beneficial and feasible. |

1. **Creativity and Innovation Killers.**

Statements such as “it’s impossible” and “it can’t be done” discourage creativity and innovation.

1. **The Creative Process**

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| LO 4–8. List and explain the three stages in the creative process.  The three stages are (1) preparation—developing familiarity with the problem, (2) incubation and illumination—taking a break from the problem and perhaps getting an idea for the solution, and (3) evaluation—making sure the idea will work. |

The three stages in the **creative process** are (1) preparation, (2) incubation and illumination, and (3) evaluation.

1. *Preparation*. First, you must define the problem by getting others’ opinions, feelings, and ideas, as well as the facts. When solving a problem or seeking opportunities, look for new angles, use imagination and invention, and don’t limit yourself to the boundaries of past thinking. Generate as many possible solutions as you can think of without making a judgment.
2. *Incubation and illumination*. After generating alternatives, take a break; sleep on the problem. During the incubation stage, as your subconscious works on the problem, you may gain an insight into the solution—*illumination*. Illumination can also happen while working on the problem; it is sometimes referred to as the “Aha, now I get it” phenomenon.
3. *Evaluation*. Before implementing a solution, you should evaluate the alternative to make sure the idea is practical. A good approach to use when evaluating a solution or alternative is to become the devil’s advocate. With the **devil’s advocate** **approach**, group members focus on defending a solution while others try to come up with reasons the solution will not work. Using the devil’s advocate approach usually leads to more creativity as the idea is improved upon.

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| WORK APPLICATION Example student answer  4–**7. Give an example of how you or someone else solved a problem using the stages in the creative process. Be sure to list the steps and note whether illumination came during incubation or while working on the problem.**  I’m a member of the parish council at Holy Cross Church.  *Step 1. Preparation*—We were working on developing an organization chart so committee members would understand their responsibilities and working relationships. We did not finalize the chart at the meeting; instead, we were asked to think about it for the next meeting.  *Step 2. Incubation and illumination*—When I was driving home listening to the radio (incubation), how to better organize the chart came to me (illumination). When I got home, I made a revised chart.  *Step 3. Evaluation*—At the next meeting, I presented my new chart to the group. During the discussion, a few members recommended minor changes, which were made, and the final chart was accepted. |

1. **Using Information to Generate Alternatives**

Successful managers use facts, information, and knowledge to make decisions. Decisions should be based on solid information rather than simply intuition. However, when generating alternatives, the question for many managers is, “How much information and how many alternatives do I need, and where should I get them?” There is no simple answer. The more important the decision, generally, the more information and/or alternatives you need. However, if you get too much information or too many alternatives, the decision becomes too complex and the best alternative may not be selected.

1. **Using Information and Technology to Generate Alternatives**

Technology, especially the Internet, has shown considerable potential for assisting with problem solving and decision making, as it provides so much data instantly.

1. **Using Groups to Generate Creative Alternatives**

A variety of methods are available for using groups to generate creative alternative solutions. Five of the more popular techniques, illustrated in Exhibit 4–7, are brainstorming, synectics, nominal grouping, consensus mapping, and the Delphi technique.

1. **Brainstorming**

**Brainstorming** is the process of suggesting many possible alternatives without evaluation. The group is presented with a problem and asked to develop as many solutions as possible. Members should be encouraged to make wild, extreme suggestions. They should also build on suggestions made by others. However, members should not react in any way, favorably or unfavorably, to any of the members’ contributions, including their own. When selecting members for a brainstorming group, try to include diverse people; 5 to 12 people make up a good-sized group. Status differences should be ignored; everyone should have an equal voice. None of the alternatives should be evaluated until all possible alternatives have been presented.

A newer form of brainstorming is electronic brainstorming. With electronic brainstorming, people use computers to generate alternatives. Participants synchronously send ideas without getting together.

1. **Synectics**

**Synectics** is the process of generating novel alternatives through role playing and fantasizing. Synectics focuses on generating novel ideas rather than a large quantity of ideas. At first, the group leader does not even state the exact nature of the problem so that group members avoid preconceptions.

1. **Nominal Grouping**

**Nominal grouping** is the process of generating and evaluating alternatives using a structured voting method. This process usually involves six steps:

*Listing.* Each participant generates ideas in writing.

*Recording.* Each member presents one idea at a time and the leader records them where everyone can see them. This continues until all ideas are posted.

*Clarification.* Alternatives are clarified through a guided discussion, and any additional ideas are listed.

*Ranking.* Each employee rank-orders the ideas and identifies what he or she sees as the top three; low-ranked alternatives are eliminated.

*Discussion.* Rankings are discussed for clarification, not persuasion. During this time, participants should explain their choices and their reasons for making them.

*Voting.* A secret vote is taken to select the alternative.

1. **Consensus Mapping**

**Consensus mapping** is the process of developing group agreement on a solution to a problem. If a consensus cannot be reached, the group does not make a decision. In consensus mapping, the group categorizes or clusters ideas in the process of trying to agree on a single solution. A major benefit of consensus mapping is that because any solution chosen is the group’s, members generally are more committed to implementing it.

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| **RQ 4–7. What is the major difference between nominal grouping and consensus mapping?**  Consensus mapping differs from nominal grouping because there can be no competitive struggle ending in a vote that may force a solution on some members of the group. |

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| WORK APPLICATION Example student answer  4–**8. Give examples of organizational problems for which brainstorming, nominal grouping, or consensus mapping would be appropriate techniques.**  The Gap management is always concerned about getting more sales. Displays are considered a primary source for increasing sales. I think the manager could have a brainstorming session with employees to try to come up with some ideas for more creative displays. |

1. **The Delphi Technique**

The *Delphi technique* involves using a series of confidential questionnaires to refine a solution. Responses on the first questionnaire are analyzed and resubmitted to participants on a second questionnaire. This process may continue for five or more rounds before a consensus emerges. Managers commonly use the Delphi technique for technological forecasting.

Upper-level managers commonly use synectics and the Delphi technique for a specific decision. Brainstorming, nominal grouping, and consensus mapping techniques are frequently used at the department level with work groups.

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| APPLYING THE CONCEPT Answers  AC 4–3—Using Groups to Generate Alternatives  a 11. Brainstorming. The group may come up with some creative ideas that might be good innovations.  e 12. Delphi technique. Projecting future trends calls for a forecasting technique.  b 13. Synectics. Developing new toys requires generating novel ideas.  d 14. Consensus mapping. Using consensus mapping to get group agreement on a solution to their morale problem would be ideal in this situation.  c 15. Nominal grouping. A voting technique would work fine for selecting furniture. |

1. **Decision Trees**

After you come up with alternative problem solutions, you may want to make a decision tree. A *decision tree* is a diagram of alternatives. The diagram gives a visual picture of the alternatives, which makes it easier for some people to analyze them.

When creating a decision tree, you write down all the alternative solutions to a problem. After listing alternatives, you analyze them and make a decision.

