

chapter 12

Individual and Group Decision Making



Learning Objectives

When you finish studying the material in this chapter, you should be able to:

- LO.1** Compare and contrast the rational model of decision making, Simon's normative model, and the garbage can model.
- LO.2** Discuss eight decision-making biases.
- LO.3** Discuss the thrust of evidence-based decision making and its implementation principles.
- LO.4** Explain the model of decision-making styles.
- LO.5** Explain the model of intuition and the ethical decision tree.
- LO.6** Summarize the pros and cons of involving groups in the decision-making process.
- LO.7** Contrast brainstorming, the nominal group technique, the Delphi technique, and computer-aided decision making.
- LO.8** Describe the stages of the creative process.
- LO.9** Discuss the practical recommendations for increasing creativity.

Why Does Google Rely on Group Decision Making at the Top of the Organization?

A group of Google executives meets every Monday afternoon in the corporate boardroom. "The weekly meeting, known as Execute, was launched last summer with a specific mission: to get the near-sovereign leaders of Google's far-flung product groups into a single room and harmonize their disparate initiatives." Google's co-founders Sergey Brin and Larry Page, who recently took over as CEO, and former CEO Eric Schmidt run the meetings. Attendees at the meeting include Andy Rubin, engineering VP for Android, Salar Kamangar, VP for Youtube, and Vic Gundotra, engineering VP for social networks. Page told a reporter from *Bloomberg Businessweek* that the goal of these meetings is "to get these different product leaders together to find time to talk through all the integration points. . . . Every time we increase the size of the company, we need to keep things going to make sure we keep our speed, pace, and passion."

Over the years, the decision-making process at Google led to a host of innovative products such as Gmail and Android, not to mention the company's heralded search engine. Unfortunately, the company has recently encountered several failed offerings, including Google Buzz, which is a Twitter clone, and Google

Wave, a service that allows people to collaborate online.

"Page doesn't explicitly blame those missteps on the company's loosely knit management or the famous troika at the top. Yet he concedes, 'We do pay a price [for shared decision making], in terms of speed and people not necessarily knowing where they go to ask questions.' Page believes that his appointment as CEO will help the company to get things done faster.

People outside and inside Google note that Larry Page does not fit the profile of a traditional chief executive. He's an introvert who does not like public speaking or having a strict daily regimen. This is one reason why Google is holding the weekly Execute meetings. Attendees at these meetings will become spokespeople for the organization around the world. "Page says one of his goals is to take the decisive leadership style they have shown within their product groups, spread it across the company, and apply it to major decisions."

Page wants to increase the speed with which people make decisions and innovate at Google. He believes that the weekly Execute meetings are prime vehicles for making this happen.¹

Time will tell whether or not Google's approach to decision making works in the long run. Individually, we all make decisions on a daily basis. From deciding what clothes to wear to whom we want to marry, our decisions impact our lives in many ways. Sometimes our choices are good and other times they are bad. At work, however, decision making is one of the primary responsibilities of being a manager, and the quality of one's decisions can have serious consequences. Consider the case of Ronald Shaich, chairman and CEO of Panera Bread Company. Despite objections from others around him, he relied on his own judgment and intuition and decided to sell off Au Bon Pain in 1998 in order to grow Panera Bread Company. At the time, Panera had 135 stores. He said it was a "bet-the-job kind of choice." The sale resulted in \$73 million to invest in Panera, and the rest is history. Panera now operates 1,500 cafés around the country. He told a *Bloomberg Businessweek* reporter that "I make my best decisions when I'm on vacation. You're not focused on all the stuff that comes at you as CEO. I've moved into a chairman role and I'm now more productive than ever. My decisions are formed by where I want to go."²

The overall goal of this chapter is to provide you with a thorough understanding of decision making so that you can improve the quality of your personal and group-based decisions. Who knows, you may one day use material in this chapter to help make entrepreneurial decisions like Larry Page and Ronald Shaich. To help in this pursuit, this chapter focuses on (1) models of decision making, (2) decision-making biases, (3) evidence-based decision making, (4) the dynamics of decision making, (4) group decision making, and (5) creativity.

TO THE POINT

What are the key differences between rational and nonrational models of decision making and how can these models be integrated?



LO.1 Models of Decision Making

Decision making entails identifying and choosing alternative solutions that lead to a desired state of affairs. For example, you may be reading this book as part of an online course that you decided to take because you are working full time. Alternatively, you may be a full-time student reading this book as part of a course being taken on campus. Identifying and sorting out alternatives like when and how to take a course is the process of decision making.

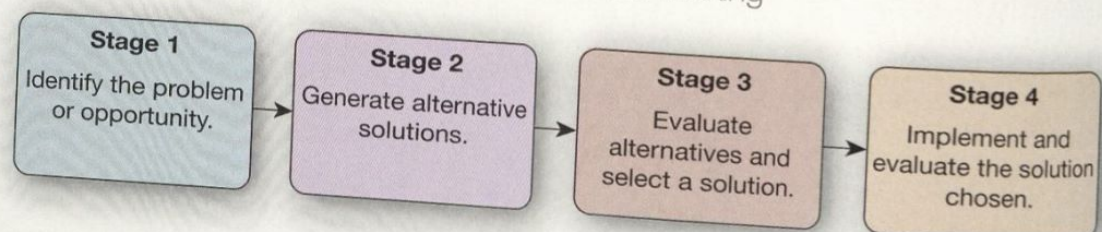
You can use two broad approaches to make decisions. You can follow a *rational model* or various *nonrational models*. Let us now consider how each of these approaches works. We begin by examining the rational model of decision making.

The Rational Model

The **rational model** proposes that managers use a rational, four-stage sequence when making decisions (see Figure 12-1). According to this model, managers are completely objective and possess complete information to make a decision. Despite criticism for being unrealistic, the rational model is instructive because it analytically breaks down the decision-making process and serves as a conceptual anchor for newer models.³ Let us now consider each of these four steps.

Stage 1: Identify the Problem or Opportunity—Determining the Actual versus the Desirable A **problem** exists when the actual situation and the desired situation differ. As a manager, you will have no shortage of

figure 12-1 The Four Stages in Rational Decision Making



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Reed Hastings Seizes Opportunities to Grow Netflix

Hastings anticipated, virtually from the moment he started Netflix, that consumers would eventually prefer to get movies instantly delivered via the Internet. (Hastings's foresight is amazing, considering that back in 2000, less than 7% of US homes had broadband.) And so rather than let any number of current and potential competitors—including premium cable channels like HBO . . . and some of the biggest companies in the tech world—swoop in and deliver a lethal blow, Hastings is now re-tooling Netflix as a streaming-video company, disrupting his own business before it gets disrupted.

For Hastings the decline of AOL is a reminder of what happens to companies unwilling to take risks. AOL, the dominant dial-up online service, struggled as broadband service proliferated. It had good e-mail and some unique content, but those services didn't buy AOL loyalty or

make it synonymous with broadband, and ultimately AOL lost customers.

The opportunity faced by Hastings involved deciding how to get Netflix's 10 million subscribers to switch from DVD to streaming. Hastings decided in 2011 to separate its DVD-by-mail business from the online movie streaming business. The move angered customers and the stock price significantly dropped.

To what extent do you think an individual's personality plays a part in perceiving opportunity?

SOURCE: Excerpted from M V Copeland, "Reed Hastings: Leader of the Pack," *Fortune*, December 6, 2010, p 123; Updated with "Netflix Separates DVD, Streaming Businesses," *Florida Today.com*, <http://www.floridatoday.com/article/20110920/BUSINESS/109200306/1003>, September 20, 2011.

problems. Customer complaints. Employee turnover. Competitors' new products. Production problems. Consider the problems faced by Mattel's CEO, Bob Eckert. He concluded that his company had a problem when two of his top managers arrived in his office to tell him lead had been discovered in one of the company's toys. Around the same time, newspapers were publishing reports that magnets were becoming dislodged from other Mattel toys: If a small child swallowed them, they could cause serious damage by attaching themselves together in the child's intestines. Eckert had to decide whether his company had a publicity problem, a design problem, or a production problem—and if it were a production problem, where that problem was occurring and why.⁴

However, managers also have to make decisions regarding opportunities. An **opportunity** represents a situation in which there are possibilities to do things that lead to results that exceed goals and expectations. For example, Reed Hastings, founder, chairman, and CEO of Netflix, saw great opportunities in transforming his DVD-by-mail company into a streaming-video company (see Real World/Real People above). Financial results suggest that Reed clearly capitalized on opportunity: Netflix was the stock of the year in 2010, increasing 200% since January, as compared to the S&P 500's 7% gain.⁵

Whether you face a problem or an opportunity, the goal is always the same: to make improvements that change conditions from their current state to more desirable ones. This requires you to diagnose the causes of the problem.



Mattel CEO Bob Eckert quickly responded to a problem regarding finding lead in some of the company's toys. Failure to respond could have cost the company severe negative public relations.

decision making Identifying and choosing solutions that lead to a desired end result.

rational model Logical four-step approach to decision making.

problem Gap between an actual and a desired situation.

opportunity Situations that present possibilities for exceeding goals or expectations.

Stage 2: Generate Alternative Solutions—Both the Obvious and the Creative After identifying a problem and its causes, the next logical step is generating alternative solutions. Later in this chapter we discuss several group problem-solving techniques that can be used during this stage. Unfortunately, a research study of 400 strategic decisions revealed that managers struggled during this stage because of three key decision-making blunders. These blunders were (1) rushing to judgment, (2) selecting readily available ideas or solutions, and (3) making poor allocation of resources to study alternative solutions. Decision makers thus are encouraged to slow down when making decisions, to evaluate a broader set of alternatives, and to invest in studying a greater number of potential solutions.⁶

Stage 3: Evaluate Alternatives and Select a Solution—Ethics, Feasibility, and Effectiveness In this stage, you need to evaluate alternatives in terms of several criteria. Not only are costs and quality important, but you should consider the following questions: (1) Is it ethical? (If not, don't consider it.) Returning to the earlier example of Mattel's problems, CEO Eckert said, "How you achieve success is just as important as success itself."⁷ He announced a recall of 18.2 million toys, the largest recall in Mattel's history. The company also announced that its magnet toys had been redesigned to make them safer and that it had investigated the Chinese contractor that had used the paint containing lead. (2) Is it feasible? (If time is an issue, costs are high, resources are limited, technology is needed, or customers are resistant, for instance, than the alternative is not feasible.) (3) Will it remove the causes and solve the problem?

Stage 4: Implement and Evaluate the Solution Chosen Once a solution is chosen, it needs to be implemented. After the solution is implemented, the evaluation phase assesses its effectiveness. If the solution is effective, it should reduce the difference between the actual and desired states that created the problem. If the gap is not closed, the implementation was not successful, and one of the following is true: Either the problem was incorrectly identified or the solution was inappropriate. Assuming the implementation was unsuccessful, management can return to the first step, problem identification. If the problem was correctly identified, management should consider implementing one of the previously identified, but untried, solutions. This process can continue until all feasible solutions have been tried or the problem has changed.

