4
Creative Problem Solving and Decision Making

Learning Objectives

After studying this chapter, you should be able to:

4-1. Discuss the interrelationship between objectives, problem solving, and decision making in terms of their impact on the management functions. PAGE 113

4-2. Compare decision-making styles. PAGE 114

4-3. Summarize each of the steps in the decision-making model. PAGE 115

4-4. Apply the first step of the decision-making model by classifying a problem, selecting the appropriate level of participation, determining the cause of the problem, and determining the type of decision to be made. PAGE 116

4-5. Explain the difference between an objective and "must" and "want" criteria. PAGE 122

4-6. State the difference between creativity and innovation. PAGE 123

4-7. Identify five group techniques used to generate creative alternatives. PAGE 123

4-8. Compare quantitative techniques including big data, cost-benefit analysis, and intuition for analyzing and selecting an alternative. PAGE 129

4-9. Explain the importance of planning, implementing, and controlling decisions. PAGE 134

Ideas on Management at National Basketball Association (NBA)

The National Basketball Association (NBA) is the professional basketball league in the United States. It is composed of 30 teams, 29 based in the United States, one in Canada. The league operates under a set of values including the following:

- Integrity: We conduct ourselves in accordance with the highest standards of honesty, ethics, and fair dealing.
- Teamwork: We work hard, communicate clearly, and collaborate without regard to departmental lines or individual goals, and we have fun while doing it.
- Respect: We value individuality and diversity and are courteous to each other, to our fans, and our business partners. We will do our utmost to ensure that everyone feels welcome at our games, our events, and our workplace.

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- Review key terms with eFlashcards.
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Innovation: We encourage creative thinking. We are progressive and embrace the opportunity to try new things—and we are not afraid to fail.

The Commissioner of the NBA is Adam Silver, who has held this position since 2014.

While other professional sports leagues such as the National Football League and Major League Baseball have been experiencing declines in fan attendance at games in recent years, the NBA achieved record attendance in 2017 (22 million) and global fan engagement of over one billion.

One of the major reasons for the success of the NBA is its effective approach to being creative and solving problems. Specifically, the league has found innovative strategies to leverage technology to enhance fan game experiences including NBA League Pass that enables fans to video stream games to their mobile devices; NBA In Play, a fantasy basketball game that can be synced with live games; and NBA 2K League, an e-sports game that involves a partnership with 2K Sports, the developer of the video game of the same name. All three of these initiatives have been successful in engaging fans and increasing attendance at games.

IOM 1. What was the problem, decision making, and problem solving focus for the NBA?

IOM 2. What type of decision making style was most likely used by the NBA commissioner and other leaders in the organization to increase attendance and fan engagement?

IOM 3. How are the concepts of risk and uncertainty relevant to the NBA’s League Pass, In Play, and 2K Sports initiatives?

IOM 4. What was the objective of the NBA’s decision-making and problem-solving processes?

IOM 5. How could the NBA use big data to continue its track record of success with building fan engagement and attendance in the future?


Poll: Decision-Making Styles

How do you approach decisions?

− I make decisions quickly.
− I like to take my time and consider all angles and alternatives before making a decision.
− I gather needed information to make a decision as efficiently as possible.

Feedback: You will learn to identify your style as reflexive, reflective, or consistent.
PROBLEM SOLVING AND DECISION MAKING: AN OVERVIEW

>> LO 4-1: Discuss the interrelationship between objectives, problem solving, and decision making in terms of their impact on the management functions.

Running a business is a series of decisions, including how to allocate its resources, which are usually limited. Recall that decision making is one of the three critical management skills. Your decisions lead to your success or failure. Jeff Bezos made good decisions in starting Amazon and expanding it to be in the top 10 on the Fortune 500 with revenues near $178 billion, making Bezos one of the Forbes 400 Richest Americans, worth $160 billion. Whereas Pershing Square Capital Management's Bill Ackman bought and sold its ownership of Valeant Pharmaceuticals International, losing over $4 billion on the investment. Ackman lost $7.7 million for every day he owned the stock.

Let's face it—we are not perfect decision makers, but we can improve our decision-making skills; that is the objective of this chapter. In this section, we discuss problem-solving and decision-making interrelationships.

The Interrelationship Among Objectives, Problem Solving, and Decision Making

A problem exists whenever objectives are not being met. In other words, you have a problem whenever there is a difference between what is actually happening and what you want to happen. If the objective is to produce 1,500 units per day but the department produces only 1,490, a problem exists. Problem solving is the process of taking corrective action to meet objectives. Decision making is the process of selecting a course of action that will solve a problem. Decision making is about solving problems, so successful businesses solve problems, especially by offering products that solve customer problems by doing things better, faster, and/or cheaper.

Here are three things that help determine if a problem exists and needs to be solved: (1) the manager is aware of a gap between actual and desired objectives, (2) they have the resources to deal with it, and (3) a time factor is involved. If any one of these three is not present, then a problem may not exist.

For the NBA (IOM 1), the fundamental problem was how to build fan support in order to increase game attendance. Increasing fan engagement was also a focus as engagement is a leading indicator of interest in attending games as well as sales of team-themed merchandise. The decision making process refers to the process the NBA leadership and staff deployed to identify the best alternative to implement to support the resolution of the problem. This process resulted in a focus on leveraging technology to solve the problem. Problem solving was then deployed to determine the most effective approach for deploying the solution. This included the decision to partner with 2K Sports on the e-sports initiative called NBA 2K Sports as well as building a global community of fans from many countries around the world. In particular, China has become a huge market with massive growth opportunities for the future.

Decisions must be made when you are faced with a problem. The first decision you face when confronted with a problem is whether to take corrective action. Some problems cannot be solved, others do not deserve the time and effort it would take to solve them, and some would hurt the business. Southwest Airlines customers complain that they want assigned seats, but management said it would slow down the boarding process and ignores this suggestion. However, your job requires you to achieve organizational objectives. Therefore, you will have to attempt to solve most problems—this is what managers and employees get paid to do.

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

All managers perform the same four functions of management. While performing these functions, you must make decisions and solve problems. When planning, you
first make decisions about objectives and when, where, and how they will be met. When organizing, you must make decisions about what to delegate and how to coordinate the department’s resources. When staffing, you must decide whom to hire and how to train and evaluate employees. To lead, you must decide how to influence employees. To control, you must monitor progress and select methods to ensure that objectives are met and take corrective action when needed.

WORK APPLICATION 4-1

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.

DECISION-MAKing STYLES

>> LO 4-2: Compare decision-making styles.

How do you approach decisions? Critiquing our style helps us improve, so before learning about the three decision-making styles, determine your preferred style by completing Self-Assessment 4-1.

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 many 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. Samsung rushed conclusions based on incomplete evidence. Rushing resulted in fires and other problems that led to recalls and discounting sales of its Galaxy Note 7 phone, and its mobile division profits plunged 96%. If you use a reflexive style for important decisions, you may want to slow down and spend more time gathering information and analyzing alternatives. Being rational leads to better decisions, so be careful not to let emotions control and rush your decisions. We will help you learn when to slow down, by classifying the problem in the next major section.

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 can be indecisive and may procrastinate, lose opportunities, and waste valuable time and other resources. Christene Barberich, editor in chief of Refinery29, says being indecisive can lead to your ultimate downfall. Even a correct decision is wrong when it is taken too late. Cisco CEO John Chambers said, “Without exception, all of my biggest mistakes occurred because I moved too slowly.” Lou Gerstner, turnaround specialist and former CEO of IBM, said, “When the decision is finally made, I’ve found my reaction is always the same: I should have done this a long time ago.” If you constantly use a reflective style, you may want to speed up your decision making. We will help you learn when to speed it up, by classifying the problem in the next major section.

Consistent Style

In the fast-changing environment, making better decisions faster is important to success. However, rushing decisions like Samsung can be costly. The key is to get and analyze data quickly as consistent decision makers, including speedy, agile companies such as Amazon, Facebook, and Google. Consistent decision makers tend to make decisions without either rushing or wasting time.
# Decision-Making Styles

Individuals differ in the way they approach decisions. To determine whether your decision-making style is reflexive, reflective, or consistent, evaluate each of the following eight statements using the scale below. Place a number between 1 (indicating “This behavior is common for me”) and 5 (indicating “This behavior is not common for me”) on the line preceding each statement.

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<tr>
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<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
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<tbody>
<tr>
<td>1</td>
<td>Overall, I make decisions quickly.</td>
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<td>2</td>
<td>When making decisions, I go with my first thought or hunch.</td>
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<td>3</td>
<td>When making decisions, I don’t bother to re-check my work.</td>
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<tr>
<td>4</td>
<td>When making decisions, I gather little or no information.</td>
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<tr>
<td>5</td>
<td>When making decisions, I consider very few alternative options.</td>
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<tr>
<td>6</td>
<td>When making decisions, I usually decide well before any deadline.</td>
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<tbody>
<tr>
<td>7</td>
<td>When making decisions, I don’t ask others for advice.</td>
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<tr>
<td>8</td>
<td>After making decisions, I don’t look for other alternatives or wish I had waited longer.</td>
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<tr>
<td>9</td>
<td>Total score</td>
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To determine your style, add up the numbers you assigned to the statements; the total will be between 8 and 40. Note where you fall on the decision-style continuum.

- **Reflexive** (Total score of 8-20)
- **Consistent** (Total score of 30)
- **Reflective** (Total score of 40)

They know when they have enough information and alternatives to make a sound decision. However, there is no guarantee of success. McDonald’s had sales declines, partly due to a documented trend toward healthier food. So, it expanded its menu to include more healthy choices. But it found out that it slowed down customer service, wasn’t very profitable, and people didn’t come to McDonald’s to eat healthy, so it cut back its menu. But consistent decision makers are more successful and tend to have the best record for making good decisions. They tend to follow the steps in the decision-making process or model, which we present next.

The **NBA (IOM 2)** most likely used a consistent decision making style to address their engagement and attendance problem because it balances speed with being thorough and systematic in collecting and evaluating data related to decisions.

## The Decision-Making Model

**LO 4-3:** Summarize each of the steps in the decision-making model.

When making decisions, we want to use rational judgement and avoid using bad intuition—a hunch, gut feeling, knowing, suspicion, or belief arrived at unconsciously without the use of rational reasoning processes—also called winging it. Be careful not to use this type of intuition, as you can be deceived into making a bad decision, based upon your rapid, nonconscious impulse. We need to give more thought to how we think about problems and make decisions.
Decision-making theory is important because it can help improve the decisions we make. Through years of research to determine how the most successful managers make decisions, a decision-making model has been developed, encompassing evidence-based management (EBM), or decisions that should be based on evidence. Applying a conscious process model leads to better decisions and results for you and your firm.