1. ANALYZE ALTERNATIVES AND SELECT THE MOST FEASIBLE

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| LO 4–9. Describe the differences among quantitative techniques, the Kepner-Tregoe method, and cost-benefit analysis for analyzing and selecting an alternative.  Quantitative techniques and the Kepner-Tregoe method are management science approaches; cost-benefit analysis is not. Quantitative methods use math to objectively select the alternative with the highest value. The Kepner-Tregoe method uses math, with some subjectivity in selecting and weighting criteria, to select the alternative with the highest value. Cost-benefit analysis is primarily based on subjective analysis; it can use some math, but alternatives do not have a final number value to compare. |

Notice that in the decision-making model in Exhibit 4–1, generating alternatives and analyzing alternatives and selecting the most feasible are two different steps (steps 3 and 4). This is because generating and evaluating alternatives at the same time tends to lead to satisficing and wasting time discussing poor alternatives rather than optimizing.

In evaluating alternatives, you should think forward and try to predict the possible outcome of each. Be sure to compare alternatives to the objectives and criteria set in step 2 of the decision-making process. In addition, compare each alternative to the others.

There are three approaches that are commonly used to analyze alternative solutions: quantitative techniques, the Kepner-Tregoe method, and cost-benefit analysis.

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| **RQ 4–8. Why are generating and analyzing alternatives separate steps in the decision-making model?**  Generating and evaluating alternatives at the same time tends to lead to satisficing and wasting time discussing poor alternatives rather than optimizing. |

A. Quantitative Techniques

As you read in the Appendix to Chapter 1, one of the five approaches to management is management science, which uses math to aid in problem solving and decision making. Quantitative techniques use math in the objective analysis of alternative solutions.

**1. Break-Even Analysis**

Break-even analysis allows calculation of the volume of sales or revenue that will result in a profit. It involves forecasting the volume of sales and the cost of production. The break-even point occurs at the level where no profit or loss results.

**2. Capital Budgeting**

This technique is used to analyze alternative investments in assets. The payback approach allows the calculation of the number of years it will take to recover the initial cash invested. Another approach computes the average rate of return. It is appropriate when the yearly returns differ. A more sophisticated approach, *discounted cash flow*, takes into account the time value of money. It assumes that a dollar today is worth more than a dollar in the future.

**3. Linear Programming**

Optimum allocation of resources is determined using linear programming (LP). The resources that managers typically allocate are time, money, space, material, equipment, and employees.

**4. Queuing Theory**

Queuing theory focuses on waiting time. An organization can have any number of employees providing service to customers. If the organization has too many employees working at one time, not all of them will be waiting on customers and money paid to them is lost. If the organization has too few employees working at one time, it can lose customers who don’t want to wait for service, which results in lost revenue. Queuing theory helps an organization balance these two costs.

**5. Probability Theory**

Probability theory enables the user to make decisions that take into consideration conditions of risk. The user assigns a probability of success or failure to each alternative. The user then calculates the expected value, which is the payoff or profit from each combination of alternatives and outcomes. The calculations are usually done on a payoff matrix by multiplying the probability of the outcome by the benefit or cost.

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| **RQ 4–9. What quantitative techniques are commonly used to compare alternatives?**  The five quantitative techniques are (1) break-even analysis, (2) capital budgeting, (3) linear programming, (4) queuing theory, and (5) probability theory. |

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| WORK APPLICATION Example student answer  4–**9. Give examples from an organization you work for or have worked for of decisions that might appropriately be analyzed using the quantitative techniques of break-even analysis, capital budgeting, linear programming, queuing theory, and probability theory.**  McDonald’s probably uses queuing theory to determine the number of checkout stations for the restaurant and linear programming to figure out how to set up the restaurant to optimize fast-food productivity. |

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| APPLYING THE CONCEPT Answers  AC 4–4—Selecting Quantitative Methods  e 16. Probability theory. Stock investments are usually made under the condition of risk.  d 17. Queuing theory. In a fast-food restaurant, when employees are overworked, there are lines of people waiting. When there are no lines, they are idle. Queuing theory would help the restaurant balance these two.  a 18. Break-even analysis. If the owner pays $10 and rents them for $2, it takes five rentals to break even. To make it worthwhile to add a DVD to the rental list, it would take more than five rentals to make a profit.  c 19. Linear programming. The manager is trying to maximize the use of limited resources.  b 20. Capital budgeting. Machines are capital equipment. Using discounted cash flow is a good choice. |

B. The Kepner-Tregoe Method

The Kepner-Tregoe method combines the objective quantitative approach with some subjectivity. The subjectivity comes from determining “must” and “want” criteria and assigning weighted values to them.

**Step 1: Assess each alternative with regard to the “must” criteria.**

**Step 2: Rank the importance of each “want” criterion on a scale of 1 to 10 (10 being most important).**

**Step 3: Determine how well each alternative meets each “want” criterion.**

**Step 4: Compute the weighted score (WS) for each alternative on each criterion.**

**Step 5: Select the alternative with the highest total weighted score.**

C. Cost-Benefit, Pros and Cons, and Intuition

**1. Cost-benefit analysis**

There are times when it is unclear whether the benefit to be gained from an alternative is worth its cost. In such cases, management science approaches alone are not effective. *Cost-benefit analysis* is a technique for comparing the cost and benefit of each alternative course of action using subjective intuition and judgment along with math.

**2. Pros and Cons**

With pros and cons analysis, you identify the advantages, which can be considered the benefits, and the disadvantages, which can be considered the costs, of each alternative.

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| **RQ 4–10. When is the cost-benefit analysis commonly used?**  The cost-benefit analysis is commonly used when it is unclear whether the benefit to be gained from an alternative is worth its cost. |

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| **CSQ 4–4. What is the role of intuition in decision making? Should managers use more objective or subjective intuition techniques when making decisions?**  Intuition, the ability to synthesize information quickly and effectively, can help guide a wide range of critical decisions.  Answers will vary. |

**3. Intuition**

*Intuition* is used when you make a decision based on experience, feeling, and accumulated judgment; it is unconscious reasoning. When you have dealt with a problem before and it comes up again, you can act quickly with what seems to be limited information when in fact it is based on your experience.

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| **CSQ 4–5. Have you ever used any of the techniques for analyzing and selecting an alternative? If so, which one(s)?**  Answers will vary. |

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| WORK APPLICATION Example student answer  4–**10. Give examples from an organization where you work or have worked of decisions that might appropriately be analyzed using the Kepner-Tregoe method and cost-benefit analysis.**  The office continually upgrades the computers every few years. When managers make the next decision, they could use the Kepner-Tregoe Method. My manager uses the cost-benefit analysis when she assigns us work. She mentally judges our strengths and weaknesses and delegates accordingly. |

D. Ethics and Social Responsibility in Decision Making

Today, corporations are expected to be ethical and socially responsible. Doing the right thing is not only a moral issue, it invariably makes companies more competitive and more reputable.

When performing the management functions, you need to maintain high ethical standards. As a manager, you should follow the ethical guidelines in Chapter 2 when analyzing alternatives to make sure you select one that is ethical while striving to be socially responsible and considering sustainability.