Summarizing the Rational Model The rational model is prescriptive, outlining a logical process that managers should use when making decisions. As such, the rational model is based on the notion that managers optimize when making decisions. **Optimizing** involves solving problems by producing the best possible solution and is based on a set of highly desirable assumptions—having complete information, leaving emotions out of the decision-making process, honestly and accurately evaluating all alternatives, time and resources are abundant and accessible, and people are willing to implement and support decisions. Practical experience, of course, tells us that these assumptions are unrealistic. As noted by Herbert Simon, a decision theorist who in 1978 earned the Nobel Prize for his work on decision making, "The assumptions of perfect rationality are contrary to fact. It is not a question of approximation; they do not even remotely describe the processes that human beings use for making decisions in complex situations."⁸ That said, there are three benefits of trying to follow a rational process as much as realistically possible.

- The quality of decisions may be enhanced, in the sense that they follow more logically from all available knowledge and expertise.
- It makes the reasoning behind a decision transparent and available to scrutiny.
- If made public, it discourages the decider from acting on suspect considerations (such as personal advancement or avoiding bureaucratic embarrassment).⁹

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for an interactive exercise to
test your knowledge of the
rational model of decision
making.

Nonrational Models of Decision Making

In contrast to the rational model's focus on how decisions should be made, **nonrational models** attempt to explain how decisions actually are made. They are based on the assumption that decision making is uncertain, that decision makers do not possess complete information, and that it is difficult for managers to make optimal decisions. Two nonrational models are Herbert Simon's *normative model* and the *garbage can model*.

Simon's Normative Model Herbert Simon proposed this model to describe the process that managers actually use when making decisions. The process is guided by a decision maker's bounded rationality. **Bounded rationality** represents the notion that decision makers are "bounded" or restricted by a variety of constraints when making decisions. These constraints include any personal characteristics or internal and external resources that reduce rational decision making. Personal characteristics include the limited capacity of the human mind, personality (a meta-analysis of 150 studies showed that males displayed more risk taking than females),¹⁰ and time constraints. Examples of internal resources are the organization's human and social capital, financial resources, technology, plant and equipment, and internal processes and systems. External resources include things the organization cannot directly control such as employment levels in the community, capital availability, and government policies.¹¹

Ultimately, these limitations result in the tendency to acquire manageable rather than optimal amounts of information. In turn, this practice makes it difficult for managers to identify all possible alternative solutions. In the long run, the constraints of bounded rationality cause decision makers to fail to evaluate all potential alternatives, thereby causing them to satisfice.

Satisficing consists of choosing a solution that meets some minimum qualifications, one that is "good enough." Satisficing resolves problems by producing solutions that are satisfactory, as opposed to optimal. Finding a radio station to listen to in your car is a good example of satisficing. You cannot optimize because it is impossible to listen to all stations at the same time. You thus stop searching for a station when you find one playing a song you like or do not mind hearing.

A recent national survey by the Business Performance Management Forum underscores the existence of satisficing: only 26% of respondents indicated that their companies had formal, well-understood decision-making processes. Respondents noted that the most frequent causes of poor decision making included:

- Poorly defined processes and practices.
- Unclear company vision, mission, and goals.
- Unwillingness of leaders to take responsibility.
- A lack of reliable, timely information.¹²

The Garbage Can Model As is true of Simon's normative model, this approach grew from the rational model's inability to explain how decisions are actually made. It assumes that organizational decision making is a sloppy and haphazard process. This contrasts sharply with the rational model, which proposed that decision makers follow a sequential series of steps beginning with a problem and ending with a solution. According to the **garbage can model**, decisions result

optimizing Choosing the best possible solution.

nonrational models Explain how decisions actually are made.

bounded rationality Constraints that restrict rational decision making.

satisficing Choosing a solution that meets a minimum standard of acceptance.

garbage can model Holds that decision making is sloppy and haphazard.

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www.mcgrawhillconnect.com
 for a video case on decision
 making at New Belgium
 Brewery.



Campbell Soup Company invented a shelving system that neatly stacks its products on shelves like this one. The system is good for Campbell Soup and for grocery stores.

from a complex interaction between four independent streams of events: problems, solutions, participants, and choice opportunities.¹³ The interaction of these events creates "a collection of choices looking for problems, issues and feelings looking for decision situations in which they might be aired, solutions looking for issues to which they might be the answer, and decision makers looking for work."¹⁴ A similar type of process occurs in your kitchen garbage basket. We randomly discard our trash and it gets mashed together based on chance interactions. Consider, for instance, going to your kitchen trash container and noticing that the used coffee grounds are stuck to a banana peel. Can you explain how this might occur? The answer is simple: because they both got thrown in around the same time. Just like the process of mixing garbage in a trash container, the garbage can model of decision making assumes that decision making does not follow an orderly series of steps. Rather, attractive solutions can get matched up with whatever handy problems exist at a given point in time or people get assigned to projects because their workload is low at that moment. This model of decision making thus attempts to explain how problems, solutions, participants, and choice opportunities interact and lead to a decision.

The garbage can model has four practical implications. First, this model of decision making is more pronounced in industries that rely on science-based innovations such as pharmaceutical companies.¹⁵ Managers in these industries thus need to be more alert for the potential of haphazard decision making. Second, many decisions are made by oversight or by the presence of a salient opportunity. For example, managers from the Campbell Soup Company needed to find a way to motivate supermarkets to give them more space on the shelves. They thus decided to create a new shelving system that automatically slides soup cans to the front when a shopper picks up a can. The decision was a success. Customers bought more soup, increasing the revenue for both Campbell and the supermarkets, and the supermarkets reduced their restocking costs.¹⁶

Third, political motives frequently guide the process by which participants make decisions. It thus is important for you to consider the political ramifications of your decisions. Organizational politics are discussed in Chapter 15. Finally, important problems are more likely to be solved than unimportant ones because they are more salient to organizational participants.¹⁷

Integrating Rational and Nonrational Models

Applying the idea that decisions are shaped by characteristics of problems and decision makers, consultants David Snowden and Mary Boone have come up with their own approach that is not as haphazard as the garbage can model but acknowledges the challenges facing today's organizations. They essentially integrate rational and nonrational models by identifying four kinds of decision environments and an effective method of decision making for each.¹⁸

1. A simple context is stable, and clear cause-and-effect relationships can be discerned, so the best answer can be agreed on. This context calls for the rational model, where the decision maker gathers information, categorizes it, and responds in an established way.
2. In a complicated context, there is a clear relationship between cause and effect, but some people may not see it, and more than one solution may be effective. Here, too, the rational model applies, but it requires the investigation of options, along with analysis of them.
3. In a complex context, there is one right answer, but there are so many unknowns that decision makers don't understand cause-and-effect relationships. Decision makers therefore need to start out by experimenting, testing options, and probing to see what might happen as they look for a creative solution.

4. In a chaotic context, cause-and-effect relationships are changing so fast that no pattern emerges. In this context, decision makers have to act first to establish order and then find areas where it is possible to identify patterns so that aspects of the problem can be managed. The use of intuition and evidence-based decision making, both of which are discussed later in this chapter, may be helpful in this situation.¹⁹

Back to the Chapter-Opening Case

How does Google's Execute meetings attempt to integrate rational and nonrational models of decision making?

LO.2 Decision-Making Biases

People make a variety of systematic mistakes when making decisions. These mistakes are generally associated with a host of biases that occur when we use judgmental heuristics. **Judgmental heuristics** represent rules of thumb or shortcuts that people use to reduce information-processing demands.²⁰ We automatically use them without conscious awareness. The use of heuristics helps decision makers to reduce the uncertainty inherent within the decision-making process. Because these shortcuts represent knowledge gained from past experience, they can help decision makers evaluate current problems. But they also can lead to systematic errors that erode the quality of decisions, particularly for people facing time constraints such as primary health care doctors. For example, a recent study of medical malpractice claims showed that diagnostic errors, which are partly a function of judgmental heuristics, accounted for about 40% of such cases. Diagnostic errors kill 40,000 to 80,000 people a year in the United States. Experts suggest that we need to become more involved with our health care and follow up on lab results to help reduce such mistakes.²¹

There are both pros and cons to the use of heuristics. In this section we focus on discussing eight biases that affect decision making: (1) availability, (2) representativeness, (3) confirmation, (4) anchoring, (5) overconfidence, (6) hindsight, (7) framing, and (8) escalation of commitment. Knowledge about these biases can help you to avoid using them in the wrong situation.

1. **Availability heuristic.** The availability heuristic represents a decision maker's tendency to base decisions on information that is readily available in memory. Information is more accessible in memory when it involves an event that recently occurred, when it is salient (e.g., a plane crash), and when it evokes strong emotions (e.g., a high-school student shooting other students). This heuristic is likely to cause people to overestimate the occurrence of unlikely events such as a plane crash or a high-school shooting. This bias also is partially responsible for the recency effect discussed in Chapter 7. For example, a manager is more likely to give an employee a positive performance evaluation if the employee exhibited excellent performance over the last few months.

TO THE POINT

How would you describe the eight decision-making biases?

 Go to www.mcgrawhillconnect.com for an interactive exercise to test your knowledge of the biases involved in making decisions.

judgmental heuristics Rules of thumb or shortcuts that people use to reduce information-processing demands.

2. **Representativeness heuristic.** The representativeness heuristic is used when people estimate the probability of an event occurring. It reflects the tendency to assess the likelihood of an event occurring based on one's impressions about similar occurrences. A manager, for example, may hire a graduate from a particular university because the past three people hired from this university turned out to be good performers. In this case, the "school attended" criterion is used to facilitate complex information processing associated with employment interviews. Unfortunately, this shortcut can result in a biased decision. Similarly, an individual may believe that he or she can master a new software package in a short period of time because a different type of software was easy to learn. This estimate may or may not be accurate. For example, it may take the individual a much longer period of time to learn the new software because it involves learning a new programming language.
3. **Confirmation bias.** The confirmation bias has two components. The first is to subconsciously decide something before investigating why it is the right decision, for example, deciding to purchase a particular type of PDA (personal digital assistant). This directly leads to the second component, which is to seek information that supports purchasing this PDA while discounting information that does not.
4. **Anchoring bias.** How would you answer the following two questions? Is the population of Iraq greater than 40 million? What's your best guess about the population of Iraq? Was your answer to the second question influenced by the number *40 million* suggested by the first question? If yes, you were affected by the anchoring bias. The anchoring bias occurs when decision makers are influenced by the first information received about a decision, even if it is irrelevant. This bias happens because initial information, impressions, data, feedback, or stereotypes anchor our subsequent judgments and decisions.
5. **Overconfidence bias.** The overconfidence bias relates to our tendency to be over-confident about estimates or forecasts. This bias is particularly strong when you are asked moderate to extremely difficult questions rather than easy ones. Imagine the problem this bias might create for a sales manager estimating sales revenue for the next year. Research shows that overoptimism significantly influences entrepreneurs' decisions to start and sustain new ventures.²² To what extent do you think this bias affected the Deepwater Horizon oil rig explosion in 2010? A presidential oil-spill commission concluded that technological arrogance, hubris, and the overconfidence bias played major roles (see Real World/Real People on page 337).²³
6. **Hindsight bias.** Imagine yourself in the following scenario: You are taking an OB course that meets Tuesday and Thursday, and your professor gives unannounced quizzes each week. It's the Monday before a class, and you are deciding whether to study for a potential quiz or to watch Monday night football. Two of your classmates have decided to watch the game rather than study because they don't think there will be a quiz the next day. The next morning you walk into class and the professor says, "Take out a sheet of paper for the quiz." You turn to your friends and say, "I knew we were going to have a quiz; why did I listen to you?" The hindsight bias occurs when knowledge of an outcome influences our belief about the probability that we could have predicted the outcome earlier. We are affected by this bias when we look back on a decision and try to reconstruct why we decided to do something.
7. **Framing bias.** This bias relates to the manner in which a question is posed. Consider the following scenario: Imagine that the United States is preparing for the outbreak of an unusual Asian disease that is expected to kill 600 people. Two alternative programs to combat the disease have been proposed.