The question isn’t whether the model works; it’s whether you will use the model when it is appropriate, which you will learn throughout this chapter. Following the steps in the model will not guarantee you will make a good decision every time. However, using models will increase your chances of success in problem solving and decision making.

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. Notice the steps do not simply go from start to finish (see Exhibit 4-1). At any step, you may have to return to a prior step to make changes. The remainder of this chapter discusses the details of each step of the model in major sections so that you can develop your creative problem-solving and decision-making skills.

CLASSIFY AND DEFINE THE PROBLEM OR OPPORTUNITY

> LO 4.4: Apply the first step of the decision-making model by classifying a problem, selecting the appropriate level of participation, determining the cause of the problem, and determining the type of decision to be made.

Although it may seem surprising, it’s true: Half the decisions made by managers fail to solve the problems they are aimed at. The first step of the decision-making model is to classify and define the problem, which may sometimes take the form of an opportunity, like developing a product that solves a consumer problem. In this section, we discuss how to classify problems, select the appropriate level of participation, and determine the cause of problems, so we can determine the type of decision to make.
Classify the Problem and When to Use the Decision-Making Model

It is important to structure the problem correctly, and to realize that some decisions require more careful thought (use of the decision-making model) than others. Here is how. Classify the problem in terms of the decision structure involved and the conditions under which a decision will be made.

Decision-Making Structure

Most decisions are repetitive and lead to routine policies and procedures. For **programmed decisions**, those that arise in recurring or routine situations, you should use decision rules (no cash refunds) or organizational policies and procedures to make the decision. So it is not necessary to follow all the steps of the model. Reordering inventory every time stock reaches a specified level and scheduling employees are examples of programmed decisions. We discuss policies, procedures, and rules in Chapter 5.

We also less frequently make nonroutine decisions that may or may not lead to programmed decisions. For **nonprogrammed decisions**, significant decisions that arise in nonrecurring and nonroutine situations, you should use the decision-making model. To be significant, a decision must be expensive and/or have major consequences for the department or organization. Selecting a new product to sell, entering new products, and opening a new facility are examples of nonprogrammed decisions.

Upper-level managers tend to make more nonprogrammed decisions than lower-level managers do. Nonprogrammed decisions usually take longer to make than programmed decisions do. The decision structure continuum is illustrated in Exhibit 4-2.

Risk taking is fundamental to decision making. Attitudes toward risk affect how individuals, groups, and organizations make decisions. We need to do a risk analysis, and there are lots of jobs in this field. Are you a risk taker? 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, so you can usually take quick action. When making a decision under conditions of risk, you do not know the exact 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 accurately determine probabilities, such as starting or investing in new startup businesses because they have such a high failure rate.

While the League Pass, In Play, and 2K Sports initiatives have generated positive results so far, the issue of uncertainty and risk should be of concern to the NBA (IOM) leadership as customers can lose interest in new services as the novelty associated with them fades over time. If the economy falls into recession, fans may stop using these services as they are not essential for most people. Finally, new competitors will likely emerge on the horizon with an e-sports focus, and this could put pressure on the 2K Sports initiative, in particular.

**EXHIBIT 4-2**

**Decision Structure Continuum**

- **Nonprogrammed Decision**: significant, nonrecurring, and nonroutine (longer time to make decisions)
- **Programmed Decision**: nonsignificant, recurring, and routine (shorter time to make decisions)
Entrepreneurs and upper-level managers tend to make more risky and uncertain decisions than lower-level managers do. Although risk and uncertainty cannot be eliminated, they can be reduced with information—EBM. Exhibit 4-3 illustrates the continuum of decision-making conditions.

When to Use the Decision-Making Model

Once you have classified the problem, you have identified when to use the decision-making model. In short, use the decision-making model for decisions that are nonrecurring and under the condition of risk or uncertainty. Use decision rules or policies and procedures for decisions that are recurring with low risk or certainty. Below is a more detailed discussion of each.

When making programmed decisions under the condition of low risk and certainty, you are making a recurring decision, so you don't need to take the time to follow the steps of the decision-making model, as there should be decision rules or policies and procedures that allow you to know the outcomes of the decision, so you can make a quick decision.

With nonprogrammed decisions that have risky or uncertain outcomes that are important, you want to take the time to follow the steps of the decision-making model and get enough information that will help you make a sound decision resulting in the desired outcome to solve the problem.

EXHIBIT 4-3

Continuum of Decision-Making Conditions

<table>
<thead>
<tr>
<th>Uncertainty</th>
<th>Risk</th>
<th>Certainty</th>
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<tbody>
<tr>
<td>(Outcome of alternatives unpredictable)</td>
<td>(Outcome of alternatives predictable)</td>
<td>(Lesser chances of making a poor decision)</td>
</tr>
<tr>
<td>(Greater chances of making a poor decision)</td>
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Classify the Problem

Classify the problem in each statement according to the structure and condition under which the decision must be made.

A. programmed, certainty
B. programmed, uncertainty
C. programmed, risk
D. nonprogrammed, certainty
E. nonprogrammed, uncertainty
F. nonprogrammed, risk

7. Eric has to decide if he should invest in a new company in a brand-new industry.
8. Tina, a manager in a department with high turnover, must hire a new employee.
9. When Sean graduates from college, he will buy an existing business rather than work for someone else.
10. Rondo is making a routine decision, but being new, he has no idea what the outcome will be.
11. Sam, a small business owner, has had a turnaround in business; it's now profitable. She wants to keep the excess cash liquid so that she can get it quickly if she needs it. How should she invest it?
12. Aidan, a purchasing agent, must select new cars for the business. This is the fifth time in five years he has made this decision.
When to Use the Decision-Making Model

Using Applying the Concept 4-2, for each situation 7-12 determine if the decision-making model or decision rules or policies and procedures should be used to make the decisions.

A. Decision-Making Model
B. Decision Rules or Policies and Procedures

13. Use situation #7
14. Use situation #8
15. Use situation #9
16. Use situation #10
17. Use situation #11
18. Use situation #12

Select the Appropriate Level of Participation

When a problem exists, you must decide who should participate in solving it. Do you want to make the decision yourself or use a team? Did you use participation from others in making your college selection? Vistage CEO Sam Reese says to let others inform your decisions, but not dictate them.

Today’s employees want to have a voice in decisions, the trend is using teams, especially when the decision affects them directly, and a group can often solve problems better than individuals. Thus, the major question is not whether managers should allow employees to participate but when and how this should be done. When making decisions, you should use the management style appropriate to the situation. In Skill Builder 4-2, you will be given the opportunity to use the situational decision-making model to help you select the appropriate level of participation in 12 situations.

For now, realize that even though the trend is toward group decision making, it does not have disadvantages and is not always better than individual decision making. Exhibit 4-4 lists the potential advantages and disadvantages of involving groups in decision making. The key to success when using groups is to maximize the advantages while

<table>
<thead>
<tr>
<th>POTENTIAL ADVANTAGES</th>
<th>POTENTIAL DISADVANTAGES</th>
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<tbody>
<tr>
<td>1. Better-quality decisions. Groups usually do a better job of solving complex problems than the best individual in the group.</td>
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<tr>
<td>2. More information, alternatives, creativity, and innovation. A group of people usually has more of these important factors.</td>
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<tr>
<td>3. Better understanding of the decision. When people participate, they understand why the decision selected was the best alternative.</td>
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<td>4. Greater commitment to the decision. People involved in making a decision have increased commitment to implementing the decision.</td>
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<tr>
<td>5. Improved morale and motivation. Participation is rewarding and personally satisfying.</td>
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<td>6. Good training. Participation trains people to work in groups.</td>
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<table>
<thead>
<tr>
<th>POTENTIAL DISADVANTAGES</th>
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<tbody>
<tr>
<td>1. Wasted time and slower decision making. It takes longer for a group to make a decision, and employees are not on the job producing.</td>
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<tr>
<td>2. Satisficing. Groups are more likely than individuals to select a quick alternative, especially when group meetings are not run effectively.</td>
</tr>
<tr>
<td>3. Domination and goal displacement. One group member or a subgroup may control the group decision with the goal of personal gain.</td>
</tr>
<tr>
<td>4. Conformity. Group members may feel pressured to go along with the group’s decision without questioning it out of fear of not being accepted.</td>
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<tr>
<td>5. Groupthink. It occurs when members withhold different views to appear as though they are in agreement. This nullifies the advantage of diversity.</td>
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<tr>
<td>6. Social loafing. Team members may withhold their effort and fail to perform their share of the work.</td>
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minimizing the disadvantages. In general, for a significant nonprogrammed decision with high risk or uncertainty, use group decision making. For a programmed decision with low risk or certainty, use individual decision making.

**Determine the Cause of the Problem**

After you have classified the problem, you or the group must define it clearly and accurately, which requires conceptual skills as part of decision making. Because of time pressures, managers often hurry. Rushing to solve a problem that is not correctly defined often leads to a decision that does not solve the problem—haste makes waste. An important part of defining the problem is to distinguish symptoms from cause.

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

Think of this as a cause-and-effect/symptoms relationship. Begin by asking the right questions and listing the observable and describable occurrences (symptoms) indicating a problem exists. Only after doing this can you determine the cause of the problem. If you eliminate the cause, the symptoms should disappear. For example, if you go to start your car and it doesn’t start—what is the problem? If you say the car will not start, that is a symptom. The cause is why it doesn’t start. Usually there are three causes. The starter is bad, the battery is bad, or you have no gas. If no gas is the actual cause and you get a new starter or battery, the car still will not start (symptom), but if you put gas in the tank it will start (cause-symptom goes away—it starts).

Sam has been an excellent producer. However, in the last month, Sam has been out sick or late more times than he was in the past two years. What is the problem? If you say “absenteeism” or “lateness,” you are confusing symptoms and causes. They are symptoms of the problem, but they don’t tell you “why” the problem has occurred.

If you don’t eliminate the cause of the problem, the symptoms will reappear. McDonald’s sales and profits are down. Not being profitable is a symptom. The real question is “What is the cause of the decline in sales and profits?” Two possible causes are the societal change to healthier food and increased competition from Chick-fil-A and Chipotle and others, which weren’t competitors years ago.