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| **CSQ 4–6. Should managers be ethical in their decision making? If so, how should ethics be used in decision making?**  Yes. When performing the management functions, managers need to maintain high ethical standards and follow ethical guidelines.  Answers will vary, but the ethical guidelines discussed in Chapter 2 (Golden Rule, Four-Way Test, and the stakeholders’ approach to ethics) can all be used. |

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| JOIN THE DISCUSSION: ETHICS & SOCIAL RESPONSIBILITY – 4–2  Selling Stocks  Answers will vary based on opinion. |

1. PLAN, IMPLEMENT THE DECISION, AND CONTROL

The final two steps in the decision-making model involve planning and implementing the decision (step 5) and controlling (step 6). After making a decision, you develop a plan of action with a schedule for implementation.

After a decision has been made and plans developed, the plans must be implemented. Communicating the plan to all employees is critical to successful implementation. In implementing a decision, it is likely to be necessary to delegate assignments to others.

Control methods should be developed while planning to measure decision outcomes. Checkpoints should be established to determine whether the chosen alternative is solving the problem. If not, corrective action may be needed. When managers will not admit that they made a bad decision, they are in the process known as *escalation of commitment*. When you make a poor decision, you should admit the mistake and try to rectify it by going back over the steps in the decision-making model.

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| **CSQ 4–7. Have you or someone you know experienced escalation of commitment? If so, explain.**  Answers will vary. |

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| **CSQ 4–8. Do men and women make decisions differently?**  Answers will vary. |

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| **CSQ 4–9. Have you ever made a decision with information that was not timely, of good quality, complete, and/or relevant? If so, was the decision a good one? Why or why not?**  Answers will vary. |

1. VROOM’S PARTICIPATIVE DECISION-MAKING MODEL

In 1973, Victor Vroom and Philip Yetton published a decision-making model, which Vroom and Arthur Jago refined and expanded to four models in 1988. The models incorporate two factors: individual versus group decisions and time-driven versus development-driven decisions.

In 2000, Vroom published a revised version of his model.

The **participative decision-making model** is a time-driven or development-driven decision tree that assists a user in selecting one of five leadership styles (decide, consult individuals, consult group, facilitate, and delegate) to use in a given situation (based on seven questions/variables) to maximize a decision. Vroom’s model is called a normative model because it provides a sequential set of questions that are rules (norms) to follow to determine the best decision style for the given situation. To use the participative model, you must have a specific decision to make, have the authority to make the decision, and have specific group members who may participate in the decision.

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| **RQ** **4–11. For what is Vroom’s participative decision-making model primarily used?**  The Vroom model is primarily used to determine when to use a group and the level of participation to be used to make a decision. |

1. **Using the Participative Decision-Making Model**
2. **Select the Time-Driven or Development-Driven Model.** First you must choose one of the two versions of the model. The choice is determined by whether timeliness or group development is more important in the given situation.

* Use the *time-driven model* when it is more important to make a decision relatively quickly.
* Us the *development-driven model* when it is more important to gain group commitment and support by giving group members decision-making practice.

1. **Answer Questions That Determine the Appropriate Participative Decision Style**

To determine which of the five leadership styles is the most appropriate for a given situation, you answer a series of diagnostic questions based on seven variables.

Here is an expanded version from the 5e.

1. *Decision Significance:* How important is the decision to the success of the project or organization?Is the decision of high (H) or low (L) importance? When decisions are highly important, leaders need to be involved.
2. *Importance of Commitment:* How important is group commitment to implementing the decision? If group acceptance of the decision is critical to effective implementation, importance is high (H); if group commitment is not important, importance is low (L). When group commitment to implementing a decision is vital, the group generally needs to be involved in making the decision.
3. *Leader Expertise:* How much knowledge and expertise does the leader have with respect to this decision?Is expertise high (H) or low (L)? The more expertise the leader has, the less need there is for group participation.
4. *Likelihood of Commitment:* If the leader were to make the decision alone, is the certainty that the group would be committed to the decision high (H) or low (L)?When the decision is one that the group will like and want to implement, there is less need to involve them in the decision.
5. *Group Support for Objectives:* Does the group show high (H) or low (L) support for the team or organizational goals to be attained?Higher levels of group participation are acceptable with high levels of support.
6. *Group Expertise:* How much knowledge and expertise do individual group members have with respect to this decision? Is expertise high (H) or low (L)? The more expertise group members have, the greater the group participation can be.
7. *Team Competence:* Is group members’ competence in working together as a team to solve the problem high (H) or low (L)? With high team competence, more participation can be used.

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| WORK APPLICATION Example student answer  4–**11. Give an example of a specific decision that you or your boss have had to make. Was the decision time driven or development driven? Using Exhibit 4–11, select the appropriate decision style for the situation. Be sure to state the questions you answered and how (H or L) you answered each.**  My boss had to make the decision to give me the day off or not. The decision was time driven, as it had to be made in a few days. The decision was not important to the organization (Q1 = low), and I would have to work if he said no (Q2 = low). The boss just made the decision by himself to let me have the day off using the decide style. |

1. **Participation Decision Styles**

Vroom identified five leadership styles based on the level of participation of group members in the decision.

* **Decide.** The leader makes the decision alone and announces it, or sells it, to the group. The leader may get information from others outside the group and within the group without specifying the problem.
* **Consult Individuals.** The leader describes the problem to individual group members, gets information and suggestions, and then makes the decision.
* **Consult Group.** The leader holds a group meeting and describes the problem to the group, gets information and suggestions, and then makes the decision.
* **Facilitate.** The leader holds a group meeting and acts as a facilitator as the group works to define the problem and the limits within which a decision must be made. The leader seeks participation, debate, and concurrence on the decision without pushing his or her ideas. However, the leader has the final say on the decision.
* **Delegate.** The leader lets the group diagnose the problem and make the decision within stated limits. The role of the leader is to answer questions and provide encouragement and resources.

Vroom has developed a computerized version of his model that is more complex and more precise yet easier to use than the version just described. It combines the time-driven and development-driven versions into one model, includes 11 variables/questions (rather than 7), and has five possible levels for each variable (not simply H or L). In addition, the computerized version guides the user through the process of analyzing the situation with definitions, examples, and other forms of help.

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| APPLYING THE CONCEPT Answers  AC 4–5—The Participative Decision-Making Model  d 21. Facilitate. (Q1 = H, Q2 = H, Q3 = L, Q4 = L, Q5 = H, Q6 = H) Seek the group’s ideas during the brainstorming session without pushing your ideas. Form your decision with consideration to their ideas, but you ultimately have the final say on whatever decision is made.  b 22. Consult individually. (Q1 = H, Q2 = H, Q3 = L, Q4 = H, Q5 = L) Talk alone to the person that you think is doing it. Warn the employee that if it continues, he or she will be fired  e 23. Delegate. (Q1 = H, Q2 = H, Q4 = H, Q5 = H, Q6 = H, Q7 = H) Let the group select the new person.  c 24. Consult group. (Q1 = H, Q2 = H, Q4 = L, Q5 = L) Have a team meeting to discuss the problem and how to solve it.  a 25. Decide. (Q1 = L, Q2 = L) Shop around for the best deal. |

LEARNING OUTCOMES AND ANSWERS

The chapter summary is organized to answer the learning objectives for Chapter 4. They are also found at the end of the chapter and can be used as short answer questions on exams.