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Overconfidence Bias Partly to Blame for Oil-Rig Disaster

According to Bob Bea, an engineering professor at the University of California Berkely, "technological disasters, like the PB oil spill, follow a well-worn 'trail of tears.' Bea has investigated 630 different types of disasters and is an expert on offshore drilling.

"Bea categorizes disasters into four groups. One such group is when an organization simply ignores warning signs through overconfidence and incompetence. He thinks the BP spill falls into that category. Bea pointed to congressional testimony that BP ignored problems with a dead battery, leaky cement job, and loose hydraulic fittings."

"Disasters don't happen because of 'an evil empire,' Bea said. 'It's hubris, arrogance, and indolence.'"

"Cutting-edge technology often works flawlessly. At first, everyone worries about risk. Then people get lulled into complacency by success, and they forget that they are operating on the edge, say experts who study disasters. Corners get cut, problems ignored. Then boom."

Charles Perrow, a professor at Yale University, concluded that "there's nothing safe out there. We like to pretend there is and argue afterward, 'That's why we took the risks, because it hadn't failed before.'"

How could BP have overcome the overconfidence bias?

SOURCE: Excerpted from S Borenstein, "Disasters Often Stem from Hubris," *The Arizona Republic*, July 12, 2010, p A4.



The Deep Horizon oil rig disaster.

Assume that the exact scientific estimates of the consequences of the programs are as follows:

Program A: If Program A is adopted, 200 people will be saved.

Program B: If Program B is adopted, there is a one-third probability that 600 people will be saved and a two-thirds probability that no people will be saved.

Which of the two programs would you recommend?²⁴ Research shows that most people chose Program A even though the two programs produce the same results. This result is due to the framing bias. The framing bias is the tendency to consider risks about gains—saving lives—differently than risks pertaining to losses—losing lives. You are encouraged to frame decision questions in alternative ways in order to avoid this bias.

8. **Escalation of commitment bias.** The escalation of commitment bias refers to the tendency to stick to an ineffective course of action when it is unlikely that the bad situation can be reversed. Personal examples include investing more money into an old or broken car or putting more effort into improving a personal relationship that is filled with conflict. A business example pertains to Blockbuster "asking creditors to put up more money to help it exit bankruptcy protection, prompting a debate among bondholders about whether to invest further in the struggling video chain or put it up for sale."²⁵ Would you invest in Blockbuster? Researchers recommend the following actions to reduce the escalation of commitment:

- Set minimum targets for performance, and have decision makers compare their performance against these targets.
- Regularly rotate managers in key positions throughout a project.

- Encourage decision makers to become less ego-involved with a project.
- Make decision makers aware of the costs of persistence.²⁶

TO THE POINT

What is thrust of evidence-based decision making, and what does it take to implement this approach in organizations?



LO.3

Evidence-Based Decision Making

Interest in the concept of evidence-based decision making stems from two sources. The first is the desire to avoid the decision-making biases discussed in the previous section, and the second is research done on evidence-based medicine. Dr David Sackett defines evidence-based medicine as “the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients.” Researchers and practitioners are studying evidence-based medicine because research suggests that physicians make only 15% of their decisions based on evidence, and this approach helps determine the most efficient use of health care resources.²⁷ OB researchers have taken this framework and applied it to the context of managerial decision making.

Quite simply, **evidence-based decision making (EBDM)** represents a process of conscientiously using the best available data and evidence when making managerial decisions. We explore this new approach to decision making by beginning with a model of EBDM and then reviewing a set of implementation principles that can help companies to implement this model of decision making. We conclude by examining the reasons why it is hard to implement EBDM. Understanding this material will help you reduce the susceptibility to decision-making biases.

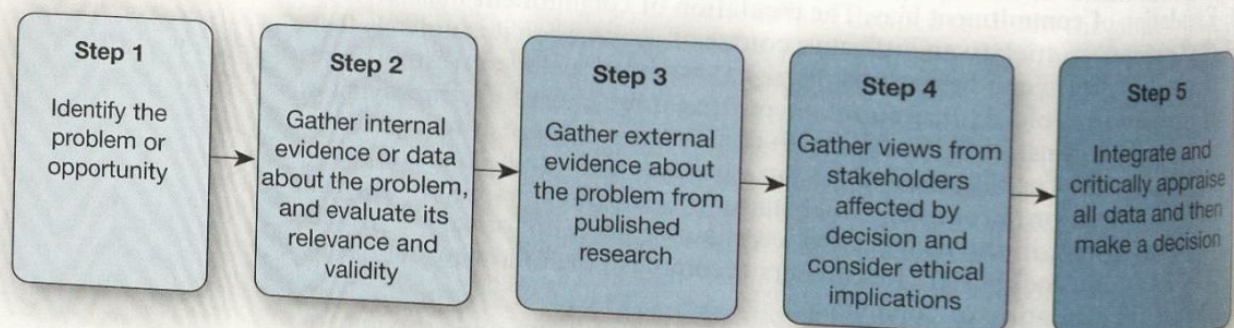
 **connect**™ Go to www.mcgrawhillconnect.com for an interactive exercise to test your knowledge of evidence-based decision making.

A Model of Evidence-Based Decision Making (EBDM)

Figure 12–2 illustrates a five-step model of EBDM.²⁸ You can see that the process begins by gathering internal and external data and evidence about a problem at hand. This information is then integrated with views from stakeholders (e.g., employees, shareholders, customers) and ethical considerations to make a final decision. All told, the process shown in Figure 12–2 helps managers to face hard facts and avoid their personal biases when making decisions. EBDM’s use of relevant and reliable data from different sources is clearly intended to make any decision-making context more explicit, critical, systematic, and fact based.

It is important to consider that evidence is used in three different ways within the process depicted in Figure 12–2: to make a decision, to inform a decision, and to support a decision.²⁹ “Evidence is used to *make* a decision whenever the decision follows directly from the evidence.” For example, if you wanted to purchase a particular used car (e.g., Toyota Prius) based on price and color (e.g., red), you

figure 12–2 Evidence-Based Decision-Making Model



SOURCE: Derived from R B Briner, D Denyer, and D M Rousseau. “Evidence-Based Management: Concept Cleanup Time?” *Academy of Management Perspectives*, November 2009, pp 19–32.

would obtain data from the Internet and classified ads and then choose the seller offering the lowest priced red Prius. “Evidence is used to inform a decision whenever the decision process combines hard, objective facts with qualitative inputs, such as intuition or bargaining with stakeholders.” For instance, in hiring new college graduates, objective data about applicants’ past experience, education, and participation in student organizations would be relevant input to making a hiring decision. Nonetheless, subjective impressions garnered from interviews and references would typically be combined with the objective data to make a final decision. These two uses of evidence are clearly positive and should be encouraged. The same cannot be said about using evidence to support a decision.

“Evidence is used to *support* a decision whenever the evidence is gathered or modified for the sole purpose of lending legitimacy to a decision that has already been made.” This application of evidence has both positive and negative effects. On the positive side, manufactured evidence can be used to convince an external audience that the organization is following a sound course of action in response to a complex and ambiguous decision context. This can lead to confidence and goodwill about how a company is responding to environmental events. On the negative side, this practice can stifle employee involvement and input because people will come to believe that management is going to ignore evidence and just do what it wants. There are two takeaways about using evidence to support a decision. First, this practice should not always be avoided. Second, because this practice has both pros and cons, management needs to carefully consider when it “might” be appropriate to ignore disconfirming evidence and push its own agenda or decisions.

Seven Implementation Principles

Stanford professors Jeffrey Pfeffer and Robert Sutton have been studying evidence-based management for quite some time. Based on this experience, they offer seven implementation principles to help companies integrate EBDM into an organization’s culture.³⁰

1. **Treat your organization as an unfinished prototype.** The thrust of this principle involves creating a mindset that the organization is an unfinished prototype that may be broken and in need of repair, thus avoiding the hubris and arrogance of concluding that nothing needs to be changed in the organization. For example, the products QVC sells are chosen through a process of experimentation in which EBDM is used to understand why some products sell and others don’t. The use of experiments, as done at QVC, is one recommendation for making this happen. The Real World/Real People on page 340 illustrates how one retailer uses experimentation to determine the best type of promotions.³¹
2. **No brag, just facts.** This slogan is used by DaVita, a company that operates 600 dialysis centers, to reinforce a culture that supports EBDM. The company measures, monitors, and rewards the effectiveness of its dialysis centers



This dialysis patient is benefitting from DaVita’s use of EBDM. The use of EBDM helps the company provide better service, and ultimately contributes to profitability.

evidence-based decision making

Conscientiously using the best data when making decisions.



real WORLD // real PEOPLE

A Retailer Experiments with Discount Promotions

The retailer designed six experimental conditions—a control and five discount levels that ranged from 0 to 35% for the private-label items. The retailer divided its stores into six groups, and the treatments were randomized across the groups. This meant each store had a mixture of the experimental conditions distributed across the different products in the study. For example, in Store A—label sugar was discounted 20%, and private-label mascara was full price, whereas in Store B mascara was discounted, but sugar was not. This experimental design allowed the retailer to control for variations in sales that occurred because the store groups were not identical.

The test revealed that matching the national brand promotions with moderate discounts on the private-label products generated 10% more profits than not promoting the private-label items. As a result, the retailer now automatically discounts private-label items when the competing national brands are under promotion.

Why don't more companies do experiments like this?

SOURCE: Excerpted from E T Anderson and D Simester, "Every Company Can Profit from Testing Customers' Reactions to Changes. Here's How to Get Started," *Harvard Business Review*, March 2011, p 103.

and patient well-being on a regular basis. In contrast, Hewlett-Packard's former CEO Carly Fiorina bragged to the press about the company's merger with Compaq but failed to do any research on consumers' opinions about Compaq products prior to the merger. These products were viewed as among the worst in the industry.