**WORK APPLICATION 4-2**

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.

**Rational Versus Bounded**

**Rational Decisions and Cognitive Bias**

Once you determine to use the decision-making model, rather than decision rules or policies and procedures, there are two approaches that can be used to make decisions: rational (or maximizing) decisions and bounded rational (satisficing) decisions.46 Both tend to be considered consistent styles because the decision is neither so fast as to ignore information nor so slow as to miss opportunities.

**Rational Maximizers Versus Bounded**

**Rational Satisficers Approaches to Decision Making**

*Maximizers* tend to make rational decisions, taking their time and weighing a wide range of options before choosing. *Satisficers* (blending satisfy and suffice) tend to make bounded rational decisions and would rather be fast than thorough; they prefer to quickly choose the option that fills the minimum criteria. Often due to time pressure, cost and availability of information, and cognitive bias (the inability to process an excess of information), managers make satisficing decisions.
The key difference between maximizers and satisficers is the time and effort to gather information, generate and analyze alternatives. Decisions are often made somewhere between the two approaches, as we can move toward either end of the continuum based on the programmed decision importance and condition when using the decision-making model.

**Beware of Cognitive Bias**

Both maximizing and satisficing are rational approaches because we generally want to make decisions being rational. However, we are limited to some extent by our cognitive bias. Our ability to make rational decisions is biased and can cause us to use inaccurate judgment, or illogical interpretation, resulting in irrational decisions. Thus, our cognitive limitations and biases may influence our decisions due to:

1. Our brain’s limited information processing capacity—overload. With too much information and too many options, we may not make the best decision.

2. Our attitudes and perceptual biases. Have you noticed that people have different preferences and see the same thing differently than you do? We will discuss attitudes and perception in Chapter 10.

**EXHIBIT 4.5**

**Continua for Classifying a Problem**

<table>
<thead>
<tr>
<th>Decision Structure</th>
<th>Uncertainty</th>
<th>Risk</th>
<th>Certainty</th>
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<tbody>
<tr>
<td>Nonprogrammed Decision: Significant, Nonrecurring, and Nonroutine (Outcome of alternatives unpredictable) (Greater chances of making a poor decision)</td>
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<tr>
<td>Programmed Decision: Nonsignificant, Recurring, and Routine (Outcome of alternatives predictable) (Lesser chances of making a poor decision)</td>
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**When to Use Group or Individual Decision Making**

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<tr>
<th>Group Decisions</th>
<th>Individual Decisions</th>
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**Which Decision Type to Use**

<table>
<thead>
<tr>
<th>Maximizing Rational Decision</th>
<th>Bounded Rational Decision</th>
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3. Our emotions. It is difficult to be rational when we are emotional. We will discuss how to deal with our emotions and emotional people in Chapter 13.

4. Our ethical or unethical (Chapter 2) motivations of the outcomes make the decision for us. We may have incentives that lead us to making decisions that benefit us, but in some way hurt other stakeholders.

Therefore, to make optimal rational decisions, we need to be aware of, and limit, our cognitive biases when solving problems and making decisions.

Exhibit 4-5 puts together the concepts from this section to help you better understand how to classify problems or opportunities to know when to use the decision-making model and to select the most appropriate decision type to use. Note that each part/box is on a continuum, and most decisions will lie somewhere between the two ends of the continuum.

SET OBJECTIVES AND CRITERIA

**>> LO 4- 5:** Explain the difference between an objective and “must” and “want” criteria.

Generally, with simple programmed decisions, the objectives and the criteria have been set. Therefore, you need not complete steps 2 through 4 of the decision-making model. However, with nonprogrammed decisions, you should follow all the steps in the decision-making model. Therefore, the second step for the individual or group facing such a decision requires setting objectives and developing criteria.

The objective of the decision making process for the NBA (IOM 4) was to determine the best solutions for growing game attendance and fan engagement. The objective of the problem solving process was to identify the best solution for implementing and controlling the outcomes related to deploying the solution.

**Setting Objectives**

Setting objectives is an important part of problem solving because it gets you to focus on the final result you want to accomplish. Objectives are the end results outcome of the decision and the plan is the means to achieve the objective. Objectives must be specific, so you'll learn how to set effective objectives in Chapter 5.

**Setting Criteria**

You should also specify the criteria for choosing an alternative solution to a problem, as they set the level of performance. **Criteria are the standards an alternative must meet to be selected as the decision that will accomplish the objective.** Having multiple criteria helps to maximize the decision. You should distinguish “must” and “want” criteria. “Must” criteria have 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. With satisficing, you stop with the first acceptable alternative; with maximizing, you seek to select the best possible option. Criteria that lead to a decision solution that is accepted and supported by key stakeholders are more successful.

Suppose a regional manager faces the problem that a Chili’s Grill & Bar manager has quit and a new manager must be hired. The objective is to hire a store manager by next month. The “must” criteria are that the person have a college degree and a minimum of five years’ experience as a store manager. The “want” criterion is that the person should be a minority group member. The regional manager wants to hire a minority employee but will not hire one who does not meet the “must” criteria. We will discuss criteria again later in this chapter.

**WORK APPLICATION 4-3**

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.
Weighing Criteria

Some criteria are more important than others. But all the “must” criteria are essential, so they each get equal weight at the top rating, say 10 points. However, the “want” criteria can be weighted by importance. For example, in buying a car, a “must” criterion could be a price of under $15,000 or a specific brand—GM Camaro. “Want” criteria can be weighted, such as low mileage (8), good gas mileage (6), blue (4), and so on. You could get technical and develop a mathematical calculation chart for the “want” criteria—such as using the Kepner-Tregoe method. But if you are not mathematically inclined to do so, it is a good idea to give the want criteria weights to keep in mind when analyzing alterations—step 4 of the decision-making model.

GENERATE CREATIVE AND INNOVATIVE ALTERNATIVES

>> **LO 4-6:** State the difference between creativity and innovation.

>> **LO 4-7:** Identify five group techniques used to generate creative alternatives.

When using the decision-making model, 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). Usually, many possible ways exist to solve a problem, so there isn’t always one right decision. You need to recognize your options, and creative problem-solving offers the promise of new, more effective solutions. That is why companies want creative employees.

**Avoiding Taxes**

Many large corporations have an objective to pay less in taxes and are using corporate tax loopholes to avoid paying taxes. Walmart and Apple are such companies. Apple CEO Tim Cook was quoted in the press as defending Apple’s tax-avoiding practices.

It is not known just how many corporations are engaging in these kinds of activities. What is known, though, is that as these corporations continue taking advantage of corporate tax laws, the more taxes ordinary families and small businesses pay.

The U.S. has federal, state, and some local government taxes on corporate profits. President Donald Trump lowered the federal corporate tax rate from 35% to 21%, which was intended to give less incentive to move jobs overseas and keep money in America. However, others claim that large, profitable corporations should pay high taxes to help fund social programs, and the tax rate should not have been cut.

1. Although it is legal, is it ethical for Apple, Walmart, and other corporations to take advantage of tax loopholes to avoid paying taxes?
2. If you became CEO of one of these corporations, would you continue to take advantage of the tax loopholes? Why or why not?
3. As an individual, do or will you take advantage of deductions that are called tax loopholes or pay more taxes than legally required by law?
4. What is the government’s role and responsibility regarding tax loopholes? What should the government do?
5. Should the corporate tax rate be cut more or increased? If so, by how much?
In this section, you will read about creativity and innovation, as companies such as 3M love to say they innovate. We also discuss five group techniques for generating creative alternatives and viewing the alternatives with decision trees.

**Creativity and Innovation**

Creativity can lead to decisions to solve problems. Creativity is a way of thinking that generates new ideas. It’s about seeing things through a different lens, often called thinking outside the box, and coming up with novel and useful ways to solve problems or come up with opportunities. Creativity is the driver that leads to innovation.

Apple’s Steve Jobs said that almost every breakthrough is a combination of ideas that already existed. Jobs didn’t invent the M3 player or the sale of music, he improved it with the iPod and sold music through iTunes, and he didn’t invent the smartphone, just improved it combining existing technology in the iPhone including music. Henry Ford is considered the inventor of the assembly line, but he got the idea from meat-packing mechanized hooks and bakeries’ use of conveyor belts—he put them together and applied them to an automobile assembly line that is still being used today, and used in all types of industries. And today, assembly lines include robots that already existed.

Innovation is the implementation of a new idea. Two important types of innovation are product innovation (new things such as goods/services) and process innovation (new ways of doing things). Creativity is needed, but essentially useless if not implemented. After years of making juice and discarding the leftover cranberry skins, an employee at Ocean Spray came up with the idea of turning them into a consumer snack like Craisins. Innovation is so important to business success that we will discuss it in Chapter 6.

Unfortunately, managers often say they want creative ideas, but when employees come up with great ideas, managers fail to implement them. Star Wars was first denied by United Artists, Silicon Valley investors originally declined to give money to Airbnb, and Kodak initially rejected digital cameras. So employees give up trying to improve products and processes; they even hide creative knowledge. Conversely, managers who ask for employees’ ideas, reward them for sharing, and innovate get improved managerial effectiveness through increased performance. Creativity obviously leads to innovation, but it can be costly, and there is always the risk of failure, like with the Kold soda maker. But don’t let fear of failure stop you from being successful.

**Creativity and Innovation Killers**

There are barriers to changing and trying something different. Gatekeepers slow down or stop innovations, and it’s common for decision-makers to disagree over whether an idea is creative or not. But success only comes from taking some risks and innovating. In Chapter 6, you will learn how to overcome these barriers and manage change. For now, while thinking and working with a group to solve problems or take advantage of new opportunities, you’ll want to be on guard against the kinds of responses that can block creativity and stop innovation, such as the following:

- “It is impossible.” “It can’t be done.”
- “We’ve never done it.” “Has anyone else tried it?”
- “It won’t work in our department (company/industry).”
- “It costs too much.” “It isn’t in the budget.”
- “Let’s form a committee and have lots of meetings.”

If group members say and think something is impossible, they will not try to be creative. If you think about or anyone makes such statements, your job is to remind yourself and the group to focus on generating ideas, the more offbeat the better. So keep a positive, can-do attitude.
The Creative Process

The image of the creative type, like Steve Jobs of Apple, is overrated. Everyone has creative capability, and you can become more creative.63 If not, why do Coca-Cola, OMRON, Pitney Bowes, and Shiseido all have training programs that emphasize creativity for their employees? One thing that helps creativity is to simply give people time and space to think, which they do at Google.