*These learning outcomes are included in the test bank in the concept section.*

4–1. **Explain the relationship among objectives, problem solving, and decision making.**

Managers are responsible for setting and achieving organizational objectives. When managers do not meet objectives, a problem results. When a problem exists, decisions must be made about what, if any, action must be taken.

4–2. **Explain the relationship among the management functions, problem solving, and decision making.**

When managers perform the functions of planning, organizing, leading, and controlling, they make decisions and solve problems.

4–3. **List the six steps in the decision-making model.**

The steps in the decision-making model are (1) classifying and defining the problem or opportunity, (2) setting objectives and criteria, (3) generating creative and innovative alternatives, (4) analyzing alternatives and selecting the most feasible, (5) planning and implementing the decision, and (6) controlling the decision.

4–4. **Describe the differences between programmed and nonprogrammed decisions and among the conditions of certainty, uncertainty, and risk.**

Programmed decisions are recurrent, routine, and nonsignificant. Nonprogrammed decisions are nonrecurring, nonroutine, and significant. The difference in decision-making conditions is based on the degree of certainty of the outcome of the decision. Under conditions of certainty, you know the outcome of alternatives. Under conditions of risk, you can assign probabilities to the outcomes, but you do not know the outcomes of alternatives. Under conditions of uncertainty, lack of information or knowledge makes the outcome of each alternative unpredictable, so you cannot determine probabilities.

4–5. **Describe when to use rational versus bounded rational decision making and group versus individual decision making.**

Use rational decision making with a group when faced with a nonprogrammed decision with high risk or uncertainty. Use bounded rational decision making and make an individual decision when faced with a programmed decision with low risk or certainty. However, this is a general guide; there may be exceptions to the rule.

4–6. **State the difference between an objective and “must” and “want” criteria.**

An objective is the result you want to achieve when making the decision. “Must” criteria are the requirements that an alternative must meet to be selected. “Want” criteria are desirable but are not necessary for the alternative to be selected.

4–7. **State the difference between creativity and innovation.**

Creativity is a way of thinking that generates new ideas. Innovation is the implementation of a new idea.

4–8. **List and explain the three stages in the creative process.**

The three stages are (1) preparation—developing familiarity with the problem, (2) incubation and illumination—taking a break from the problem and perhaps getting an idea for the solution, and (3) evaluation—making sure the idea will work.

4–9. **Describe the differences among quantitative techniques, the Kepner-Tregoe method, and cost-benefit analysis for analyzing and selecting an alternative.**

Quantitative techniques and the Kepner-Tregoe method are management science approaches; cost-benefit analysis is not. Quantitative methods use math to objectively select the alternative with the highest value. The Kepner-Tregoe method uses math, with some subjectivity in selecting and weighting criteria, to select the alternative with the highest value. Cost-benefit analysis is primarily based on subjective analysis; it can use some math, but alternatives do not have a final number value to compare.

WORK APPLICATION SAMPLE ANSWERS

(Most of the answers are actual student answers or based on student answers. You may give these answers as part of your lecture before, after, or in place of getting student answers.)

*These work applications are included in the test bank in the application section.*

4–1. **Describe a situation in which a job objective was not met. Identify the problem created and the decision made in regard to this problem.**

I was working on an order to be shipped to a customer that day by mail. However, the order was not ready on time for the 3:00 p.m. mail pickup. At around 4:00 p.m. it was ready, so the manager told me to stop working and drive to the post office so that the order would go out that night.

4–2. **Give an example of a poor decision made by a manager performing a management function. Explain the management function and the problem created by the poor decision.**

Bill came to work around 5 minutes late one day. The manager decided not to say anything to him, rather than to use the controlling function. Since the manager did not say anything, the next day Bill and Karen were both late. They figured that the boss wouldn’t say anything to them. However, the boss told them both in front of the group not to be late again.

4–3. **Give an example of a programmed and a nonprogrammed decision faced by an organization you work for or have worked for, and describe the decision condition in each case.**

A nonprogrammed decision at Costco Wholesale where I work was when it put in new checkout counters with computers that scan the products. Before the new scanners, one person would read off the numbers while another punched them into the cash register. As a stock person, I walk around and made programmed decisions by determining what products need to be placed on the shelves.

4–4. **Give an example of a group decision made in an organization you work for or have worked for. Identify the advantages and disadvantages encountered by the group.**

We had a meeting to determine where the company picnic would be, what we would eat, and the activities that would take place. The group did not satisfice, the women tended to dominate, and groupthink was not a problem. I’d say that the major disadvantage was the time wasted. I don’t think the decision was any better; a simple, small committee could have done the whole thing just as well. On the other hand, there were more alternatives offered and people understood the decision. It’s hard to say if people were more committed and motivated because the picnic is on company time and you have to go anyway.

4–5. **Define a problem in an organization you work for or have worked for. Be sure to clearly distinguish the symptoms from the causes of the problem.**

At our supermarket, sales are down. This is a symptom. The cause of the problem is the new supermarket that moved in across the street from us.

4–6. **Identify some of the qualification criteria (college degree, years of experience, etc.) for jobs at an organization you work for or have worked for. Distinguish any “must” and “want” criteria.**

I work at Figures and Fitness exercise salon. To be an exercise instructor, you must be a club member. Figures and Fitness always recruits from the members. The manager looks for members who are in excellent condition, are capable of leading efficient exercise classes, enjoy working out, and who interact well with other members—“must” criteria. The manager wants the instructors to be attractive—“want” criteria.

4–7. **Give an example of how you or someone else solved a problem using the stages in the creative process. Be sure to list the steps and note whether illumination came during incubation or while working on the problem.**

I’m a member of the parish council at Holy Cross Church.

*Step 1. Preparation*—We were working on developing an organization chart so committee members would understand their responsibilities and working relationships. We did not finalize the chart at the meeting; instead, we were asked to think about it for the next meeting.

*Step 2. Incubation and illumination*—When I was driving home listening to the radio (incubation), how to better organize the chart came to me (illumination). When I got home, I made a revised chart.

*Step 3. Evaluation*—At the next meeting, I presented my new chart to the group. During the discussion, a few members recommended minor changes, which were made, and the final chart was accepted.

4–8. **Give examples of organizational problems for which brainstorming, nominal grouping, or consensus mapping would be appropriate techniques.**

The Gap management is always concerned about getting more sales. Displays are considered a primary source for increasing sales. I think the manager could have a brainstorming session with employees to try to come up with some ideas for more creative displays.

4–9. **Give examples from an organization you work for or have worked for of decisions that might appropriately be analyzed using the quantitative techniques of break-even analysis, capital budgeting, linear programming, queuing theory, and probability theory.**

McDonald’s probably uses queuing theory to determine the number of checkout stations for the restaurant and linear programming to figure out how to set up the restaurant to optimize fast-food productivity.