3. **See yourself and your organization as outsiders do.** Many managers are filled with optimism and inflated views of their talents and chances for success. This leads them to downplay risks and to commit an escalation of commitment bias. "Having a blunt friend, mentor, or counselor," Pfeffer and Sutton suggest, "can help you see and act on better evidence."
4. **Evidence-based management is not just for senior executives.** Research shows that the best organizations are those in which all employees, not just top managers, are committed to EBDM.³² Pfeffer and Sutton encourage managers to "treat employees as if a big part of their job is to invent, find, test, and implement the best ideas." This implies that employees must be given the training and resources needed to engage in EBDM.
5. **Like everything else, you still need to sell it.** "Unfortunately, new and exciting ideas grab attention even when they are vastly inferior to old ideas," say Pfeffer and Sutton. "Vivid, juicy stories and case studies sell better than detailed, rigorous, and admittedly dull data—no matter how wrong the stories or how right the data." This means that you will need to similarly use vivid stories and case studies such as the DaVita example used earlier to sell the value of EBDM. You can also hire gurus to help sell the value of evidence-based practices.
6. **If all else fails, slow the spread of bad practice.** Because employees may face pressures to do things that are known to be ineffective, it may be necessary to engage in what Pfeffer and Sutton call "evidence-based misbehavior." This can include ignoring requests and delaying action. Be cautious if you use this principle.
7. **The best diagnostic question: what happens when people fail?** "Failure hurts, it is embarrassing, and we would rather live without it," say the Stanford professors. "Yet there is no learning without failure. . . . If you look at how the most effective systems in the world are managed, a hallmark is that when something goes wrong, people face the hard facts, learn what

happened and why, and keep using those facts to make the system better.” The US civil aviation system is a good example. It has created the safest system in world through its accident and incident reporting system. Ford’s CEO Alan Mulally is another example. He meets with his top 15 executives every Thursday morning at 7 A.M. for 2½ hours to conduct a business plan review. “He requires his direct reports to post more than 300 charts, each of them color-coded red, yellow, or green to indicate problems, caution, or progress. . . . Afterward, the adjoining Taurus and Continental rooms are papered with these charts so Mulally can study them. As the CEO likes to say, ‘You can’t manage a secret. When you do this every week, you can’t hide.’”³³

Why Is It Hard to be Evidenced Based?

Despite the known value of using EBDM, there are seven reasons why it is hard for anyone to bring the best evidence to bear when making decisions. They are: (1) There’s too much evidence. (2) There’s not enough good evidence. (3) The evidence doesn’t quite apply. (4) People are trying to mislead you. (5) You are trying to mislead you. (6) The side effects outweigh the cure. (7) Stories are more persuasive, anyway.³⁴

Dynamics of Decision Making

Decision making is part science and part art. Accordingly, this section examines decision-making styles, which is part of the “science” component. It is important to understand decision-making styles because they influence the manner in which people make decisions. We also examine the “art” side of the equation by discussing the role of intuition in decision making and a decision tree for making ethical decisions. An understanding of these dynamics can help managers make better decisions.

TO THE POINT

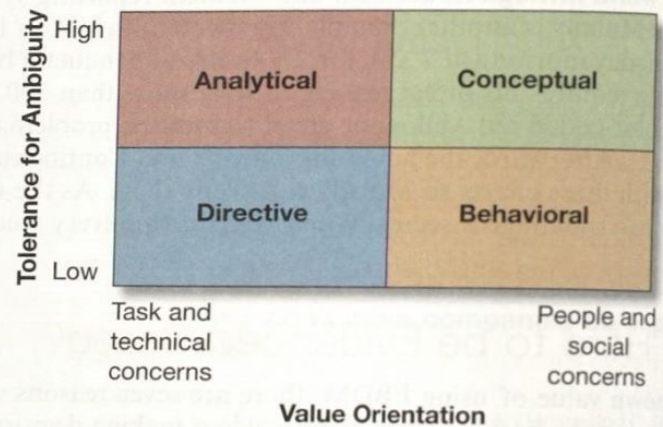
What are the key conclusions regarding decision-making styles, intuition in decision making, and ethical decision making?

LO.4 General Decision-Making Styles

This section focuses on how an individual’s decision-making style affects his or her approach to decision making. A **decision-making style** reflects the combination of how an individual perceives and comprehends stimuli and the general manner in which he or she chooses to respond to such information.³⁵ A team of researchers developed a model of decision-making styles that is based on the idea that styles vary along two different dimensions: value orientation and tolerance for ambiguity.³⁶ *Value orientation* reflects the extent to which an individual focuses on either task and technical concerns or people and social concerns when making decisions. Some people, for instance, are very task focused at work and do not pay much attention to people issues, whereas others are just the opposite. The second dimension pertains to a person’s *tolerance for ambiguity*. This individual difference indicates the extent to which a person has a high need for structure or control in his or her life. Some people desire a lot of structure in their lives (a low tolerance for ambiguity) and find ambiguous situations stressful and psychologically uncomfortable. In contrast, others do not have a high need for structure and can thrive in uncertain situations (a high tolerance for ambiguity). Ambiguous

decision-making style A combination of how individuals perceive and respond to information.

figure 12-3 Decision-Making Styles



SOURCE: Based on discussion contained in A J Rowe and R O Mason, *Managing with Style: A Guide to Understanding, Assessing, and Improving Decision Making* (San Francisco: Jossey-Bass, 1987), pp 1-17.

situations can energize people with a high tolerance for ambiguity. When the dimensions of value orientation and tolerance for ambiguity are combined, they form four styles of decision making (see Figure 12-3): directive, analytical, conceptual, and behavioral.

Directive People with a *directive* style have a low tolerance for ambiguity and are oriented toward task and technical concerns when making decisions. They are efficient, logical, practical, and systematic in their approach to solving problems. People with this style are action oriented and decisive and like to focus on facts. In their pursuit of speed and results, however, these individuals tend to be autocratic, exercise power and control, and focus on the short run.

Interestingly, a directive style seems well suited for an air-traffic controller. Here is what Paul Rinaldi had to say about his decision-making style to a reporter from *Fortune*.

Example. It's not so much analytical as it is making a decision quickly and sticking with it. You have to do that knowing that some of the decisions you're going to make are going to be wrong, but you're going to make that decision be right. You can't back out. You've constantly got to be taking into account the speed of the airplane, its characteristics, the climb rate, and how fast it's going to react to your instructions. You're taking all that in and processing it in a split second, hoping that it'll all work together. If it doesn't, then you go to plan B. . . . The percentage of us that make it to retirement is not real high. It takes a toll on you. We can't make mistakes.³⁷

Analytical This style has a much higher tolerance for ambiguity and is characterized by the tendency to overanalyze a situation. People with this style like to consider more information and alternatives than do directives. Analytic individuals are careful decision makers who take longer to make decisions but who also respond well to new or uncertain situations. They can often be autocratic.

Zhang Guangming is a good example of someone with an analytical style. "Zhang Guangming's car-buying synapses have been in overdrive for months. He has spent hours poring over Chinese car buff magazines, surfing Web sites to mine data on various models, and trekking out to a dozen dealerships across Beijing. Finally, Zhang settled on either a Volkswagen Bora or a Hyundai Sonata

sedan. But with cutthroat competition forcing dealers to slash prices, he's not sure whether to buy now or wait."³⁸

Conceptual People with a conceptual style have a high tolerance for ambiguity and tend to focus on the people or social aspects of a work situation. They take a broad perspective to problem solving and like to consider many options and future possibilities. Conceptual types adopt a long-term perspective and rely on intuition and discussions with others to acquire information. They also are willing to take risks and are good at finding creative solutions to problems. On the downside, however, a conceptual style can foster an idealistic and indecisive approach to decision making. Howard Stringer, Sony Corporation's first foreign-born CEO, possesses characteristics of a conceptual style.

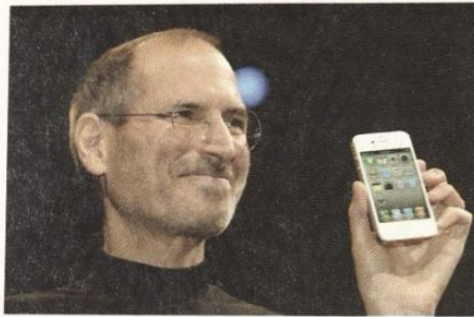
Example. Mr Stringer's dilemma is that he is caught between different management styles and cultures. He says he recognizes the risk of falling behind amid breakneck changes in electronics. But he says there's an equal risk of moving too aggressively. "I don't want to change Sony's culture to the point where it's unrecognizable from the founder's vision," he says. . . . Mr Stringer, 65 years old, stuck with [an] executive team he inherited. He tried gently persuading managers to cooperate with one another and urged them to think about developing products in a new way.³⁹

Behavioral This style is the most people oriented of the four styles. People with this style work well with others and enjoy social interactions in which opinions are openly exchanged. Behavioral types are supportive, receptive to suggestions, show warmth, and prefer verbal to written information. Although they like to hold meetings, people with this style have a tendency to avoid conflict and to be too concerned about others. This can lead behavioral types to adopt a wishy-washy approach to decision making and to have a hard time saying no to others and to have difficulty making difficult decisions.

Research and Practical Implications Research shows that very few people have only one dominant decision-making style. Rather, most managers have characteristics that fall into two or three styles. Studies also show that decision-making styles vary by age, occupations, personality types, gender, and countries.⁴⁰ You can use knowledge of decision-making styles in four ways. First, knowledge of styles helps you to understand yourself. Awareness of your style assists you in identifying your strengths and weaknesses as a decision maker and facilitates the potential for self-improvement. Second, you can increase your ability to influence others by being aware of styles. For example, if you are dealing with an analytical person, you should provide as much information as possible to support your ideas. This same approach is more likely to frustrate a directive type. Third, knowledge of styles gives you an awareness of how people can take the same information and yet arrive at different decisions by using a variety of decision-making strategies. Different decision-making styles represent one likely source of interpersonal conflict at work (conflict is thoroughly discussed in Chapter 13). Finally, it is important to remember that there is not a single best decision-making style that applies in all situations. It is most beneficial to use a contingency approach in which you use a style that is best suited for the situation at hand. For example, if the context requires a quick decision, then a directive style might be best. In contrast, a behavioral approach would be more appropriate when making decisions that involve employees' welfare. At this point we cannot provide more detailed recommendations because researchers have not developed a complete contingency theory that outlines when to use the different decision-making styles.



LO.5 The Role of Intuition in Decision Making



Steve Jobs, former CEO of Apple, was a very intuitive person. Sadly, he died in October 2011. Part of Apple's success is related to employees like Jobs who somehow foresee the future demands of consumers. We encourage you to practice your intuitive skills.