The three stages in the creative process are (1) preparation, (2) incubation and illumination, and (3) evaluation (see Exhibit 4-6). As with the decision-making model, you may have to return to prior stages as you work through the creative process.

1. **Preparation**. First, you must define the problem by getting others’ opinions, feelings, and ideas, as well as the facts. 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, put it aside.64 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,” Epiphany, and Eureka phenomenon.65 Sleep on it, literally.66 Keith Richards woke and didn’t remember putting on his tape recorder, but he listened to it and the first 30 seconds held the opening bars and lyric of what became one of the Rolling Stones’ most iconic hits, “(I Can’t Get No) Satisfaction.” Albert Einstein was stuck on a problem for 10 years, but after a good night’s sleep woke up with the theory of relativity.67

3. **Evaluation**. Before implementing a solution, you should evaluate the alternative to make sure the idea is practical.68 A good approach 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.

Engineer Arthur Fry of 3M developed a new glue that was extremely weak (preparation), so the company called it a failure and decided not to use it. However, Fry sang in a church choir and put little pieces of paper in the hymnal to mark the songs. The problem was the paper often fell out. While listening to a sermon, he had an illumination to use his weak glue to solve the problem. The Post-it note was invented and became a great success, and even today with all the electronic technology, it still sells well.69

**WORK APPLICATION 4-4**

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.

**Using Information to Generate Alternatives**

Being armed with data helps you solve problems and make decisions, and it gives you credibility when presenting your decisions.70 Successful managers, such as Amazon’s Jeff Bezos and Google’s Sergey Brin, use facts, data, information, and knowledge to make decisions, and they are more creative and innovative. 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 significant the decision, generally, the more information and/or alternatives you need. However, if you get too much information or have too many alternatives, the decision becomes too complex, and the best alternative may not be selected. So data should be your tool, not your master.

Using 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. New and increasingly complex technologies are becoming more prevalent and central for gaining knowledge for problem solving and decision making. Two Sigma Investments uses computers to trawl the sea of data for stock picks, including Twitter. However, when using the Internet to make decisions, one must be careful due to the amount of false information posted on the web. Technology is also used to generate creative alternatives in groups. We will revisit technology in the analyzing alternatives quantitative techniques section and the Trends and Issues section.

Nike has a team of 50 research scientists developing new technology to improve the performance of athletes using its products, such as its featherweight Flyknit sneakers. Nike continues to innovate the fashion looks of its sports footwear, apparel, and equipment with new materials, colors, and designs. Nike also offers customizing your own shoes and apparel under the NIKEiD option at its website.

Using Groups to Generate Creative Alternatives

Creativity can thrive in small groups, so there is a trend today toward using groups to develop creative ideas and make decisions. A big advantage to using a group is members’ ability to combine and improve creative ideas. Five of the more popular group creativity techniques are illustrated in Exhibit 4-7 and discussed here.

Brainstorming

**Brainstorming** is the process of suggesting many possible alternatives without evaluation. When brainstorming ideas, follow these guidelines. Include diverse people—let everyone play. 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. You should also build on suggestions made by others. Everyone should have an equal voice. No criticizing others’ ideas, and none of the alternatives should be evaluated until all possible alternatives have been presented, and building on others’ ideas is encouraged. Microsoft used brainstorming to choose “Bing” as the name of its search engine. Research has also shown that we are creative when walking; it helps us get away from the problem, so with small groups, some companies are holding walking brainstorming sessions. Using technology, a newer form of brainstorming is electronic e-brainstorming. People use computers to generate alternatives. Participants synchronously send ideas without getting together. People who are far apart geographically can brainstorm this way, and the number of participants does not have to be limited.

**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.

Nolan Bushnell, founder of Chuck E. Cheese’s, wanted to develop a new concept in family dining, so he began by discussing leisure activities generally. Bushnell then moved to leisure activities having to do with eating out. The idea that came out of this synectic process was a restaurant–electronic game complex where families could entertain themselves while eating pizza and hamburgers.

**Nominal Grouping**

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

1. **Listing.** Each participant generates ideas in writing.
2. **Recording.** Each member presents one idea at a time, and the leader records these ideas where everyone can see them. This continues until all ideas are posted.
3. **Clarification.** Alternatives are clarified through a guided discussion, and any additional ideas are listed.
4. **Ranking.** Each employee rank orders the ideas and identifies what he or she sees as the top three; low-ranked alternatives are eliminated.
5. **Discussion.** Rankings are discussed for clarification, not persuasion. During this time, participants should explain their choices and their reasons for making them.
6. **Vote.** A secret vote is taken to select the alternative.

Nominal grouping is appropriate to use in situations in which groups may be affected by disadvantages (Exhibit 4-4) of domination, goal displacement, conformity, and groupthink, because it minimizes these effects.

**Consensus Mapping**

*Consensus mapping* is the process of developing group agreement on a solution to a problem, or just consensus. If a consensus cannot be reached, the group does not make a decision. 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. The Japanese call this approach *ringi*. Consensus mapping can be used after brainstorming by categorizing or clustering/combining ideas in the process of trying to agree on a single solution. A major benefit is that because any solution chosen is the group’s, members generally are more committed to implementing it. However, consensus can’t always be reached, and leaders can’t always wait for consensus and must make decisions themselves.
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, such as projecting the next artificial intelligence breakthrough and its effect on a specific industry. By knowing what is to come, managers can make creative decisions to plan for the future.

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 departmental level with work groups.

Decision Trees

After you come up with alternative problem solutions, you may want to make a decision tree, as it can help you visualize the alternatives you are considering. 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 (in our next step of the decision making model). Decision trees are also especially helpful when you face information overload.

Carolyn Blakeslee started her then-named Art Calendar (a business magazine for visual artists) because she was dedicated to helping artists make a living doing what they love. Blakeslee started Art Calendar as a part-time business in a room in her house. But as the business grew, it became more than a full-time job. She wanted to have it all—to meet financial goals and devote time to her family and create her own artwork. Like many small business owners, she had to make a decision. Her choices are diagrammed in a decision tree in Exhibit 4-8. Blakeslee decided to expand her business—to work full time and hire professional help. But she later decided to sell the company magazine, now called Professional Artist.

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Using Groups to Generate Alternatives

Identify the most appropriate group technique for generating alternatives in each situation.

A. brainstorming
B. synectics
C. nominal grouping
D. consensus mapping
E. Delphi technique

19. Management wants to expand the business by offering a new product but doesn’t know what to offer.
20. Management wants to project future trends in the social media industry as part of its long-range planning.
21. Management at a video game maker wants to develop a new game. It calls in a consultant, who is leading groups of employees and children to come up with ideas together.
22. A department is suffering from morale problems, and the manager doesn’t know why or how to improve morale.
23. A department is getting new computers, and everyone has to get the same type: either desktop, laptop, or tablet. The manager doesn’t know which type to select for her 25 employees.
ANALYZE ALTERNATIVES AND SELECT THE MOST FEASIBLE

>> LO 4-8: Compare quantitative techniques including big data, cost-benefit analysis, and intuition for analyzing and selecting an alternative.

Notice that in the decision-making model in Exhibit 4-1, generating 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 moving to maximizing. So only after you gather evidence-supported alternatives is it time to evaluate your creative ideas using analytical thinking. Adidas hired Herbert Hainer as CEO because he is known for his analytical approach with the task of determining the cause and solving the symptoms of decreasing market share to Nike and Under Armour.

You want to select the “best” alternative. But notice we said select the most feasible, because some options may not be practical. You have limited resources and data and just can’t afford some options, or the cost may be too high for the expected return. Are you attending the college, driving the car, and living in the house of your first choice, or the most feasible? The CEO of Priceline says that sometimes it is harder to decide what you’re not going to do, especially when analyzing opportunities instead of problems.

In evaluating alternatives, think forward and try to predict the possible outcome of each action on your stakeholders that will be affected by the decision. Don’t forget to consider the ethics of each alternative and how it affects key stakeholders. 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.

This section presents quantitative and qualitative approaches that are commonly used to analyze alternative solutions: quantitative techniques, big data, cost-benefit analysis, and intuition.
Quantitative Techniques

As you read in 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 are evidence-based analytical tools that professionalize decision making by using math in the objective analysis of alternative solutions providing fact-based decisions. The MLB Oakland Athletics player Billy Beane became a celebrity (did you see the movie Moneyball?) by popularizing the use of statistics to make baseball decisions.

You may not be expected to compute the math for all types of quantitative techniques. However, if you know when to use these techniques, you can seek help from specialists within or outside the organization. If you are interested in the actual calculations, you should take courses in quantitative analysis.

Break-Even Analysis

Break-even analysis allows calculation of the volume of sales or revenue that will result in a profit. The break-even point occurs at the level at which no profit or loss results. If a Kroger store buys a carpet cleaner for $300 and rents it for $25 a day, how many times does it have to rent it to break even? If you said 12, you are correct.

Capital Budgeting

Capital budgeting is used to analyze alternative investments in assets that will be used to make money, such as machines to make products and equipment to provide a service like a lawn mower. Capital budgeting is used for make-or-buy, fix-or-replace, upgrade-replacement, and rent/lease-or-buy decisions. 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. Organizations including AMF, Kellogg’s, Procter & Gamble, and 3M use discounted cash flow analysis.

Linear Programming

Optimum allocation of resources (time, money, space, material, equipment, and employees) is determined using linear programming (LP). Companies primarily use LP for programmed decisions under conditions of certainty or low risk, but LP is also widely applied to product-mix decisions. Lear Siegler uses LP when determining work flow to optimize the use of its equipment. FedEx and UPS use LP (with GPS) to determine the best sequence of deliveries to minimize costs for their air and trucking fleets. Uber and Lyft use a form of LP (with GPS) to determine the optimum route for drivers to pick up and get people to their destinations.

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 the 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, which helps the organization balance these two costs, is used by retail stores to determine the optimum number of checkout clerks and by production departments to schedule preventive maintenance. Kaiser Permanente uses queuing theory to help doctors’ offices reduce waiting times for patients.

Probability Theory

Probability theory enables the user to make decisions that take into consideration conditions of risk. You assign a probability of success or failure to each alternative. Then you calculate 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 the cost.