4–10. **Give examples from an organization where you work or have worked of decisions that might appropriately be analyzed using the Kepner-Tregoe method and cost-benefit analysis.**

The office continually upgrades the computers every few years. When managers make the next decision, they could use the Kepner-Tregoe method. My manager uses the cost-benefit analysis when she assigns us work. She mentally judges our strengths and weaknesses and delegates accordingly.

4–11. **Give an example of a specific decision that you or your boss have had to make. Was the decision time driven or development driven? Using Exhibit 4–11, select the appropriate decision style for the situation. Be sure to state the questions you answered and how (H or L) you answered each.**

My boss had to make the decision to give me the day off or not. The decision was time driven, as it had to be made in a few days. The decision was not important to the organization (Q1 = low), and I would have to work if he said no (Q2 = low). The boss just made the decision by himself to let me have the day off using the decide style.

REVIEW QUESTION ANSWERS

T/F Answers are found at the end of the chapter.

*These review questions are included in the test bank in the concept section.*

**4–1. What is the relationship among the management functions, problem solving, and decision making?**

All managers perform the same four functions: planning, organizing, leading, and controlling. While performing these functions, managers must make decisions and solve problems.

**4–2. Why is it necessary to determine the decision structure and decision-making conditions?**

These are the determinants of how much time and effort you should expend on making a decision and when and when not to use the decision-making model.

**4–3. What is the current trend concerning the use of groups to solve problems and make decisions?**

The current trend in management favors increased employee participation.

**4–4. Is a decrease in sales and/or profits a symptom or a cause of a problem?**

They are symptoms that a problem exists; however, they do not tell you why sales and profits have decreased.

**4–5. Would a maximum price of $1,000 to spend on a stereo be an objective or a criterion?**

This is a “must” criterion. The objective would be to buy a stereo.

**4–6. Is there really a difference between creativity and innovation?**

Yes. Creativity is a way of thinking that generates new ideas. Innovation is the implementation of a new idea. Creativity can lead to innovation.

**4–7. What is the major difference between nominal grouping and consensus mapping?**

Consensus mapping differs from nominal grouping because there can be no competitive struggle ending in a vote that may force a solution on some members of the group.

**4–8. Why are generating and analyzing alternatives separate steps in the decision-making model?**

Generating and evaluating alternatives at the same time tend to lead to satisficing and wasting time discussing poor alternatives rather than optimizing.

**4–9. What quantitative techniques are commonly used to compare alternatives?**

The five quantitative techniques are (1) break-even analysis, (2) capital budgeting, (3) linear programming, (4) queuing theory, and (5) probability theory.

**4–10. When is the cost-benefit analysis commonly used?**

The cost-benefit analysis is commonly used when it is unclear whether the benefit to be gained from an alternative is worth its cost.

**4–11. For what is Vroom’s participative decision-making model primarily used?**

The Vroom model is primarily used to determine when to use a group and the level of participation to be used to make a decision.

COMMUNICATION SKILLS ANSWERS

Applications may also be used as class discussion questions or written assignments to develop communication skills.

*These communication skills questions are included in the test bank in the skills section.*

**4–1. Are problem solving and decision making really all that important? How do you rate your decision-making ability?**

Answers will vary, but students should realize that the success (or failure) of a business is based on the decisions it makes.

**4–2. Which potential disadvantage of group problem solving and decision making do you think arises most frequently?**

Answers will vary.

**4–3. Are creativity and innovation really important to all types of businesses? Is it important to evaluate a creative idea before it becomes an innovation?**

Yes. If businesses want to attract and retain customers, they need continuous creativity and process/product innovations.

Yes. Businesses need to make sure the creative idea will be beneficial and feasible.

**4–4. What is the role of intuition in decision making? Should managers use more objective or subjective intuition techniques when making decisions?**

Intuition, the ability to synthesize information quickly and effectively, can help guide a wide range of critical decisions.

Answers will vary.

**4–5. Have you ever used any of the techniques for analyzing and selecting an alternative? If so, which one(s)?**

Answers will vary.

**4–6. Should managers be ethical in their decision making? If so, how should ethics be used in decision making?**

Yes. When performing the management functions, managers need to maintain high ethical standards and follow ethical guidelines.

Answers will vary, but the ethical guidelines discussed in Chapter 2 (Golden Rule, Four-Way Test, and the stakeholders’ approach to ethics) can all be used.

**4–7. Have you or someone you know experienced escalation of commitment? If so, explain.**

Answers will vary.

**4–8. Do men and women make decisions differently?**

Answers will vary.

**4–9. Have you ever made a decision with information that was not timely, of good quality, complete, and/or relevant? If so, was the decision a good one? Why or why not?**

Answers will vary.

APPLYING THE CONCEPT ANSWERS

*There are similar questions in the test bank in the application section.*

AC 4–1—Steps in Decision Making

f 1. Step 6. The manager is controlling by checking to see if the problem is solved.

b 2. Step 2. The objective is not clear.

a 3. Step 1. When defining the problem, you distinguish symptoms from causes of the problem.

d 4. Step 4. Probability theory is a technique used to analyze alternatives.

c 5. Step 3. Brainstorming is a technique used to generate creative and innovative alternatives.

AC 4–2—Classify the Problem

e 6. Nonprogrammed, uncertainty. This is a first-time decision. With a new business, it is very difficult to determine the chances of success. Nonprogrammed, risk (f) is also a good answer because it is difficult to draw a clear line between risk and uncertainty.

c 7. Programmed, risk. This is a recurring situation—high turnover. When hiring new employees, there is a chance that the new hires will not work out.

f 8. Nonprogrammed, risk. This is a significant, nonroutine decision. With an established business, there is financial information that gives a probability of success. However, there is always the chance that the past will not repeat itself.

d 9. Nonprogrammed, certainty. This is a first-time decision. To keep the money liquid, she must go with a savings account, certificate of deposit, or money market type of investment with a set rate of interest.

a 10. Programmed, certainty. This is a recurring decision. With a new car, you get a warranty, which makes the investment relatively certain that the car will do the job.

AC 4–3—Using Groups to Generate Alternatives

a 11. Brainstorming. The group may come up with some creative ideas that might be good innovations.

e 12. Delphi technique. Projecting future trends calls for a forecasting technique.

b 13. Synectics. Developing new toys requires generating novel ideas.

d 14. Consensus mapping. Using consensus mapping to get group agreement on a solution to their morale problem would be ideal in this situation.

c 15. Nominal grouping. A voting technique would work fine for selecting furniture.

AC 4–4—Selecting Quantitative Methods

e 16. Probability theory. Stock investments are usually made under the condition of risk.

d 17. Queuing theory. In a fast-food restaurant when employees are overworked, there are lines of people waiting. When there are no lines, they are idle. Queuing theory would help the restaurant balance these two.

a 18. Break-even analysis. If the owner pays $10 and rents them for $2, it takes five rentals to break even. To make it worthwhile to add a DVD to the rental list, it would take more than five rentals to make a profit.

c 19. Linear programming. The manager is trying to maximize the use of limited resources.

b 20. Capital budgeting. Machines are capital equipment. Using discounted cash flow is a good choice.