In the book *How We Decide*, author Jonah Lehrer concluded that intuition is effectively used by many people when making decisions.⁴¹ **Intuition** represents judgments, insights, or decisions that “come to mind on their own, without explicit awareness of the evoking cues and of course without explicit evaluation of the validity of these cues.”⁴² Research reveals that anyone can be intuitive, and its use is unrelated to gender.⁴³ It thus is important to understand the sources of intuition and to develop your intuitive skills because intuition is as important as rational analysis in many decisions. Consider the following examples:

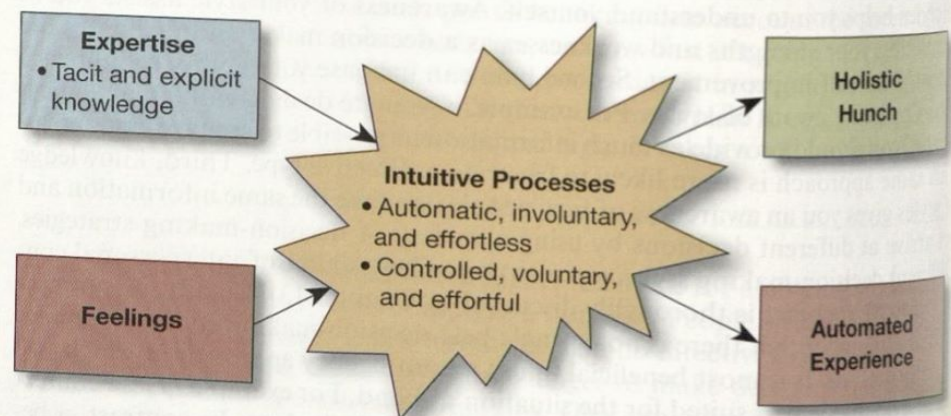
Example. Ignoring recommendations from advisers, Ray Kroc purchased the McDonald's brand from the McDonald brothers: “I’m not a gambler and I didn’t have that kind of money, but my funny bone instinct kept urging me on.” Ignoring numerous naysayers and a lack of supporting market research, Bob Lutz, former president of Chrysler, made the Dodge Viper a reality. “It was this subconscious, visceral feeling. And it just felt right.” Ignoring the fact that 24 publishing houses had rejected the book and her own publishing house was opposed, Eleanor Friede gambled on a “little nothing book,” called *Jonathan Livingston Seagull*: “I felt there were truths in this simple story that would make it an international classic.”⁴⁴

Unfortunately, the use of intuition does not always lead to blockbuster decisions such as those by Ray Kroc or Eleanor Friede. To enhance your understanding of the role of intuition in decision making, this section reviews a model of intuition and discusses the pros and cons of using intuition to make decisions.

A Model of Intuition Figure 12–4 presents a model of intuition. Starting at the far right, the model shows there are two types of intuition:

1. A holistic hunch represents a judgment that is based on a subconscious integration of information stored in memory. People using this form of intuition

figure 12–4 A Dual Model of Intuition



SOURCES: Based in part on D Kahneman and G Klein, “Conditions for Intuitive Expertise,” *American Psychologist*, September 2009, pp 515–26; E Sadler-Smith and E Shefy, “The Intuitive Executive: Understanding and Applying ‘Gut Feel’ in Decision-Making,” *Academy of Management Executive*, November 2004, pp 76–91; and C C Miller and R D Ireland, “Intuition in Strategic Decision Making: Friend or Foe in the Fast-Paced 21st Century,” *Academy of Management Executive*, February 2005, pp 19–30.

may not be able to explain why they want to make a certain decision, except that the choice “feels right.”

2. Automated experiences represent a choice that is based on a familiar situation and a partially subconscious application of previously learned information related to that situation. For example, when you have years of experience driving a car, you react to a variety of situations without conscious analysis.

Returning to Figure 12-4, you can see that intuition is represented by two distinct processes. One is automatic, involuntary and mostly effortless. The second is quite the opposite in that it is controlled, voluntary, and effortful. Research reveals that these two processes can operate separately or jointly to influence intuition.⁴⁵ For example, when trying to answer one of the “Back to Chapter-Opening Case” questions in this book, you may spontaneously have an answer pop into your mind based on your recollection of what you previously read (an automatic process). Upon further reflection (controlled process), however, you may decide your initial thought is wrong and that you need to go back and reread some material to arrive at another answer. This in turn may cause novel ideas to come to mind, and the two processes continue. These intuitive processes are influenced by two sources: expertise and feelings (see Figure 12-4). Expertise represents an individual’s combined explicit knowledge (i.e., information that can easily be put into words) and tacit knowledge (i.e., information gained through experience that is difficult to express and formalize) regarding an object, person, situation, or decision opportunity. This source of intuition increases with age and experience. The feelings component reflects the automatic, underlying effect one experiences in response to an object, person, situation, or decision opportunity. An intuitive response is based on the interaction between one’s expertise and feelings in a given situation.

Pros and Cons of Using Intuition When Making Decisions On the positive side, intuition can speed up the decision-making process.⁴⁶ Intuition thus can be valuable in our complex and ever-changing world. Intuition may be a practical approach when resources are limited and deadlines are tight. For example, intuition based on deep knowledge and active preparation informs quick and complicated decisions in an effective hospital emergency department. Recalling her work as director of an emergency department, Kathleen Gallo says, “While the arrival of a helicopter with a whole family of car-wreck victims might look like a crisis and might be a crisis for the family, it is not a crisis for the staff . . . because they are prepared.”⁴⁷

On the downside, intuition is subject to the same types of biases associated with rational decision making. It is particularly susceptible to the availability and representativeness heuristics, as well as the anchoring, overconfidence, and hindsight biases.⁴⁸ In addition, the decision maker may have difficulty convincing others that the intuitive decision makes sense, so a good idea may be ignored.

Where does that leave us with respect to using intuition? We believe that intuition and rationality are complementary and that managers should attempt to use both when making decisions. We thus encourage you to use intuition when making decisions. You can develop your intuitive awareness by using the guidelines shown in Table 12-1.

intuition Judgments that come to mind without explicit awareness of the causes or an evaluation of their validity.

table 12-1 Guidelines for Developing Intuitive Awareness

RECOMMENDATION	DESCRIPTION
1. Open up the closet	To what extent do you experience intuition; trust your feelings; count on intuitive judgments; suppress hunches; covertly rely upon gut feel?
2. Don't mix up your I's	Instinct, insight, and intuition are not synonymous; practice distinguishing among your instincts, your insights, and your intuitions.
3. Elicit good feedback	Seek feedback on your intuitive judgments; build confidence in your gut feel; create a learning environment in which you can develop better intuitive awareness.
4. Get a feel for your batting average	Benchmark your intuitions; get a sense for how reliable your hunches are; ask yourself how your intuitive judgment might be improved.
5. Use imagery	Use imagery rather than words; literally visualize potential future scenarios that take your gut feelings into account.
6. Play devil's advocate	Test out intuitive judgments; raise objections to them; generate counter-arguments; probe how robust gut feel is when challenged.
7. Capture and validate your intuitions	Create the inner state to give your intuitive mind the freedom to roam; capture your creative intuitions; log them before they are censored by rational analysis.

SOURCE: From E Sadler-Smith and E Shefy, "The Intuitive Executive: Understanding and Applying 'Gut Feel' in Decision-Making," *Academy of Management Executive*, November 2004, p 88. Copyright © 2004 by The Academy of Management. Reproduced by permission of The Academy of Management via Copyright Clearance Center.

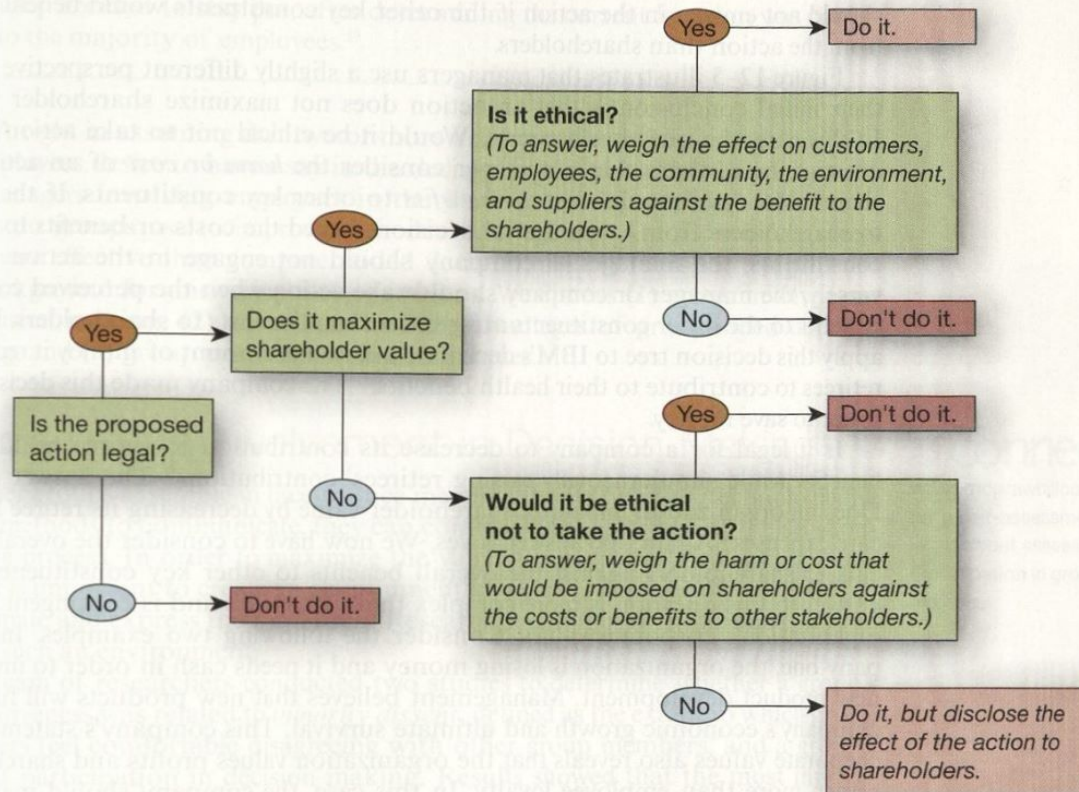
Back to the Chapter-Opening Case

How will Google's approach to decision making increase the use of intuition in making decisions?

Road Map to Ethical Decision Making: A Decision Tree

In Chapter 1 we discussed the importance of ethics and the growing concern about the lack of ethical behavior among business leaders. Unfortunately, research shows that many types of unethical behavior go unreported, and unethical behavior is negatively associated with employee engagement.⁴⁹ While these trends partially explain the passage of laws to regulate ethical behavior in corporate America, we believe that ethical acts ultimately involve individual or group decisions. It thus is important to consider the issue of ethical decision making. Harvard Business School professor Constance Bagley suggests that a decision tree can help managers to make more ethical decisions.⁵⁰

figure 12-5 An Ethical Decision Tree



SOURCE: Reprinted by permission of *Harvard Business Review*. Exhibit from "The Ethical Leader's Decision Tree," by Constance E Bagley, February 2003. Copyright 2003 by the Harvard Business School Publishing Corporation. All rights reserved.

A **decision tree** is a graphical representation of the process underlying decisions and it shows the resulting consequences of making various choices. Decision trees are used as an aid in decision making. Ethical decision making frequently involves trade-offs, and a decision tree helps managers navigate through them. The decision tree shown in Figure 12-5 can be applied to any type of decision or action that an individual manager or corporation is contemplating. Looking at the tree, the first question to ask is whether or not the proposed action is legal. If the action is illegal, do not do it. If the action is legal, then consider the impact of the action on shareholder value. A decision maximizes shareholder value when it results in a more favorable financial position (e.g., increased profits) for an organization. Whether or not an action maximizes shareholder value, the decision tree shows that managers still need to consider the ethical implications of the decision or action. For example, if an action maximizes shareholder value, the next question to consider is whether or not the action is ethical. The answer to this question is based on considering the positive effect of the action on an organization's other key constituents (i.e., customers, employees, the community, the environment, and

decision tree Graphical representation of the process underlying decision making.

suppliers) against the benefit to the shareholders. According to the decision tree framework, managers should make the decision to engage in an action if the benefits to the shareholders exceed the benefits to the other key constituents. Managers should not engage in the action if the other key constituents would benefit more from the action than shareholders.