Probability theory is used to determine whether to expand facilities and to what size, to select the most profitable investment portfolio, and to determine the amount of inventory to stock. Using probability theory, hedge fund investors are providing movie financing to major film studios, such as Walt Disney and Sony Pictures, using computer-driven investment simulations to pick movies with the right characteristics to make money. Have you ever used a simple probability, such as, “I have a 75% chance of winning,” or “I have a 90% probability of getting the job or sale”?

WORK APPLICATION 4-5

Give examples from an organization you work for or have worked for of decisions that might appropriately be analyzed using the quantitative techniques.

Big Data

You should realize that big data is also a quantitative technique that is used with or rapidly replacing the other quantitative techniques. Big data analytic software is available to help reduce risk—moving from the decision-making condition continuum of uncertainty toward risk; see Exhibit 4-3.

What Is Big Data?

Big data is the analysis of large amounts of quantified facts to aid in maximizing decision making. The quantitative analysis is commonly done through algorithms and their related sophisticated software. Jack Ma, chairman of Alibaba, says, “Data will become the biggest production material in the future.” Executives must transform into math machines because whoever has the most exact data—and knows how to use it—wins today. Data-driven businesses make faster decisions and are more profitable than companies with low reliance on data.

Selecting Quantitative Methods

Select the appropriate quantitative method to use in each situation.

A. break-even analysis
B. capital budgeting
C. linear programming
D. queuing theory
E. probability theory

24. You are on vacation and want to get to a Walmart.
25. Burger King manager Tania wants to even the workload in her fast-food restaurant. At times, employees hang around with no customers; at other times, they scramble to take the orders of long lines of people.
26. Taylor Rental manager Matthew wants to know how many times a bounce house will have to be rented out to recoup the expense of adding it to the rental list.
27. Machine shop manager Henry is scheduling which products to make on which machines next week.
28. Candida, a lawn-care services sole owner/operator, must decide whether to repair her old truck or to replace it with a new one.
29. Trevor wants to invest money in commodities futures to make a profit.
Using big data with the help of data crunchers like IBM Watson, Gauss & Neumann, and Google Analytics can be expensive, but big data can be used by small business at no or low cost. Google Analytics does have a free version, and for $100 or less per month, Wicked Reports, ClicData, Graphly, and SumAll can provide reports of information telling you what is working and what isn’t from websites and social media.96

What Are Algorithms?

*Algorithms* are used to solve problems and make decisions. They perform calculation, data processing, automated reasoning, and other tasks and functions by following a set of rules in a number of finite number of steps resulting in data for use in decision making. Algorithms using big data can reveal patterns and opportunities that 99% of businesspeople would miss.97

Today, many decisions that could be made by human beings are now being made by computer algorithms with advanced analytic capabilities and access to huge stores of data.98 Complete Self-Assessment 4-2 to find out two of the many ways algorithms are being used with big data, and to compare your attitude about having algorithms used to make decisions in a Pew Research Center survey. Note that we will be discussing the use of résumés and interviews in Chapter 9. For now, focus on “what is your attitude towards the use of an algorithm in making decisions about others and you without human assessment.”

How Is Big Data Used?

The math department is the hottest new function because it is used in all industries. It provides the big data to the operation, marketing, accounting, and other functional

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**Algorithm Attitudes**

Below is a question and the two types of decisions that are being made by algorithms alone, without human assessment, using big data. Note that these are individual questions and there is no cumulative score, and you can compare your answers to the Pew Research Center survey results.

1. Which do you agree with?
   - **A.** Algorithms will always reflect the biases of the people who designed them.
   - **B.** It is possible for algorithms to make decisions that are free from human bias.

2. It is ___ to use algorithm résumé screening to select job candidates.
   - **A.** acceptable
   - **B.** not acceptable

3. I would like to have my résumé screened by an algorithm without human assessment.
   - **A.** agree
   - **B.** disagree

4. It is ___ to use automated job-interviewing analysis to select job candidates.
   - **A.** acceptable
   - **B.** not acceptable

5. I would like to have my computerized job interview screened by an algorithm without human assessment.
   - **A.** agree
   - **B.** disagree

Here are the responses from the Pew Survey (questions 1, 2, and 4). Note that percentages don’t always equal 100% due to rounding and nonresponses.

1. **58%** selected A and **40%** selected B.
2. **41%** selected A and **57%** select B.
3. **32%** selected A and **67%** select B.

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departments. Harklinikken (Danish for “hair clinic”) founder Lars Skjoth uses his algorithm to make tonics designed to prevent and stop hair loss. Domino’s Pizza uses big data to customize marketing, select locations, and manage staffing. Manufacturers, including 3M, use big data in operations to make its products and in the maintenance of its assets to keep them running longer at a lower cost. United Airlines uses big data to decide where to fly, how often, how many people to carry, and how big or small a plane. Taco Bell and Pizza Hut are using apps to take orders and payment to improve service and increase sales. Apple and Google are collecting big data in a race to predict what future products and services you will buy.

Do you believe those big-hit music artists and songs just happen by chance? Alex White brought data analysis to the music industry, forecasting which artists were on the brink of stardom and which songs would be hits before they were released, and now he is using big data to help predict best-selling books with Next Big Book. Have you ever been online and received customized ads for products you bought or searched for in the past or are likely to buy or ads telling you it’s time to reorder? That’s big data.

The NBA is most likely already collecting at least some data related to fan engagement and attendance. However they will likely also focus on collecting as much information as possible about who purchases the streaming services and games versus those who do not and how they use them once they do purchase them. This would help the NBA to identify the most profitable service offerings and to potentially identify other opportunities to generate new revenue streams.

Cost-Benefit, Pros and Cons, and Intuition

Decision making is not simple trust data-versus-gut decisions. Quantitative techniques including big data are objective mathematical approaches to comparing alternatives. However, there are times when management science approaches alone don’t work well, and data is a tool for enhancing intuition, or data and intuition are commonly used together, as discussed here. The people who truly understand the numbers and have experience will make the best so-called gut decisions.

Cost-Benefit Analysis

When making decisions, it is helpful to use a cost-benefit analysis. It compares the cost of implementing a decision to the benefits received. Although we should still use EBM, sometimes you can’t put an exact number on a cost and/or benefit. You may be able to tell me how much you paid for tuition, but how much did you lose in income while you were in college and not working? Plus, the benefits of your education are surely more than the pay you get for a job—how do you put a price on these?

How do you put a price on a human life, and how should you compare the cost of adding extra safety features to the benefits of fewer “potential” accidents? In such cases, cost-benefit analysis is considered a mixed technique for comparing the cost and benefit of each alternative course of action using subjective judgment along with some quantitative math.

Judgment is the cognitive process of drawing conclusions using a rational reasoning process in reaching a decision. So cost-benefit should be a mix of EBM information and judgment. Even with big data, in the fast-changing global environment, managers tend to use some judgment. Mindbody CEO Rick Stollmeyer says, to balance all the relevant information, takes judgment. Vistage CEO Sam Reese says, “I exercise judgement in my choices, drawing on data and experiences to research conclusions.”

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. Benjamin Franklin is said to have used pros-and-cons analysis. Franklin would draw a line down the middle of a piece of paper. On one side he would list the pros and on the other the cons of whatever he was considering.
Recall that we suggested not using bad intuition, winging it without using the decision-making model and EBM information. However, when using the decision-making model, it is appropriate to use good intuition by selecting an alternative based on your experience and rational judgment. Many successful entrepreneurs suggest listening to your voice of intuition.111

When you have dealt with a recurring problem calling for a programmed decision, and it comes up again, you can act quickly with what seems to be limited information when in fact it is based on good intuition. Intuition can also be used with nonsignificant nonprogrammed decisions with low risk, but it is also used to some extent with the decision-making model to complement the other techniques.

Exhibit 4-9 compares the three major approaches to analyzing and selecting alternatives. Although the exhibit seems to have three distinct types, they are actually on a continuum. Regardless of the method used to analyze alternatives, the one selected must meet the criteria established in step 2 of the decision-making model. If none of the alternatives meets the criteria, you have two options: (1) return to step 2 and change the criteria for the most feasible alternative or (2) return to step 3 and generate more alternatives.

### PLAN, IMPLEMENT THE DECISION, AND CONTROL

**LO 4-9:** Explain the importance of planning, implementing, and controlling decisions.

The final two steps in the decision-making model involve planning and implementing the decision (step 5) and controlling (step 6). Unfortunately, decisions will be made but not implemented, and a major cause is not developing a detailed plan to achieve the objective of the decision.112 Entrepreneur and *Shark Tank* TV star Daymond John says that every one of his objectives has an action plan to achieve it.113

Some managers seem to think that once a decision is made, their job is done, but it really has only just begun.114 Have you ever made a New Year’s resolution or decision, like to lose weight and exercise more, but didn’t succeed? So as a leader, once the decision is made, everyone needs to commit to meeting its objective (step 2 of the
decision-making model), and this requires giving support and getting the necessary resources and coordinating them with current resources.

After making a decision, you develop a plan of action with a schedule for implementation. (You will learn the details of the planning process in the next chapter.) The plan needs to be clearly communicated so everyone can do his or her part to achieve the objective. (You will learn about communication in Chapter 13.) And the plans developed, must be implemented to achieve your objective. In implementing a decision, it is likely to be necessary to delegate assignments to others. (You will learn about delegating in Chapter 7.)

Control methods should be developed while planning to measure and monitor decision outcomes. Checkpoints should be established to get feedback to determine whether the chosen alternative is solving the problem. If not, corrective action may be needed based on the feedback. (You will learn about getting feedback in Chapter 13 and control methods in Chapters 14 and 15.) If you are not on track to achieve the objective, you don’t want to give up too soon and lose the desired outcome, but you also don’t want to get caught in the escalation of commitment.115

When we will not admit that we made a bad decision, we are in the process known as escalation of commitment. We tend to maintain commitment to losing courses of action, even in the face of bad news, by wasting more resources, called throwing good money after bad. Why? Because we don’t like to lose something once we have it, and we don’t like to admit we made a mistake, even to ourselves. Do you know anyone who will never admit to making a mistake?

The pain of losing outweighs the joy of winning. It’s called loss aversion. When you make a poor decision, you should admit the mistake and try to rectify it quickly. Go back over the steps in the decision-making model. Target went global, for the first time opening stores in Canada, but it was a major misstep, as after losing billions in investment it shut down.116 You also need to learn from your mistakes by building intuition so you don’t repeat them. On the positive side, poor decisions and failure can often be fixed and may even lead to new opportunities,117 recall the 3M Post-it note.