AC 4–5—The Participative Decision-Making Model

d 21. Facilitate. (Q1 = H, Q2 = H, Q3 = L, Q4 = L, Q5 = H, Q6 = H) Seek the group’s ideas during the brainstorming session without pushing your ideas. Form your decision with consideration to their ideas, but you ultimately have the final say on whatever decision is made.

b 22. Consult individually. (Q1 = H, Q2 = H, Q3 = L, Q4 = H, Q5 = L) Talk alone to the person that you think is doing it. Warn the employee that if it continues, he or she will be fired.

e 23. Delegate. (Q1 = H, Q2 = H, Q4 = H, Q5 = H, Q6 = H, Q7 = H) Let the group select the new person.

c 24. Consult group. (Q1 = H, Q2 = H, Q4 = L, Q5 = L) Have a team meeting to discuss the problem and how to solve it.

a 25. Decide. (Q1 = L, Q2 = L) Shop around for the best deal.

CASE ANSWERS

The Coca-Cola Company

**4–1. Explain the relationship between Coca-Cola’s objective, decision, and problem in this case.**

Coke’s objective was to expand in China, it make the decision to acquire Huiyuan, but it had a problem because the Chinese government would not allow the acquisition.

**4–2. What is the classification of the problem/opportunity and which decision-making model should have been used in the acquisition decision in this case?**

Based on the decision structure, it is a *nonprogrammed* decision, and the decision-making condition is *risk*. It is an important and costly decision; therefore, the *rational (optimizing) decision model* should be used.

**4–3. Which quantitative techniques could have been used in the acquisition decision in this case?**

The acquisition would require a large financial commitment, which is *capital budgeting.* *Probability* *theory* could also be used to determine the odds of making the acquisition and for it to be a profitable new venture. Break-even is much less important than capital budgeting and can be included with it—but discounted cash flow is much better. Linear programming and queuing theory are not really very relevant until after the acquisition.

**4–4. After having its bid for Huiyuan rejected, should Coca-Cola have continued to focus on acquisitions by trying to acquire another company in an attempt to expand in China?**

Answers will vary, but Coke gave up because they didn’t believe the government would allow any acquisition.

**4–5. After having its bid for Huiyuan rejected, what other alternatives did Coca-Cola have to expand in China? Faced with this problem, what should Coke do?**

Answers will vary, but Coke focused on existing brands and building the company’s production, sales, distribution, and marketing operations. See expanded answer below for details.

**4–6. Do you drink Coca-Cola Company beverages? If so, which products? How many of the 3,500+ Coca-Cola brands can you name?**

Answers will vary, but some students will not realize that if they drink Minute Maid juice and Dasani water, they are drinking Coca-Cola products.

**#4–5. Expanded answer.** In March 2009, The Coca-Cola Company opened a new $90 million research and development center in Shanghai. In June of that same year, the company and its bottling partner, COFCO Coca-Cola Beverages Ltd., continued its expansion by opening two new bottling facilities—one in Xinjiang and the other in Nanchang. The new bottling facility in Xinjiang, located along the historic Silk Road, will provide a strategically important platform for continuous growth of Coca-Cola in northwestern China, where Xinjiang, with more than 20 million consumers, is the largest province. The Nanchang bottling plant will provide refreshing Coca-Cola products for 44 million consumers in this central province of China.

The new facilities are testimonies to Coca-Cola’s long-term commitment to China as part of a recently announced $2 billion, three-year investment plan aimed at bolstering further growth in one of the world’s largest and fastest-growing beverage markets. This new investment has directly created 796 new jobs at the new bottling plants and is more broadly expected to create an additional 8,000 jobs with upstream suppliers and a wide variety of service providers. In addition, Coca-Cola has two new bottling plants scheduled to open in Inner Mongolia and in the Guangdong province in late 2010. Although it doesn’t have Huiyuan, Coca-Cola is still growing in China.

**Cumulative Case Questions**

**4–7. Describe the role of the manager’s resources in Coca-Cola’s success. (Chapter 1)**

*Human resources* are critical to Coca-Cola’s success, as without people there is no business. Being profitable provides *financial resources* to grow, such as building new facilities. *Physical resources* are needed to make (water, sugar, fruit, flavors, etc.) and deliver (trucks) its beverages globally. *Information resources* provide inventory knowledge to keep its customer retailers stocked.

**4–8. Which management functions, skills, and management levels are more important in developing the growth strategy for Coca-Cola? Which are more important for making and delivering Coca-Cola beverages? (Chapter 1)**

Strategy is developed by *top managers*, who use *decision-making skills* and perform the *planning* and *organizing* functions. Making and delivering beverages is done primarily by *middle* and *first-line managers*, who use *technical* and *interpersonal skills* and perform the *leading* and *controlling* functions.

**4–9. Coca-Cola has been a highly successful company over the years. Which internal and external environmental factors were most instrumental in its long-term success? (Chapter 2)**

Obviously, Coca-Cola’s *management* is responsible for the company’s performance and success over the years. Also, Coca-Cola has a unique *culture*. Although Coca-Cola’s *labor force* is made up of diverse individuals, they are all passionate about the company and its products. Coca-Cola’s *suppliers* and business partners are vital for their success because they deliver necessary products and services for the business. Coca-Cola also values its *customers* and listens to their needs and feedback, such as when the company replaced the original formula of its flagship drink, Coca-Cola, with a new recipe in 1985. Due to public outcry and consumer backlash, three months later, “New Coke” was dropped and the company returned to its original recipe. Finally, Coca-Cola’s *competition* is important as Coca-Cola must continually compete for customers with other established soft drink, bottled water, and sports drink companies.

**4–10. How is Coca-Cola’s business classified in the global village? Which approach to taking a business global is it using today? (Chapter 3)**

The Coca-Cola Company is a multinational corporation (MNC) primarily using the direct investment strategy.

**Decision-Making Styles**

Showing the video takes around 13 minutes. The video may also be followed by a class discussion, which will vary in time required. This video addresses a situational management scenario between Richard, a human resources director, meeting with a supervisor, Denise, to discuss training changes. The video can be used to explain how to use the decision-making model and illustrates the four management decision-making styles.

When showing this video, you should pause it after each scene to give students more time to place their answers in the textbook. You then have two options: (1) Go over the answers (given below) after each scene. (2) Do not give the answers until after showing all four scenes. (The answers are on the video.)

Scene 1. Autocratic S1A

Scene 2. Consultative S2C

Scene 3. Empowering S4E

Scene 4. Participative S3P

Recommended Answer: Consultative

Yes, Richard has enough time to involve employees in the decision. Richard has some of the information (S2C). Employees will probably be reluctant to rejection if they are not involved (SC2 to SP3). The employees are of moderate ability because they are too busy to fully participate (SC2). Based on the four variables, the consultative style is the most appropriate for this situation.