Figure 12-5 illustrates that managers use a slightly different perspective when their initial conclusion is that an action does not maximize shareholder value. In this case, the question becomes, Would it be ethical not to take action? This question necessitates that a manager consider the *harm or cost* of an action to shareholders against the *costs or benefits* to other key constituents. If the costs to shareholders from a managerial decision exceed the costs or benefits to other constituents, the manager or company should not engage in the action. Conversely, the manager or company should take action when the perceived costs or benefits to the other constituents are greater than the costs to shareholders. Let us apply this decision tree to IBM's decision to raise the amount of money it required retirees to contribute to their health benefits.⁵¹ The company made this decision in order to save money.

Is it legal for a company to decrease its contribution to retiree health care benefits while simultaneously raising retirees' contributions? The answer is yes. Does an organization maximize shareholder value by decreasing its retiree health care expenses? Again, the answer is yes. We now have to consider the overall benefits to shareholders against the overall benefits to other key constituents. The answer to this question is more complex than it appears and is contingent on an organization's corporate values. Consider the following two examples. In company one, the organization is losing money and it needs cash in order to invest in new product development. Management believes that new products will fuel the company's economic growth and ultimate survival. This company's statement of corporate values also reveals that the organization values profits and shareholder return more than employee loyalty. In this case, the company should make the decision to increase retirees' health care contributions. Company two, in contrast, is profitable and has been experiencing increased market share with its products. This company's statement of corporate values also indicates that employees are the most important constituent it has, even more than shareholders: Southwest Airlines is a good example of a company with these corporate values. In this case, the company should not make the decision to decrease its contribution to retirees' benefits.

It is important to keep in mind that the decision tree cannot provide a quick formula that managers and organizations can use to evaluate every ethical question. Ethical decision making is not always clear-cut and it is affected by cross-cultural differences. Organizations are encouraged to conduct ethics training and to increase awareness about cross-cultural issues when the work involves people with mixed cultural backgrounds.⁵² That said, the decision tree does provide a framework for considering the trade-offs between managerial and corporate actions and managerial and corporate ethics. Try using this decision tree the next time you are faced with a significant ethical question or problem.

TO THE POINT

What are the pros and cons of group decision making and the various problem-solving techniques?

Group Decision Making

Groups such as committees, task forces, project teams, or review panels often play a key role in the decision-making process. ATA Engineering Inc., for example, is committed to group decision making.

Example. At least eight to 10 ATA employees are involved in interviewing every job candidate. If one employee objects to the hire, the candidate may not be offered

a job unless that employee changes his or her mind. Sometimes, even the biggest company decisions are made by workers. When the lease was up on the company's building, for instance, ATA formed a committee of employees to address the issue. The group decided to stay put, after determining the current location was convenient to the majority of employees.⁵³

Is ATA right in assuming that two or more heads are always better than one? Do all employees desire to have a say in the decision-making process? To what extent are managers involving employees in the decision-making process? What techniques do groups use to improve their decision making? Are face-to-face meetings more effective than computer-aided decision making? This section provides the background for answering these questions. We discuss (1) group involvement in decision making, (2) advantages and disadvantages of group-aided decision making, and (3) group problem-solving techniques.



LO.6 Group Involvement in Decision Making

Whether groups assemble in face-to-face meetings or rely on other technologically based methods to communicate, they can contribute to each stage of the decision-making process. In order to maximize the value of group decision making, however, it is important to create an environment in which group members feel free to participate and express their opinions. Research sheds light on how managers can create such an environment.

A team of researchers conducted two studies to determine whether a group's innovativeness was related to *minority dissent*, defined as the extent to which group members feel comfortable disagreeing with other group members, and a group's level of participation in decision making. Results showed that the most innovative groups possessed high levels of both minority dissent and participation in decision making.⁵⁴ How can you apply these results to your own group meetings at school or work? One way is to foster more discussion among group members during meetings. Research also confirms a side benefit to this recommendation. Group members' job satisfaction and performance are increased through group discussion.⁵⁵ Another suggestion is to seek divergent views from group members during decision making, and do not ridicule or punish people who disagree with the majority opinion.

connect™ Go to www.mcgrawhillconnect.com for a self-assessment to learn about assessing your participation in group decision making.

Advantages and Disadvantages of Group Decision Making

Including groups in the decision-making process has both pros and cons (see Table 12-2). On the positive side, groups contain a greater pool of knowledge, provide more varied perspectives, create more comprehension of decisions, increase decision acceptance, and create a training ground for inexperienced employees. John Mackey, CEO of Whole Foods Market, reinforced some of these positive characteristics during an interview with the *Harvard Business Review* (see Real World/Real People on page 351). These advantages must be balanced, however, with the disadvantages listed in Table 12-2. In doing so, managers need to determine the extent to which the advantages and disadvantages apply to the decision situation. The following three guidelines may then be applied to help decide whether groups should be included in the decision-making process.

1. If additional information would increase the quality of the decision, managers should involve those people who can provide the needed information.

table 12-2 Advantages and Disadvantages of Group-Aided Decision Making

ADVANTAGES	DISADVANTAGES
1. Greater pool of knowledge. A group can bring much more information and experience to bear on a decision or problem than can an individual acting alone.	1. Social pressure. Unwillingness to "rock the boat" and pressure to conform may combine to stifle the creativity of individual contributors.
2. Different perspectives. Individuals with varied experience and interests help the group see decision situations and problems from different angles.	2. Domination by a vocal few. Sometimes the quality of group action is reduced when the group gives in to those who talk the loudest and longest.
3. Greater comprehension. Those who personally experience the give-and-take of group discussion about alternative courses of action tend to understand the rationale behind the final decision.	3. Logrolling. Political wheeling and dealing can displace sound thinking when an individual's pet project or vested interest is at stake.
4. Increased acceptance. Those who play an active role in group decision making and problem solving tend to view the outcome as "ours" rather than "theirs."	4. Goal displacement. Sometimes secondary considerations such as winning an argument, making a point, or getting back at a rival displace the primary task of making a sound decision or solving a problem.
5. Training ground. Less experienced participants in group action learn how to cope with group dynamics by actually being involved.	5. Groupthink. Sometimes cohesive in-groups let the desire for unanimity override sound judgment when generating and evaluating alternative courses of action. (Groupthink was discussed in Chapter 10.)

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2. If acceptance is important, managers need to involve those individuals whose acceptance and commitment are important.
3. If people can be developed through their participation, managers may want to involve those whose development is most important.⁵⁶

Group versus Individual Performance Before recommending that managers involve groups in decision making, it is important to examine whether groups perform better or worse than individuals. After reviewing 61 years of relevant research, a decision-making expert concluded that "[g]roup performance was generally qualitatively and quantitatively superior to the performance of the average individual."⁵⁷ Although subsequent research of small-group decision making generally supported this conclusion, there are five important issues to consider when using groups to make decisions:

1. Groups were less efficient than individuals. It thus is important to consider time constraints when determining whether to involve groups in decision making.



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John Mackey, CEO of Whole Foods Market, Believes in Consensual Decision Making

Here is what Mr. Mackey had to say to an interviewer from *Harvard Business Review* about his emphasis on consensual making decisions.

"I found that when you make decisions by consensus, and you let all the disagreements get expressed, you make better decisions. If you don't do that, there is a natural human tendency on the part of whoever didn't get their way to want to be proved right. It's like "See, I told you that wasn't going to work."

Mr. Mackey also was asked if gaining consensus takes a long time. He responded that "It can. Generally, if you're making decisions that really are going to impact the business, it's good to talk them over. It's a little bit like Japanese management decision-making—they spend a lot more time trying to develop consensus in the decision group. The virtue of it is that although it takes longer to make the decision, implementation goes a lot faster, because there isn't resistance or sabotage that works its way through the organization."

Do you think that it is always necessary to gain consensus when groups make decisions?

SOURCE: Excerpted from "What Is It That Only I Can Do?" *Harvard Business Review*, January–February 2011, pp 119–20.



John Mackey, CEO of Whole Foods Market, seems to be enjoying the stocking of apples in one of his stores.

2. Groups were more confident about their judgments and choices than individuals. Because group confidence is not a surrogate for group decision quality, this overconfidence can fuel groupthink—groupthink was discussed in Chapter 10—and a resistance to consider alternative solutions proposed by individuals outside the group.
3. Groups tend to make more moderate decisions. It appears that the need to reach consensus or compromise leads to less extreme decisions.⁵⁸
4. Decision-making accuracy was higher when (a) groups knew a great deal about the issues at hand and (b) group leaders possessed the ability to effectively evaluate the group members' opinions and judgments. Groups need to give more weight to relevant and accurate judgments while downplaying irrelevant or inaccurate judgments made by its members.⁵⁹
5. The composition of a group affects its decision-making processes and ultimately performance. For example, groups of familiar people are more likely to make better decisions when members share a lot of unique information. In contrast, unacquainted group members should outperform groups of friends when most group members possess common knowledge.⁶⁰



These employees are conducting a brainstorming session. Brainstorming can be fun and is used to generate multiple ideas and solutions for solving problems.

Additional research suggests that managers should use a contingency approach when determining whether to include others in the decision-making process. Let us now consider these contingency recommendations.

Back to the Chapter-Opening Case

To what extent is Google's approach to decision making consistent with research and recommendations about group decision making?

Practical Contingency Recommendations If the decision occurs frequently, such as deciding on promotions or who qualifies for a loan, use groups because they tend to produce more consistent decisions than do individuals. Given time constraints, let the most competent individual, rather than a group, make the decision. In the face of environmental threats such as time pressure and potential serious effects of a decision, groups use less information and fewer communication channels. This increases the probability of a bad decision. This conclusion underscores a general recommendation that managers should keep in mind: Because the quality of communication strongly affects a group's productivity, on complex tasks it is essential to devise mechanisms to enhance communication effectiveness.



LO.7 Group Problem-Solving Techniques

Using groups to make decisions generally requires that they reach a consensus. According to a decision-making expert, a **consensus** "is reached when all members can say they either agree with the decision or have had their 'day in court' and were unable to convince the others of their viewpoint. In the final analysis, everyone agrees to support the outcome."⁶¹ This definition indicates that consensus does not require unanimous agreement because group members may still disagree with the final decision but are willing to work toward its success.

Groups can experience roadblocks when trying to arrive at a consensus decision. For one, groups may not generate all relevant alternatives to a problem because an individual dominates or intimidates other group members. This can be overt or subtle. For instance, group members who possess power and authority, such as a CEO, can be intimidating, regardless of interpersonal style, simply by being present in the room. Moreover, shyness inhibits the generation of alternatives. Shy or socially anxious individuals may withhold their input for fear of embarrassment or lack of confidence. Satisficing is another hurdle to effective group decision making. As previously noted, groups satisfice due to limited time, information, or ability to handle large amounts of information. A management expert offered the following dos and don'ts for successfully achieving consensus: Groups should use active listening skills, involve as many members as possible, seek out the reasons behind arguments, and dig for the facts. At the same time, groups should not horse trade (I'll support you on this decision because you supported me on the last one), vote, or agree just to avoid "rocking the boat."⁶² Voting is not encouraged because it can split the group into winners and losers.

Decision-making experts have developed three group problem-solving techniques—brainstorming, the nominal group technique, and the Delphi technique—to reduce the above roadblocks. Knowledge of these techniques can help you to more effectively use groups in the decision-making process. Further, the advent

of computer-aided decision making enables managers to use these techniques to solve complex problems with large groups of people.