**USING THE DECISION-MAKING MODEL**

**LO 4-10:** Demonstrate use of the decision-making model in personal or business settings.

Many successful people who say they make decisions based on intuition don’t realize that they actually have a nonconscious process based on information and experience.118 When you apply a conscious process model, you make better decisions.119 That is why using the decision-making model helps you make better decisions, because it gives you a proved conscious process.

If you think about it, you most likely followed all or some of the steps in the decision-making model when selecting a college.

**Step 1. Classify and Define the Problem or Opportunity.** Did you have an opportunity? Was it classified as a nonprogrammed decision under the condition of risk? Did you get information from others and participation in selecting your college?

**Step 2. Set Objectives and Criteria.** Did you have the objective of getting a college degree? Did you have any criteria the college had to have to be selected, like a specific major, financials, location, size, etc.?

**Step 3. Generate Creative and Innovative Alternatives.** Did you generate a list of alternative colleges to attend? Did you get any information, use technology, or others’ input to select colleges to apply too?

**Step 4. Analyze Alternatives and Select the Most Feasible.** Did you compare the alternative colleges and select one? Are you attending your first-choice college or
the most feasible? Did you use information, quantitative data, cost-benefit, pros and cons, and/or intuition in making your selection?

**Step 5. Plan and Implement the Decision.** Did you make any plans to attend college (can be on campus or online)? Did you actually attend college?

**Step 6. Control the Decision.** Are you monitoring your progress towards earning your degree? Have you given any thoughts to transferring colleges? If so, return to prior steps. Are you thinking about not completing your degree?

You may have realized that we haven’t discussed steps 5 and 6 yet. They are covered next.

## TRENDS AND ISSUES IN MANAGEMENT

Globalization, diversity, and integration of technology, as well as, ethics and social responsibility are integral to the success of businesses. Here we will examine the trends related to these topics.

### Globalization and Diversity

A critical global trend is striving to be more innovative and productive. The World Economic Forum has an annual Global Competitiveness Report that measures national competitiveness, defined as the set of institutions, policies and factors that determine the level of productivity of 140 economies. The top five ranked countries in 2018 are the United States, Singapore, Germany, Switzerland, and Japan. China is ranked 28th.

As discussed in Chapter 3’s section on Project GLOBE, the world has diversity, and diverse groups bring creativity. People from different cultures don’t necessarily make decisions the same way. So, cultural intelligence gives you better judgment and decision-making results. Managers in some countries (such as the United States) are more oriented to problem solving, whereas those in others (such as Thailand and Indonesia) 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. Thus, in high-power-distance cultures (most Latin American countries and the Philippines), where decisions are more autocratic, participation is not acceptable. In lower-power-distance cultures (the United States, Ireland, Australia, and Israel), there is greater use of participation in decision making.

Decision-making styles also often vary based on time orientation globally. In some countries, decisions are made more quickly than in others. In countries that are less time conscious, such as Egypt, decision styles are more reflective than in time-conscious countries like the United States, 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. Japanese managers, for example, for whom decision making involves high levels of participation, often take longer to make decisions than U.S. managers do.

### Technology and Cybersecurity

Some say we are in the era of big-data analysis, but CEO Ginni Rometty says IBM is putting artificial intelligence together with data, taking us into a data analytics revolution. Technology using big data can help you think about problems and how to solve them or create opportunities. When starting or growing a business you face a lot of uncertainty and risk. Decisions must be made regarding products to offer and areas to conduct business. A large benefit from using big data is its ability to reduce uncertainty and risk. Clover Health successfully entered new markets to grow and said “Without quantitative analysis, we would have been flying blind.”

Along with big data come the issues of privacy and security in gathering the data. People question their privacy using websites like Google, Facebook, and LinkedIn and...
are concerned about how these companies are using (and possibly selling) their data. Cybersecurity is a major concern. As you may know, hackers broke into companies’ data files, including Yahoo!, Sony, and Equifax and stole customer information. After Mindbody was the victim of a cyberattack that brought the cloud software services down for four days, its CEO, Rick Stollmeyer, hired a new head of security to prevent future cyberattacks.128

**Ethics, CSR, and Sustainability**

Clearly, when it comes to making decisions, we need to be ethical and socially responsible globally, and not simply go by the big data numbers. Embrace diversity and avoid stereotypes that lead you to make decisions that discriminate and help close the gender and minority gap. Use ethical guides (Chapter 2) when making decisions and assess how the decision will affect stakeholders.

We need to be honest in reporting statistical data and not fix the data to support the decisions we want to make. Recall in Self-Assessment 4-2 that the general public questions the ethics and accuracy of using algorithms to manage people.

We need to balance economics and sustainability of the environment. Poor illegal and unethical decisions can be costly to business, society, and the environment. One of the worst and memorable environmental disasters occurred back in 2010. BP didn’t use proper safety measures, and that resulted in the Deepwater Horizon oil spill. BP spent several billion dollars to clean up its oil spill water and shore pollution, some fishermen lost their businesses, it killed fish and other wildlife, and destroyed ecosystems. More recently, PG&E (Pacific Gas & Electric Co.), with a history of illegal safety violations, caused major fires in California causing similar destruction as BP, but with much more land and air pollution and damaged buildings and houses causing people to lose all their material possessions.

Have there been any accidents or intentional disasters in your area? Many disasters can be avoided if people are ethical and don’t cut corners and skimp on safety and do their jobs correctly. We may debate who is going to pay for the damages, but we all end up paying for it.

Technology and big data can also help with environmental sustainability problems, such as sewage treatment plants and turning the sea into fresh water. Bayer is collecting big data that helps farmers increase productivity while helping to preserve our natural resources to feed the world.

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**CHAPTER SUMMARY**

As we bring this chapter to a close, you should understand the relationship between problem solving and decision making and how important making good decisions are to your personal and professional success. You should be able to make decisions using the six step decision-making model. A review of the learning objectives follows:

4-1. Discuss the interrelationship between objectives, problem solving, and decision making in terms of their impact on the management functions.

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.

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

4-2. Compare decision-making styles.

4-3. Summarize each of the steps in the decision-making model.

4-4. Apply the first step of the decision-making model by classifying a problem, selecting the appropriate level of participation, determining the cause of the problem, and determining the type of decision to be made.
The more complex and nonprogrammed the decision, the higher the degree of risk and uncertainty, and the more significant the decision outcome, the greater the need to spend time as a maximizer conducting research with the aid of the decision-making model to make a rational decision.

The more programmed the decision, the more certainty of the outcomes of the decision, and the less important the decision outcome, the less research and use of the decision-making model needed to make a bounded rational (satisficing) decision. The greater the need to maximize, the greater the need to use group decision making. With a group, it is good to have a mix of maximizers and satisficers to increase the speed and quality of the decision. Simple satisficing decisions can be made by an individual.

However, this is a general guide; there may be exceptions to the rule.

4-5. **Explain the difference between an objective and “must” and “want” criteria.**

An objective is the result you want to achieve when making a 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. “Want” criteria should also be weighted by their level of importance to achieving the objective.

4-6. **State the difference between creativity and innovation.**

Creativity is a way of thinking that generates new ideas. Innovation is the implementation of new ideas for products and processes.

4-7. **Identify five group techniques used to generate creative alternatives.**

Five techniques for generating creative alternatives include brainstorming, synectics, nominal grouping, consensus mapping, and the Delphi technique. Decision trees can also be used as a visual aid for generating alternatives.

4-8. **Compare quantitative techniques including big data, cost-benefit analysis, and intuition for analyzing and selecting an alternative.**

Quantitative techniques (break-even, capital budgeting, linear programming, queuing, and probability theories) including big data (the analysis of large amounts of quantified facts to aid in maximizing decision making) are objective management science approaches using math to select the alternative with the highest value.

Cost-benefit analysis compares the cost of implementing a decision to the benefits received. It is commonly used when some of the cost and/or benefits can’t be quantified. Cost-benefit tends to be used by a group that mixes evidence-based information/math and subjective judgment.

Intuition is based on experience and subjective rational judgment. It is commonly used by individuals with recurring problems calling for a programmed decision under the condition of certainty.

4-9. **Explain the importance of planning, implementing, and controlling decisions.**

Decisions are of no value to the company unless there is a plan stating how the objective of solving the problem will be achieved, and a plan that is not implemented is also of no value. The implementation of the plan must also be controlled to measure and monitor the progress of achieving the objective. Based on control, the decision maker must also not give up too soon and lose the benefits or get caught in the escalation of commitment and throw good money after bad.

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**Key Terms**

- big data, 131
- brainstorming, 126
- consensus mapping, 127
- creative process, 125
- creativity, 124
- criteria, 122
- decision making, 113
- decision-making conditions, 117
- decision-making model, 116
- devil’s advocate approach, 125
- innovation, 124
- nominal grouping, 127
- nonprogrammed decisions, 117
- problem, 113
- problem solving, 113
- programmed decisions, 117
- synectics, 127

**Key Term Review**

Complete each of the following statements using one of this chapter’s key terms.

1. A ___ exists whenever objectives are not being met.
2. ___ is the process of taking corrective action to meet objectives.
3. ___ is the process of selecting a course of action that will solve a problem.
4. The steps of ___ include (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.
5. For ___, which are recurring or routine, the decision maker should use decision rules or organizational policies and procedures.
6. For ___, which are significant, nonrecurring, and nonroutine, the decision maker should use the decision-making model.
7. The three ___ are certainty, risk, and uncertainty.
8. ___ are the standards that an alternative must meet to be selected as the decision that will accomplish the objective.
9. ___ is a way of thinking that generates new ideas.
10. ___ is the implementation of a new idea.
11. The three stages in the ___ are (1) preparation, (2) incubation and illumination, and (3) evaluation.
12. With the ___ group members focus on defending a proposed solution to a problem while others try to come up with criticisms of why the solution will not work.
13. ___ is the process of suggesting many possible alternatives without evaluation.
14. ___ is the process of generating novel alternatives through role playing and fantasizing.
15. ___ is the process of generating and evaluating alternatives using a structured voting method.
16. ___ is the process of developing group agreement on a solution to a problem.
17. ___ is the analysis of large amounts of quantified facts to aid in maximizing decision making.