At the end of the video, the question is posed: Which style would produce the best and worst results? As stated in the video, consultative will get the best results. Students should realize this as they watch the video scenes. The second-best management style is participative. However, empowering and autocratic will get the worst results because employees are too overworked to be empowered with extra work. The autocratic style gives employees more direction than they need.

SKILL BUILDER 4–1 IDEAS AND ANSWERS

**Making a Decision Using the Decision-Making Model**

*Total Time* (0– 30 minutes)

The real skill building takes place during the preparation for the exercise. You can choose to spend no class time on the exercise. You may also have students write the answers and pass them in.

Time will vary with the size of the class and the option used. I just use option 1, giving students 10 minutes. For the conclusion, I stress the importance of using the decision-making model to develop skills when important nonprogrammed decisions are needed.

Doing Skill Builder **4–**1 in Class

Objective

To improve your ability to make decisions.

Preparation

Students should have made a personal decision using the model preparation pages for this exercise.

Experience

Have students share their decisions with a small group of students who will give them feedback.

*Procedure* (10–20 minutes)

*Option 1.* Break students into groups of 3 to 5 people. One at a time, go through the steps in making their decisions. At each step, have group members give feedback such as pointing out any errors, offering suggestions on how to improve the written statements, providing additional alternatives, listing more pros and cons not thought of, stating which alternatives others would select, and so on.

*Option 2.* Same as option 1, but have the group select the best decision to be presented to the entire class.

Conclusion

Lead a class discussion and/or make concluding remarks.

Sharing

Volunteers give their answers to the Apply It section.

Testing on Skill Builder **4–**1

The preparations for this exercise can also be typed and passed in as an individual assignment and graded. You can also have students write them during an exam. Note that it is not necessary to write an answer following Step 6 for the exercise or on the test. It is done as the decision is implemented.

Test Questions and Answers (Also found in the Test Bank)

1. **Making a Decision Using the Decision-Making Model.** Select a problem. (It can be the one you used for Skill Builder 1.)

Instructions

Write a brief description of the problem situations. Then, write step 1 of the decision-making model, followed by your answer to this step. Do the same for steps 2 through 5. List step 6 without any answer following the step.

**Solution**

**Step 1: Classify and Define the Problem or Opportunity**

**Step 2: Set Objectives and Criteria**

**Step 3: Generate Creative and Innovative Alternatives**

**Step 4: Analyze Alternatives and Select the Most Feasible**

**Step 5: Plan and Implement the Decision**

**Step 6: Control the Decision**

Answers for each step will vary.

SKILL BUILDER 4–2 IDEAS AND ANSWERS

Using the Vroom Model

NOTE: This Skill Builder is also based on leadership, and you have the option of waiting to do this exercise with Chapter 12, Leading With Influence.

*Total Time* (25– 40 minutes)

The amount of time you spend on this exercise is dependent on whether you choose to state the answers for the four situations or lead a discussion on each situation.

Recommended approximate time for a 35-minute period:

8:00 Procedure 1 12 minutes

8:12 Procedure 2 17 minutes

8:29 Conclusion 3 minutes

8:32 Apply It 3 minutes

8:35

Doing Skill Builder **4–**2 in Class

**Objective**

To determine the appropriate leadership style.

**Experience**

You will use the Vroom participative decision-making model in four given problem situations.

*Procedure 1* (10–15 minutes)

The instructor goes over the Vroom participative decision-making model and uses the model to illustrate how to use it to select the appropriate leadership style for situation 1 in the preparation.

*Procedure 2* (10–20 minutes)

Break into groups of 2 to 3 and use the Vroom model to determine the appropriate leadership style for situations 2 through 4 in the preparation, followed by the instructor going over (or just stating) the answers to situations 2 through 4.

**Conclusion**

Lead a class discussion and/or make concluding remarks.

**Sharing**

Volunteers give their answers to the Apply It section.

Decision-Making Answers

1. **Situation 1**

Step 1: Which version of the model should you use? (X time-driven \_\_\_\_\_ development-driven)

Step 2: How did you answer the model’s questions? Did you skip any questions? (H = high, L = low, NA = not answered/skipped)

1. H L or NA 3. H L or NA 5. H L or NA 7. H L or NA
2. H L or NA 4. H L or NA 6. H L or NA

Step 3: Which leadership style is the most appropriate?

X Decide \_\_\_\_\_ Consult individuals \_\_\_\_\_ Consult group \_\_\_\_\_ Facilitate \_\_\_\_\_ Delegate

*Note that if you say L to Q2 and H to Q3, you don’t answer Q4 and you still end up with the decide style.*

1. **Situation 2**

Step 1: Which version of the model should you use? (\_\_\_\_\_ time-driven X development-driven)

Step 2: How did you answer the model’s questions? Did you skip any questions? (H = high, L = low, NA = not answered/skipped)

1. H L or NA 3. H L or NA 5. H L or NA 7. H L or NA
2. H L or NA 4. H L or NA 6. H L or NA

Step 3: Which leadership style is the most appropriate?

\_\_\_\_\_ Decide \_\_\_\_\_ Consult individuals \_\_\_\_\_ Consult group \_\_\_\_\_ Facilitate X Delegate

1. **Situation 3**

Step 1: Which version of the model should you use? ( X time-driven \_\_\_\_\_ development-driven)

Step 2: How did you answer the model’s questions? Did you skip any questions? (H = high, L = low, NA = not answered/skipped)

1. H L or NA 3. H L or NA 5. H L or NA 7. H L or NA
2. H L or NA 4. H L or NA 6. H L or NA

Step 3: Which leadership style is the most appropriate?

\_\_\_\_\_ Decide X Consult individuals \_\_\_\_\_ Consult group \_\_\_\_\_ Facilitate \_\_\_\_\_ Delegate

1. **Situation 4**

Step 1: Which version of the model should you use? (\_\_\_\_\_ time-driven X development-driven)

*To be effective with this high-tech group with two new managers, you need to develop them and let them participate in the decision. This is the reason for answering low to Q4 in step 2.*

Step 2: How did you answer the model’s questions? Did you skip any questions? (H = high, L = low, NA = not answered/skipped)

1. H L or NA 3. H L or NA 5. H L or NA 7. H L or NA
2. H L or NA 4. H L or NA 6. H L or NA

Step 3: Which leadership style is the most appropriate?

\_\_\_\_\_ Decide \_\_\_\_\_ Consult individuals \_\_\_\_\_ Consult group X Facilitate \_\_\_\_\_ Delegate

*If the time-driven model were used, the answers would be H, H, H, L, H, H, L—consult group.*

Testing on Skill Builder **4–**2

Below are two situations that are included in the Test Bank that you can include on exams. If you do use them, you should copy Exhibit 4–11 for students to use during the exam (or let them use their books), as the exhibit is not in the Test Bank.