Brainstorming Brainstorming was developed by A F Osborn, an advertising executive, to increase creativity.⁶³ **Brainstorming** is used to help groups generate multiple ideas and alternatives for solving problems. For example, “Jim Albaugh, chief executive of Boeing’s Commercial Airplanes business, tapped eight retired Boeing executives last fall to form a Senior Advisory Group.”⁶⁴ The group’s goal was to brainstorm with current engineers and project managers about how best to get the 787 Dreamliner program on track. Production of the plane experienced a series of setbacks and is currently more than three years behind its original delivery date.

When brainstorming, a group such as Boeing’s Senior Advisory Group is convened, and the problem at hand is reviewed. Individual members then are asked to silently generate ideas/alternatives for solving the problem. Silent idea generation is recommended over the practice of having group members randomly shout out their ideas because it leads to a greater number of unique ideas. Groups tend to focus on a more limited number of ideas and get fixated on one idea when they don’t conduct silent brainstorming before sharing in a group setting.⁶⁵ Next, these ideas/alternatives are solicited and shared in writing. Managers or team leaders may want to collect the brainstormed ideas anonymously, as research demonstrated that more controversial ideas and more nonredundant ideas were generated by anonymous than nonanonymous brainstorming groups.⁶⁶ Finally, a second session is used to critique and evaluate the alternatives. Managers are advised to follow the seven rules for brainstorming used by IDEO, a product design company:⁶⁷

1. *Defer judgment.* Don’t criticize during the initial stage of idea generation. Phrases such as “We’ve never done it that way,” “It won’t work,” “It’s too expensive,” and “Our manager will never agree” should not be used.
2. *Build on the ideas of others.* Encourage participants to extend others’ ideas by avoiding “buts” and using “ands.”
3. *Encourage wild ideas.* Encourage out-of-the-box thinking. The wilder and more outrageous the ideas, the better.
4. *Go for quantity over quality.* Participants should try to generate and write down as many new ideas as possible. Focusing on quantity encourages people to think beyond their favorite ideas.
5. *Be visual.* Use different colored pens (e.g., red, purple, blue) to write on big sheets of flip chart paper, white boards, or poster board that are put on the wall.
6. *Stay focused on the topic.* A facilitator should be used for keeping the discussion on target.
7. *One conversation at a time.* The ground rules are that no one interrupts another person, no dismissing of someone’s ideas, no disrespect, and no rudeness.

Brainstorming is an effective technique for generating new ideas/alternatives, and research reveals that people can be trained to improve their brainstorming skills. Brainstorming is not appropriate for evaluating alternatives or selecting solutions.

consensus Presenting opinions and gaining agreement to support a decision.

brainstorming Process to generate a quantity of ideas.



real WORLD // real PEOPLE

CKE Restaurants Combines Brainstorming, NGT, and Intuition to Make Decisions about New Products

At CKE Restaurants, which includes the Hardee's and Carl's Jr. quick-service restaurant chains, the process for new product introduction calls for rigorous testing at a certain stage. It starts with brainstorming, in which several cross-functional groups develop a variety of new product ideas. Only some of them make it past the next phase, judgmental screening, during which a group of marketing, product development, and operations people will evaluate ideas based on experience and intuition. Those that make the cut are actually developed and then tested in stores, with well-defined measures and control groups. At that point, executives decide whether to roll

out a product systemwide, modify it for retesting, or kill the whole idea.

CKE has attained an enviable hit rate in new product introductions—about one in four new products is successful, versus one in 50 or 60 for consumer products.

How many different groups of people are involved in the decision-making process at CKE Restaurants?

SOURCE: Excerpted from T H Davenport, "How to Design Smart Business Experiments," *Harvard Business Review*, February 2000, pp 72–73.

The Nominal Group Technique The **nominal group technique** (NGT) helps groups generate ideas and evaluate and select solutions. NGT is a structured group meeting that follows this format:⁶⁸ A group is convened to discuss a particular problem or issue. After the problem is understood, individuals silently generate ideas in writing. Each individual, in round-robin fashion, then offers one idea from his or her list. Ideas are recorded on a blackboard or flip chart; they are not discussed at this stage of the process. Once all ideas are elicited, the group discusses them.

Anyone may criticize or defend any item. During this step, clarification is provided as well as general agreement or disagreement with the idea. The "30-second soap box" technique, which entails giving each participant a maximum of 30 seconds to argue for or against any of the ideas under consideration, can be used to facilitate this discussion. Alternatively, groups can create an effort/benefit matrix to facilitate this discussion. This is done by identifying the amount of effort and the costs required to implement each idea and comparing these to the potential benefits associated with each idea. Finally, group members anonymously vote for their top choices. The group leader then adds the votes to determine the group's choice. Prior to making a final decision, the group may decide to discuss the top-ranked items and conduct a second round of voting.

The nominal group technique reduces the roadblocks to group decision making by (1) separating brainstorming from evaluation, (2) promoting balanced participation among group members, and (3) incorporating mathematical voting techniques in order to reach consensus. CKE Restaurants, for example, uses a combination of brainstorming and NGT in its new product development process (see Real World/Real People above). NGT has been successfully used in many different decision-making situations and has been found to generate more ideas than a standard brainstorming session.⁶⁹

The Delphi Technique This problem-solving method was originally developed by the Rand Corporation for technological forecasting.⁷⁰ It now is used as a multipurpose planning tool. The **Delphi technique** is a group process that anonymously generates ideas or judgments from physically dispersed experts. Unlike NGT, experts' ideas are obtained from questionnaires or via the Internet as opposed to face-to-face group discussions.

A manager begins the Delphi process by identifying the issue(s) he or she wants to investigate. For example, a manager might want to inquire about customer demand, customers' future preferences, or the effect of locating a plant in a certain region of the country. Next, participants are identified and a questionnaire is developed. The questionnaire is sent to participants and returned to the manager. In today's computer-networked environments, this often means that the questionnaires are e-mailed to participants. The manager then summarizes the responses and sends feedback to the participants. At this stage, participants are asked to (1) review the feedback, (2) prioritize the issues being considered, and (3) return the survey within a specified time period. This cycle repeats until the manager obtains the necessary information.

The Delphi technique is useful when face-to-face discussions are impractical, when disagreements and conflict are likely to impair communication, when certain individuals might severely dominate group discussion, and when groupthink is a probable outcome of the group process.⁷¹

Computer-Aided Decision Making The increased globalization of organizations coupled with the advancement of information technology has led to the development of computer-aided decision-making systems. Computerization is being used in two general ways. First, many organizations are using a variety of computer, software, and electronic devices to improve decision making. Such systems allow managers to quickly obtain larger amounts of information from employees, customers, or suppliers around the world. For example, Best Buy, Google, GE, Intel, and Microsoft all use internal intranets to obtain input from employees. Both Best Buy and Google found that these systems were helpful in estimating the demand for new products and services.⁷² Walmart also is well known for using computer-aided decision making to improve decision making. For example, Walmart stores are using a new computerized system to schedule its 1.3 million workers. The system creates staffing levels for each store based on the number of customers in the store at any given point in time.⁷³ These systems also were found to improve information processing and decision making within virtual teams—recall our discussion in Chapter 11.

The second general application of computer-aided decision making relates to running meetings. Two types of systems are used: chauffeur driven and group driven. Chauffeur-driven systems ask participants to answer predetermined questions on electronic keypads or dials. Live television audiences are frequently polled with this system. The computer system tabulates participants' responses in a matter of seconds.

Group-driven electronic meetings are conducted in one of two major ways. First, managers can use e-mail systems or the Internet to collect information or brainstorm about a decision that must be made. For example, Miami Children's Hospital uses a combination of the Internet and a conferencing software technology to make decisions about the design of its training programs. Here is what Loubna Nouredin, director of staff and community education, had to say about the organization's computer-aided decision making: "What I truly like about it is my connection to other hospitals," Nouredin says. "I'm able to understand what other hospitals are doing about specific things. I put my question out, and people can respond, and I can answer back." She explains, for instance, that using the system, she and her colleagues have received guidance from other corporate educators, and even subject-matter experts, on how to best train workers in such fields

nominal group technique Process to generate ideas and evaluate solutions.

Delphi technique Process to generate ideas from physically dispersed experts.

as critical care. "You get many other hospitals logging into the system, and telling us what they do," she says.⁷⁴

Noureddin claims that the system has saved the company time and money. The second method of computer-aided, group-driven meetings is conducted in special facilities equipped with individual workstations that are networked to each other. Instead of talking, participants type their input, ideas, comments, reactions, or evaluations on their keyboards. The input simultaneously appears on a large projector screen at the front of the room, thereby enabling all participants to see all input. This computer-driven process reduces consensus roadblocks because input is anonymous, everyone gets a chance to contribute, and no one can dominate the process. Research demonstrated that computer-aided decision making produced greater quality and quantity of ideas than either traditional brainstorming or the nominal group technique for both small and large groups of people.⁷⁵

In conclusion, we expect the use of computer-aided decision making to increase in the future. These systems are well suited for modern organizational life and for the large number of Millennials or Gen Ys entering the workforce.

TO THE POINT

How can managers increase creativity throughout each stage of the creative process?

Creativity

In light of today's need for fast-paced decisions, an organization's ability to stimulate the creativity and innovation of its employees is becoming increasingly important. Many organizations believe that creativity and innovation, which is discussed in Chapter 17, are the seeds of success. Relative to our discussion in this chapter, creativity can be used in all four steps of rational decision making and anytime an individual or group is trying to solve a problem, make a decision, or develop something new. Creativity is particularly important during brainstorming sessions.

To gain further insight into managing the creative process, we begin by defining creativity and highlighting the individual and contextual characteristics associated with creativity. We then review the stages underlying the creative process and conclude with practical recommendations for increasing creativity in organizations.

Definition and Individual Characteristics Associated with Creativity

Although many definitions have been proposed, **creativity** is defined here as the process of using imagination and skill to develop a new or unique product, object, process, or thought.⁷⁶ It can be as simple as locating a new place to hang your car keys or as complex as developing a pocket-size microcomputer. Creativity can also be applied to the context of cutting costs. For example, President Barack Obama and members of Congress are currently looking for creative ways to cut costs in the federal budget.⁷⁷ This definition highlights three broad types of creativity. One can create something new (creation), one can combine or synthesize things (synthesis), or one can improve or change things (modification).

Individual creative behavior is directly affected by a variety of individual characteristics. First off, creativity requires motivation. In other words, people make a decision whether or not they want to apply their knowledge and capabilities to create new ideas, things, or products. In addition to motivation, creative people typically march to the beat of a different drummer. They are highly motivated individuals who spend considerable time developing both tacit and explicit knowledge about their field of interest or occupation. But contrary to stereotypes, creative people are not necessarily geniuses or introverted nerds. In addition, they are not *adaptors*. "Adaptors are those who . . . prefer to resolve difficulties or make decisions in such a way as to have the least impact upon the assumptions, procedures, and values of the organization."⁷⁸ In contrast, creative individuals are dissatisfied

table 12-3 Individual Characteristics Associated with Creativity

Intellectual Abilities

- Ability to see problems in new ways and to escape bounds of conventional thinking.
- Ability to recognize which ideas are worth pursuing and which are not.
- Ability to persuade and influence others.