Review Questions

1. What is the relationship among the management functions, problem solving, and decision making?
2. Why is it necessary to determine the decision structure and decision-making conditions?
3. What is the current trend concerning the use of groups to solve problems and make decisions?
4. Is a decrease in sales and/or profits a symptom or a cause of a problem?
5. Would a maximum price of $1,000 to spend on a stereo be an objective or a criterion?
6. Is there really a difference between creativity and innovation?
7. What is the major difference between nominal grouping and consensus mapping?
8. Why are generating and analyzing alternatives separate steps in the decision-making model?
9. What quantitative techniques are commonly used to compare alternatives?
10. When is the cost-benefit analysis commonly used?
11. When is intuition commonly used?

Communication Skills

The following critical-thinking questions can be used for class discussion and/or as written assignments to develop communication skills. Be sure to give complete explanations for all questions.

1. Are problem solving and decision making really all that important? How do you rate your decision-making ability?
2. Which potential advantage and disadvantage of group problem solving and decision making do you think arises most frequently?
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?
4. What is the role of intuition in decision making? Should managers use more objective or subjective intuition techniques when making decisions?
5. Have you ever used any of the techniques for analyzing and selecting an alternative? If so, which one(s)?
6. Should managers be ethical in their decision making? If so, how should ethics be used in decision making?
7. Have you or someone you know experienced escalation of commitment? If so, explain.
8. Do men and women make decisions differently?
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?
CASES

Case 4-1 Toyota Motor Corporation

Toyota Motor Corporation is a leading, global manufacturer of motor vehicles. It has seven key operating principles that drive what the company does and how it does it:

- Honor the language and spirit of the law of every nation and undertake open and fair business activities to be a good corporate citizen of the world.
- Respect the culture and customs of every nation and contribute to economic and social development through corporate activities in their respective communities.
- Dedicate our business to providing clean and safe products and to enhancing the quality of life everywhere through all of our activities.
- Create and develop advanced technologies and provide outstanding products and services that fulfill the needs of customers worldwide.
- Foster a corporate culture that enhances both individual creativity and the value of teamwork, while honoring mutual trust and respect between labor and management.
- Pursue growth through harmony with the global community via innovative management.
- Work with business partners in research and manufacture to achieve stable, long-term growth and mutual benefits, while keeping ourselves open to new partnerships.

The company consists of three business units: automotive operations, financial services, and all others. The company was started by Kiichiro Toyoda in 1937 and is headquartered in Toyota, Japan. The company has a workforce of more than 348,000 employees, and it sells its vehicles in 190 countries and regions. The company has won many industry awards including most trusted brand, longest-lasting vehicles, and best overall value.

Toyota has established itself as an industry leader in quality, reliability, and efficiency in its automotive operations. Its methods for product development, production, and operations have served as the benchmark for others in the industry. One set of practices that has enabled Toyota to achieve a sustainable competitive advantage is the Toyota eight-step problem-solving process that it deploys throughout its global operations. The steps include the following:

- Step 1: Clarify the problem
- Step 2: Break down the problem
- Step 3: Set the target
- Step 4: Analyze the root cause
- Step 5: Develop countermeasures
- Step 6: Implement countermeasures
- Step 7: Monitor results and process
- Step 8: Standardize and share success

Clarifying the problem (step 1) involves Toyota management and employees working in teams to obtain direct experience with the problem for themselves to understand the nature of the problem. Breaking down the problem (step 2) focuses on further analyzing the problem and decomposing it into subproblems that are more specific and manageable. Setting the target (step 3) involves Toyota management and workers agreeing to challenging goals for solving a problem (e.g., reducing defects) as well as mapping out a plan and timeline for achieving the objectives. Analyzing the root cause (step 4) refers to collecting empirical data to understand the underlying causes of a problem. This step is typically helpful in terms of identifying multiple causes of the problem. Developing countermeasures (step 5) focuses on teams of Toyota managers and workers brainstorming specific solutions to remove the root causes of a problem. Implementing countermeasures (step 6) is the actual deployment of the selected countermeasure. Monitoring results and process (step 7) is based on a process called Plan-Do-Check-Act (PDCA) that supports the effective implementation and continuous improvement of a countermeasure. Basically, PDCA involves implementing a countermeasure, evaluating its effectiveness, modifying the countermeasure to further improve it, and then implementing that countermeasure as a cyclical process. Standardizing and sharing success (step 8) focuses on “institutionalizing” the new practice or process into Toyota’s overall production and operational system. This could involve redesigning a process, changing rules and policies, job redesign, and realigning the culture of the organization. This also involves communicating the new practices or processes to others in the Toyota organization so that they may also learn from the success of the change and obtain guidance about how they can achieve similar results.

The decision-making and problem-solving process used at Toyota Motor Corporation has enabled it to produce some of the most popular and reliable vehicles in their respective market segments including the Camry sedan and the RAV4 sport utility vehicle.
**Discussion Questions**

1. How does Toyota address both decision making and problem solving in its operations?
2. How does Toyota’s approach to decision making and problem solving address the four management functions?
3. How does Toyota apply the six-step decision-making process model in its operations?
4. How does Toyota use groups to support decision making and problem solving?
5. What do you think of Toyota’s 8-Step Problem Solving Model? Do you think you could use it at any of the employers where you have held part-time jobs or internships as a student? Why or why not?
6. Do you think that it would be better for Toyota to use a more informal approach to decision making and problem solving so that management and workers have more flexibility to address issues they face in performing their jobs? Why or why not?

**References**


Case created by Loren Kuzuhara, University of Wisconsin–Madison

**Case 4-2 Innovation at Peloton**

Peloton, a term that refers to the main riders in a race, is also the name of a provider of cloud-based live streaming of instructional cycling exercise content focusing on cardio and strength workouts. The company was founded in 2012 by a group of individuals including John Foley (CEO), Tom Cortese (Head of Product Development), Hisao Kushi (General Counsel), Yony Feng (Chief Technology and Information Officer), and Graham Stanton (Senior Vice President of Global Marketing and Sales). It is headquartered in New York City.

In 2018, the company had revenue of over $700 million and a market valuation of $4.2 billion. Its workforce consists of nearly 1,000 employees.

In 2019, Peloton was ranked 14th as one of the most innovative companies in the world by Fast Company magazine.

The company has become a platform for content development for a variety of live and online exercise classes focusing on boot camp, yoga, running, and guided meditation. It offers 20 live classes per day and access to over 10,000 video classes available on demand. Customers pay a monthly subscription of $19.49. Given tremendous demand for its classes, Peloton is currently building a 35,000 square foot studio in Manhattan as well as one in London.

How does Peloton innovate? Two strategies it deploys are the use of curiosity and customer insights. John Foley, the CEO and one of the co-founders of the company leverages his intellectual curiosity by keeping his “radars up” at all times. This enabled him to recognize a key reality – that most consumers who purchased exercise bikes for their homes ended up not using them and putting them in the basement to gather dust. Moreover, he recognized that many people were simply too busy to be able to go to the gym.

Based on this, Foley developed the business model for the company that focused on providing customers with a way to workout in their homes using their exercise bikes and to participate in a variety of fitness classes that simulated working out in an actual gym. He also integrated social media into the user experience by using it to connect people working out with the actual instructors of the classes in real time and to build a community of users where they could post “shout outs” about their workout experiences and build relationships with other users and their instructors.

Foley and others at Peloton also maintain a deep commitment to understanding customers by collecting large amounts of data about their experiences, needs, frustrations, etc. and thinking outside the box to create solutions. A lot of this data is qualitative, based on the relationships formed between instructors and users and their postings on social media. The culture at the company is also very collaborative which encourages informal interaction and pooling of ideas from a diverse group of creative, big thinkers, who have extensive backgrounds in the fitness industry.

**Discussion Questions**

1. What was (were) the key problem(s) that Peloton was trying to solve in the case?
2. What type of decision making style was exhibited to the greatest degree by Foley and others at Peloton?
3. Which decision making condition existed in the environment at Peloton?
4. What type of innovation did Peloton focus on in the case?
5. How does Peloton address the stages of the creative process?
Cumulative Case Questions

6. What are the relevant external environmental factors in the case?
7. How does management at Peloton carry out the four management functions?
8. What types of cultural artifacts are relevant in the case?

References


Case created by Loren Kuzuhara, University of Wisconsin–Madison.

**SKILL BUILDER 4-1**

Making a Decision Using the Decision-Making Model

Select a problem or opportunity that you now face. Remember, a problem exists when objectives are not being met—when there is a difference between what is happening and what you want to happen. The problem or opportunity may be from any facet of your life—work, college, sports, a relationship, a purchase to be made in the near future, where to go on a date, and so on. Use the decision-making model outline that follows to solve your problem or take advantage of the opportunity.

Objective

To improve your ability to make decisions.

Skills

The primary skills developed through this exercise are:

1. Management skill—decision making (conceptual, diagnostic, analytical, critical thinking, and quantitative reasoning)
2. AACSB competency—analytic skills and application of knowledge
3. Management function—primarily planning (but decisions are made when organizing, leading, and controlling)

Step 1. Classify and Define the Problem or Opportunity

Decision structure. Do you need to make a programmed or a nonprogrammed decision?

Decision condition. Are you facing a condition of uncertainty, of risk, or of certainty?

Decision-making type. Is a rational or bounded rational decision appropriate? (Continue to follow all steps in the decision-making model even if a bounded rational decision is appropriate.)

Select the appropriate level of participation. Should the decision be made by an individual or a group? (If a group decision is appropriate, use a group for the following steps in the model. But remember to maximize the advantages and minimize the disadvantages of group decision making.)

Define the problem. List the symptoms and causes of the problem (or opportunity); then write a clear statement of it.

Step 2. Set Objectives and Criteria

Write down what is to be accomplished by the decision and the standards that any alternative must meet to be selected as the decision that will accomplish the objective. (Specify “must” and “want” criteria if appropriate for the decision.)

Objective: Criteria (“must” and “want”)

Step 3. Generate Creative and Innovative Alternatives

What information do you need? (Remember that information must be timely, of good quality, complete, and relevant to be useful) Will you use any technology?
If you are working with a group, will brainstorming, nominal grouping, or consensus mapping be used?

List your alternatives (at least three); number them. If a decision tree will be helpful, make one.

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

Is a quantitative or cost-benefit (pros and cons) analysis appropriate? Choose a method and complete your analysis.