1. **Production manager.** You are an experienced competent manager of a production department. A new potential customer offered to buy a large quantity of your product for a reasonable price. The offer is open for a few days, which gives you time for input into the decision if you want it. To fill the new order, your employees would have to work nights and weekends for 3 weeks. The company has no union and cannot force employees to work overtime. However, your department members work well together, they have a very good performance record, and they like to participate in decision making. Which primary leadership style would you use to make the decision to take the order or not?

Step 1: Which version of the model should you use? (**\_\_\_\_\_** time-driven **\_\_\_\_\_** development-driven)

Step 2: How did you answer the model’s questions? Did you skip any questions? (H = high, L = low, NA = not answered/skipped)

1. H L or NA 3. H L or NA 5. H L or NA 7. H L or NA
2. H L or NA 4. H L or NA 6. H L or NA

Step 3: Which leadership style is the most appropriate?

\_\_\_\_\_ Decide \_\_\_\_\_ Consult individuals \_\_\_\_\_ Consult group \_\_\_\_\_ Facilitate \_\_\_\_\_ Delegate

Solution

Step 1: Which version of the model should you use? (\_\_\_\_\_ time-driven X development-driven)

Step 2: How did you answer the model’s questions? Did you skip any questions? (H = high, L = low, NA = not answered/skipped)

1. H L or NA 3. H L or NA 5. H L or NA 7. H L or NA
2. H L or NA 4. H L or NA 6. H L or NA

Step 3: Which leadership style is the most appropriate?

\_\_\_\_\_ Decide \_\_\_\_\_ Consult individuals \_\_\_\_\_ Consult group \_\_\_\_\_ Facilitate X Delegate

*If the time-driven model were used, the delegate style would also be appropriate (H, H, H, L, H, H, H).*

1. **Fast-food manager.** As a fast-food manager, you have a high turnover rate. You need to hire two new employees soon as you are short-handed now. You have five applicants. Your employees are the typical high school students who work part time and then eventually quit for better jobs, or when they finish school, get full-time jobs or go on to college.

Solution

Step 1: Which version of the model should you use? (X time-driven \_\_\_\_\_ development-driven)

Step 2: How did you answer the model’s questions? Did you skip any questions? (H = high, L = low, NA = not answered/skipped)

1. H L or NA 3. H L or NA 5. H L or NA 7. H L or NA
2. H L or NA 4. H L or NA 6. H L or NA

Step 3: Which leadership style is the most appropriate?

X Decide \_\_\_\_\_ Consult individuals \_\_\_\_\_ Consult group \_\_\_\_\_ Facilitate \_\_\_\_\_ Delegate

EXERCISE 4–1 IDEAS AND ANSWERS (not in text)

**Individual Versus Group Decision Making**

**Note:** The preparation for this exercise is Questions 1–10 from this chapter’s Objective Case. Be sure not to go over the answers before doing this exercise if you plan to use it.

*Total Time* (20–40 minutes)

Times will vary for students to come up with group answers. To keep the exercise to 20 minutes, you may need to skip procedure 4.

*Recommended approximate time for a 35-minute period:*

8:00 Procedure 1 2 minutes

8:02 Procedure 2 18 minutes

8:20 Procedure 3 5 minutes

8:25 Procedure 4 7 minutes

8:32 Conclusion 2 minutes

8.34 Apply It 1 minute

8:35

*Answers to Objective Case Questions 1–10*

1. d
2. a
3. c
4. b
5. c
6. b
7. a
8. b
9. b
10. a

Complete answers for the case appear on pages 86–87.

EXERCISE 4–1

**Individual Versus Group Decision Making**

Preparation for Exercise **4–**1

To complete this exercise, you must read this chapter’s Objective Case and answer questions 1 through 10.

Doing Exercise **4–**1 in Class

Preparation

As preparation you should have answered questions 1 through 10 of this chapter’s Objective Case.

Experience

You will work in a group that will answer the same 10 Objective Case questions and then analyze the results to determine if the group or one of its members had the higher score.

*Procedure 1* (1–2 minutes)

Place your answers to the 10 Objective Case questions in the “Individual Answer” column in the table.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Question Number | Individual Answer | Group  Answer | Recommended Answer | Individual Score | Group  Score |
| 1. |  |  |  |  |  |
| 2. |  |  |  |  |  |
| 3. |  |  |  |  |  |
| 4. |  |  |  |  |  |
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| 8. |  |  |  |  |  |
| 9. |  |  |  |  |  |
| 10. |  |  |  |  |  |
| Total scores | |  |  |  |  |

*Procedure 2* (15–20 minutes)

Break into teams of five, with smaller or larger groups as necessary. As a group, come to an agreement on the answers to the 10 Objective Case questions. Place the group answers in the “Group Answer” column. Try to use the consensus mapping rather than the nominal grouping technique in arriving at the answers.

*Procedure 3* (4–6 minutes)

*Scoring:* The instructor will give the recommended answers. Determine how many you got right as an individual and as a group. Total your individual and the group’s score.

Calculate the average individual score by adding all the individual scores and dividing by the number of group members. Write it here: \_\_\_\_\_\_ Average.

Now calculate the difference between the average individual score and the group score. If the group’s score is higher than the average individual score, you have a gain (+) of points; if the group score is lower, you have a loss (–) of points. Write it here: \_\_\_\_\_ and circle one (+ or –).

Determine the highest individual score. Write it here: \_\_\_\_\_.

Determine the number of individuals who scored higher than the group’s score. Write it here: \_\_\_\_\_.

*Procedure 4* (5–10 minutes)

As a group, discuss the advantages or disadvantages of being in a group while making the decisions in this exercise.

Potential Advantages

1. *Better-quality decisions.* Did your group make better decisions? Was the group’s score higher than the highest individual score? If not, why not? Were knowledgeable members nonassertive? Were they listened to?
2. *More information, alternatives, creativity, and innovation.* Did the group get members to think about alternatives they did not consider as individuals? Did your group use the devil’s advocate approach?
3. *Better understanding of the decision.* Did members understand the reason for group answers?
4. *Greater commitment to the decision.* Did members accept the group’s answers?
5. *Improved morale and motivation.* Were members more satisfied making the decisions in a group or as individuals?

Potential Disadvantages

1. *Wasted time and slower decision making.* Did the group waste time? Was the time spent worth the benefits (e.g., higher group score)?
2. *Satisficing.* Did the group satisfice or optimize answers? Because no one person was held responsible for the group’s answers, did any members have an “I don’t care” attitude? If so, did they pick just any answer?
3. *Domination and goal displacement.* Did any one person or subgroup dominate? Did everyone participate? Did any member(s) seem more interested in getting their answer accepted, rather than getting the best answer?
4. *Conformity and groupthink.* Were members nonassertive when presenting their answers in order to be accepted? Did group pressure force them to agree with the majority?

Improvements

Overall, were the advantages of using a group greater than the disadvantages? If your group were to continue to work together, how could it improve its decision-making ability? Write your answer below.

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Conclusion

The instructor may lead a class discussion and/or make concluding remarks.

*Apply It* (2–4 minutes)

What did I learn from this experience? How will I use this knowledge in the future?

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Sharing

Volunteers give their answers to the Apply It section.