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

Write out your plan for implementing the decision. Be sure to state the controls you will use to make sure you know if the decision is working. How can you avoid escalation of commitment?

**Step 6. Control the Decision**

After implementing the decision, make notes about progress in solving the problem or taking advantage of the opportunity. Indicate any need for corrective action and, if you need to, return to prior steps in the decision-making model.

**Apply It**

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

Your instructor may ask you to do Skill Builder 4-1 in class in a group. If so, the instructor will provide you with any necessary information or additional instructions.

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**SKILL BUILDER 4-2**

**Using the Situational Decision-Making Model**

**Objective**

To determine the appropriate level of participation using the decision-making model.

**Skills**

The primary skills developed through this exercise are:

1. Management skill—decision making (conceptual, diagnostic, analytical, critical thinking, and quantitative reasoning)
2. AACSB competency—analytic skills and application of knowledge
3. Management function—primarily planning (but decisions are made when organizing, leading, and controlling)

**Preparation (Individual and/or Group)**

In this exercise, you will learn how to use the situational decision-making model. Chapter 1's Skill Builder 1-4 discussed the situational management model. Now you will learn an extension of the model to use when deciding which style to use when solving problems and making decisions. Selecting the appropriate level of participation style includes two steps: (1) diagnose the situation, and (2) select the appropriate style.

**Step 1: Diagnose the Situation.** The first step is to diagnose the situational variables, which include time, information, acceptance, and employee capability level. See Model 4-1 for a list of variables. The top half summarizes step 1. Note that we use the term supervisor to represent a manager or group leader of any type overseeing the decision.

**Time** You must determine if there is enough time to include the group in decision making. If there is not enough time, use the autocratic style, and ignore the other three variables—they are irrelevant if there is no time. If time permits, consider the other three variables and select the style without considering time. Time, however, is a relative term. In one situation, a few minutes may be considered a short time period, while in another, a month or more may be a short period of time.

**Information** The more information you have to make the decision, the less need there is to use participation, and vice versa. If you have all the necessary information to make a decision, there is no need to use participation. If you have little information, you need to get it through participation.
Acceptance If you make the decision alone, will the group implement it willingly? The more the team will like the decision, the less need there is to use participation, and vice versa.

Employee Capability The leader must decide if the group has the ability and willingness to be involved in problem solving and decision making. The more capable the employees, the higher the level of participation, and vice versa. Realize that a group’s capability level can change from situation to situation.

Step 2: Select the Appropriate Supervisory Style for the Situation. After considering the four variables, you select the appropriate style for the situation. In some situations, all variables suggest the same possible style, while other cases indicate conflicting styles. For example, you may have time to use any style and may have all the information necessary (autocratic); employees may be reluctant (consultative or participative); and the capability may be moderate (consultative). In situations in which conflicting styles are indicated for different variables, you must determine which variable should be given more weight. In the given example, assume it was determined that acceptance was critical for successful implementation of the decision. Acceptance takes precedence over information. Realizing that employees have a moderate capability, the consultative style would be appropriate. See the bottom half of Model 4-1 for an explanation of how the decision is made using each of the four situational supervisory styles.

Applying the Situational Decision-Making Model

We will apply the model to the following situation:

Ben, a supervisor, can give one of his employees a merit pay raise. He has a week to make the decision. Ben knows how well each employee performed over the past year. The employees really have no option but to accept getting or not getting the pay raise, but they can complain to upper management about the selection. The employees’ capability levels vary but, as a group, they have a high capability level under normal circumstances.

Step 1: Diagnose the Situation.

Time information acceptance capability

Ben, the supervisor, has plenty of time to use any level of participation. He has all the information needed to make the decision (autocratic). Employees have no choice but to accept the decision (autocratic). And the group’s level of capability is normally high (participative).

Step 2: Select the Appropriate Style for the Situation. There are conflicting styles to choose from (autocratic and participative):

The variable that should be given precedence is information. The employees are normally capable, but in a situation like this, they may not be capable of putting the department’s goals ahead of their own. In other words, even if employees know which employee deserves the raise, they may each fight for it anyway. Such a conflict could cause future problems. Some of the possible ways to make the decision are as follows:

- **Autocratic (S-A).** The supervisor would select the person for the raise without discussing it with any employees. Ben would simply announce the decision and explain the rationale for the selection after submitting it to the payroll department.

- **Consultative (S-C).** The supervisor would consult the employees as to who should get the raise. Ben would then decide who would get the raise. He would announce the decision and explain the rationale for it. The supervisor may invite questions and discussion.

- **Participative (S-P).** The supervisor could tentatively select an employee to get the raise but be open to change if an employee or group convinces him that someone else should get the raise. Or Ben could explain the situation to the group and lead a discussion of who should get the raise. After considering their input, Ben would make the decision and explain the rationale for it.

- **Empowerment (S-E).** The supervisor would explain the situation and allow the group to decide who gets the raise. Ben may be a group member. Notice that this is the only style that allows the group to make the decision.

**Selection:** The autocratic style is appropriate for this situation because Ben has all the information needed, acceptance is not an issue, and capability is questionable.

Following are 10 situations calling for a decision. Select the appropriate problem-solving and decision-making style. Be sure to use Model 4-1 when determining the style to use. On the time, information, acceptance, and capability lines, place S-A, S-C, S-P, or S-E, as indicated by the situation. Based on your diagnoses, select the one style you would use. Note that style on the line preceding the situation.
## Step 1: Diagnose the Situation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Use of Style</th>
</tr>
</thead>
</table>
| Time              | No = S-A —stop——  
|                   | Yes = any style continue |
| Information       | All = S-A  
|                   | Some = S-C  
|                   | Little = S-P or S-E |
| Acceptance        | Accept = S-A  
|                   | Reluctance = S-C  
|                   | Reject = S-P or S-E |
| Capability        | Low = S-A  
|                   | Moderate = S-C  
|                   | High = S-P  
|                   | Outstanding = S-E |

### Step 2: Select the Appropriate Style for the Situation

#### Autocratic (S-A)

The supervisor makes the decision alone and announces it after the fact. An explanation of the rationale for the decision may be given.

#### Consultative (S-C)

The supervisor consults individuals or the group for information and then makes the decision. Before implementing the decision, the supervisor explains the rationale for the decision and sells the benefits to the employees. The supervisor may invite questions and have a discussion.

#### Participative (S-P)

The supervisor may present a tentative decision to the group and ask for its input. The supervisor may change the decision if the input warrants a change. Or the supervisor may present the problem to the group for suggestions. Based on employee participation, the supervisor makes the decision and explains its rationale.

#### Empowerment (S-E)

The supervisor presents the situation to the group and describes limitations to the decision. The group makes the decision. The supervisor may be a group member.

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**S-A = Autocratic  S-C = Consultative  S-P = Participative  S-E = Empowerment**

1. You have developed a new work procedure that will increase productivity. Your boss likes the idea and wants you to try it within a few weeks. You view your employees as fairly capable and believe that they will be receptive to the change.  
   ___ time ___ information ___ acceptance ___ capability

2. The industry of your product has new competition. Your organization’s revenues have been dropping. You have been told to lay off three of your 10 employees in two weeks. You have been the supervisor for over one year. Normally, your employees are very capable.  
   ___ time ___ information ___ acceptance ___ capability

3. Your department has been facing a problem for several months. Many solutions have been tried, but all have failed. You have finally thought of a solution, but you are not sure of the possible consequences of the change required or of acceptance by the highly capable employees.  
   ___ time ___ information ___ acceptance ___ capability
4. Flextime has become popular in your organization. Some departments let each employee start and end work when he or she chooses. However, because of the cooperative effort of your employees, they must all work the same eight hours. You are not sure of the level of interest in changing the hours. Your employees are a very capable group and like to make decisions.

___ time ___ information ___ acceptance ___ capability

5. The technology in your industry is changing so fast that the members of your organization cannot keep up. Top management hired a consultant, who has made recommendations. You have two weeks to decide what to do. Your employees are normally capable, and they enjoy participating in the decision-making process.

___ time ___ information ___ acceptance ___ capability

6. A change has been handed down from top management. How you implement it is your decision. The change takes effect in one month. It will personally affect everyone in your department. Your employees’ acceptance is critical to the success of the change, but they are usually not too interested in being involved in making decisions.

___ time ___ information ___ acceptance ___ capability

7. Your boss called you on the telephone to tell you that someone has requested an order for your department’s product with a very short delivery date. She asked you to call her back in 15 minutes with the decision about taking the order. Looking over the work schedule, you realize that it will be very difficult to deliver the order on time. Your employees will have to push hard to make it. They are cooperative and capable and enjoy being involved in decision making.

___ time ___ information ___ acceptance ___ capability

8. Top management has decided to make a change that will affect all your employees. You know the employees will be upset because it will cause them hardship. One or two may even quit. The change goes into effect in 30 days. Your employees are very capable.

___ time ___ information ___ acceptance ___ capability

9. You believe that productivity in your department could be increased. You have thought of some ways that may work, but you are not sure of them. Your employees are very experienced; almost all of them have been in the department longer than you have.

___ time ___ information ___ acceptance ___ capability

10. A customer has offered you a contract for your product with a quick delivery date. The offer is open for two days. Meeting the contract deadline would require employees to work nights and weekends for six weeks. You cannot require them to work overtime. Filling this profitable contract could help get you the raise you want and feel you deserve. However, if you take the contract and don’t deliver on time, it will hurt your chances of getting a big raise. Your employees are very capable.

___ time ___ information ___ acceptance ___ capability

Preparation: You should have completed the 10 situations from the preparation.

Experience: You will try to select the recommended problem-solving and decision-making style in the 10 preparation situations.

Procedure 1 (5–12 minutes)
The instructor reviews Model 4-1 and explains how to use it for selecting the appropriate supervisory style for situation 1 of the exercise preparation.

Procedure 2 (12–20 minutes)
Break into teams of two or three. Apply the model to situations 2 through 5 as a team. You may change your original answers. The instructor goes over the recommended answers and scoring for situations 2 through 5. Do not continue on to situation 6 until after the instructor goes over the answers to situations 2 through 5.

In the same teams, select problem-solving and decision-making styles for situations 6 through 10. The instructor will go over the recommended answers and scoring.

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

Your instructor may ask you to do Skill Builder 4-2 in class in a group. If so, the instructor will provide you with any necessary information or additional instructions.