Tacit (Implied) and Explicit Knowledge (about field of interest, occupation, issue, product, service, etc.)**Styles of Thinking**

- Preference for thinking in novel ways of one's own choosing.

Personality Traits

- Willingness to overcome obstacles.
- Willingness to take sensible risks.
- Willingness to tolerate ambiguity.
- Self-efficacy.
- Openness to experience and conscientiousness.

Intrinsic Task Motivation

SOURCES: Based on discussion in T Brown, "Thinking," *Harvard Business Review*, June 2008, pp 85-92; and R J Sternberg and R I Lubart, "Investing in Creativity," *American Psychologist*, July 1996, pp 677-78.

with the status quo. They look for new and exciting solutions to problems. Creative people tend to be curious.⁷⁹ Further, research indicates that male and female managers do not differ in levels of creativity, and there are a host of personality characteristics that are associated with creativity.⁸⁰ These characteristics include, but are not limited to, those shown in Table 12-3. This discussion comes to life by considering the following example.

The Post-it Notes story represents a good illustration of how the individual characteristics shown in Table 12-3 promote creative behavior/performance. Post-it Notes are a \$200 million-a-year product for 3M Corporation:

Example. The idea originated with Art Fry, a 3M employee who used bits of paper to mark hymns when he sat in his church choir. These markers kept falling out of the hymnbooks. He decided that he needed an adhesive-backed paper that would stick as long as necessary but could be removed easily. He soon found what he wanted in the 3M laboratory, and the Post-it Note was born.

Fry saw the market potential of his invention, but others did not. Market-survey results were negative; major office-supply distributors were skeptical. So he began giving samples to 3M executives and their secretaries. Once they actually used the little pieces of adhesive paper, they were hooked. Having sold 3M on the project, Fry used the same approach with other executives throughout the United States.⁸¹

Notice how Fry had to influence others to try out his idea. Table 12-3 shows that creative people have the ability to persuade and influence others.

creativity Process of developing something new or unique.

Contextual Characteristics Associated with Creativity

We noted in Chapter 1 that contextual factors influence our behavior at work. This is certainly true when it comes to creativity. Returning to our discussion of organizational culture in Chapter 3, research reveals that organizations with an adhocracy culture tend to be more innovative.⁸² This finding suggests that managers may want to follow the Google experience of allowing more flexibility, risk taking, and experimentation into the work environment in order to enhance creative behavior among employees. Creativity also is associated with time pressure and the level of stress in the work environment. Contrary to the belief that people are more creative under a crisis or severe time pressure, time pressure stifles creativity. So does stress. Creativity is highest when workers are under moderate stress.⁸³ Finally, leadership plays a big role in fostering creativity. Leaders can boost creative behavior by showing concern for others and by treating employees fairly—recall our discussion of equity theory in Chapter 8.⁸⁴



LO.8 The Steps or Stages of Creativity

Researchers are not absolutely certain how creativity takes place. Nonetheless, we do know that creativity involves “making remote associations” between unconnected events, ideas, information stored in memory (recall our discussion in Chapter 7), or physical objects. Consider how Dr William Foege, then working for the US Centers for Disease Control and Prevention, led the effort to eradicate smallpox in Nigeria. Foege realized that his supply of vaccine was insufficient for the whole population. But he observed how people congregated to shop in markets, so he targeted his campaign to vaccinate the people in those crowded areas, even if they were merely visitors. In so doing, Foege (now a senior fellow with the Carter Center and the Bill and Melinda Gates Foundation) created a model for future vaccination campaigns that efficiently interrupt the paths by which a virus spreads.⁸⁵

The idea of “remote associations” describes thinking such as Foege’s connection of shopping behavior and a virus’s spread. But it doesn’t explain how Foege was able to make this creative link. Researchers, however, have identified five stages underlying the creative process: preparation, concentration, incubation, illumination, and verification. Let us consider these stages.

The preparation stage reflects the notion that creativity starts from a base of knowledge. Experts suggest that creativity involves a convergence between tacit and explicit knowledge. Renowned choreographer Twyla Tharp emphasizes the significance of preparation in the creative process: “I think everyone can be creative, but you have to prepare for it with routine.” Tharp’s creativity-feeding habits include reading literature, keeping physically active (which stimulates the brain as well as the rest of the body), and choosing new projects that are very different from whatever she has just completed. Even an activity as simple as looking up a word in the dictionary offers an opportunity for preparation: Tharp looks at the word before and after, too, just to see if it gives her an idea.⁸⁶

During the concentration stage, an individual focuses on the problem at hand. Creative ideas at work are often triggered by work-related problems, incongruities, or failures. That said, research shows that when you focus too much on trying to come up with creative solutions it can actually block creativity. For example, daydreaming has been linked with creativity. Other research demonstrated that “Internet leisure browsing” increased creativity.⁸⁷ Allow yourself time to be distracted when searching for creative solutions as it can enhance the next stage of creativity—the incubation stage.

Incubation is done unconsciously. During this stage, people engage in daily activities while their minds simultaneously mull over information and make remote

 **connect** Go to www.mcgrawhillconnect.com for an interactive exercise to test your knowledge of the stages of creativity.



real WORLD // real PEOPLE

Martha Beck's "Kitchen Sink" Technique Increases Creativity

This morning I sat down to write about how we can all learn to better use the right hemispheres of our brains. For 30 minutes, I tapped restlessly at a laptop. Nothing much happened, idea-wise. Flat beer.

Finally I resorted to a strategy I call the Kitchen Sink. I read bits of eight books: four accounts of brain research, one novel about India, one study of bat behavior, one biography of Theodore Roosevelt, and one memoir of motherhood. Next, I drove to my favorite Rollerblading location, listening en route to a stand-up comic, a mystery novel, and an Eckhart Tolle lecture. I yanked on my

Rollerblades and skated around, squinting slack-jawed into the middle distance. After a while, a tiny lightbulb went on. Well, I thought, I could write about this.

Duh.

The Kitchen Sink, you see, is one way to activate your brain's creative right hemisphere.

What activities would you include in your kitchen sink?

SOURCE: M Beck, "Half a Mind Is a Terrible Thing to Waste," *Oprah Magazine*, November 2009, p 57.

associations. Martha Beck, author of six books, uses a technique she calls the "kitchen sink" during this stage. The Real World/Real People above illustrates its application when she was trying to write an article on how to better use the creative side of our brains. Associations generated in this stage ultimately come to life in the *illumination* stage. Finally, *verification* entails going through the entire process to verify, modify, or try out the new idea.

Let us examine the stages of creativity to determine why Japanese organizations propose and implement more ideas than do American companies. To address this issue, a creativity expert visited and extensively interviewed employees from five major Japanese companies. He observed that Japanese firms have created a management infrastructure that encourages and reinforces creativity. People were taught to identify problems (discontents) on their first day of employment. In turn, discontents were referred to as "golden eggs" to reinforce the notion that it is good to identify problems.

These organizations also promoted the stages of incubation, illumination, and verification through teamwork and incentives. For example, some companies posted the golden eggs on large wall posters in the work area; employees were then encouraged to interact with each other to execute the final three stages of the creative process. Employees eventually received monetary awards for any suggestions that passed all five phases of this process.⁸⁸ This research underscores the conclusion that creativity can be enhanced by effectively managing the creativity process and by fostering a positive and supportive work environment.



LO.9 Practical Recommendations for Increasing Creativity

While some consultants recommend hypnotism as a good way to increase employees' creativity, we prefer suggestions derived from research and three executives leading creative or innovative companies: Jeffrey Katzenberg, CEO of Dreamworks Animation; Ed Catmull, cofounder of Pixar; and David Kelley, founder of IDEO. Both research and practical experience underscore the conclusion that creativity can be enhanced by effectively managing the stages of creativity and by fostering a positive and supportive work environment. To that end, managers are encouraged to establish an organizational culture that emphasizes innovation, to establish innovation goals (e.g., develop five new patents), and to allocate rewards and resources to innovative activities. At a minimum, individuals need the time

and space to reflect and think about whatever issues or problems need creative solutions.

All three executives further recommend that management should create a “safe” work environment that encourages risk taking, autonomy, collaboration, and trusting relationships among employees.⁸⁹ These executives suggest that it is important to develop a “peer environment” in which people are more concerned about working for the greater good than for their own personal success. This norm can be nurtured through the use of transformational leadership, which is discussed in Chapter 16.⁹⁰ The willingness to give and accept ongoing feedback in a nondefensive manner is another critical component of a culture dedicated to creativity. For example, Pixar uses daily reviews or “dailies” as a process of giving and receiving constant feedback. This will be most effective if organizations train managers in the process of providing effective feedback. Ed Catmull and David Kelly also emphasize the importance of hiring great people who possess some of the individual characteristics shown in Table 12–3. This can be done by asking job applicants “for a story, example or insight that reveals thinking, judgment and problem-solving skills.” For example, you might ask an individual to describe a situation in which he or she improvised or how he or she handled a complex problem in a previous job.⁹¹ Finally, these executives also suggest that management should stay connected with innovations taking place in the academic community. For example, Dreamworks invites academics to deliver lectures and Pixar encourages technical artists to publish and attend academic conferences. In summary, creativity is a process that can be managed, and it is built around the philosophy of hiring and retaining great people to work in a positive and supportive work environment.

Summary of Key Concepts

1. *Compare and contrast the rational model of decision making, Simon's normative model, and the garbage can model.* The rational decision-making model consists of identifying the problem or opportunity, generating alternative solutions, evaluating and selecting a solution, and implementing and evaluating the solution. Research indicates that decision makers do not follow the series of steps outlined in the rational model.
Simon's normative model is guided by a decision maker's bounded rationality. Bounded rationality means that decision makers are bounded or restricted by a variety of constraints when making decisions. This leads to satisficing.
The garbage can model is based on the assumption that decision making is sloppy and haphazard. Decisions result from an interaction between four independent streams of events: problems, solutions, participants, and choice opportunities.
2. *Discuss eight decision-making biases.* Decision-making bias occurs as the result of using judgmental heuristics. The eight biases that affect decision making include (a) availability, (b) representativeness, (c) confirmation, (d) anchoring, (e) overconfidence, (f) hindsight, (g) framing, and (h) escalation of commitment.
3. *Discuss the thrust of evidence-based decision making and its implementation principles.* The goal of evidence-based decision making is to conscientiously use the best data when making decisions. Seven implementation principles help companies to integrate this process into an organization's culture: (a) treat your organization as an unfinished prototype, (b) no brag, just facts, (c) see yourself and your organization as outsiders do, (d) evidence-based management is not just for senior executives, (e) like everything else, you still need to sell it, (f) if all else fails, slow the spread of bad practices, and (g) the best diagnostic question: what happens when people fail?
4. *Explain the model of decision-making styles.* The model of decision-making styles is based on the idea that styles vary along two different dimensions: value orientation and tolerance for ambiguity. When these two dimensions are combined, they form four styles of decision making: directive, analytical, conceptual, and behavioral. People with a directive style have a low tolerance for ambiguity and are oriented toward task and technical concerns. Analytics have a higher tolerance for ambiguity and are characterized by a tendency to overanalyze a situation. People with a conceptual style have a high threshold for ambiguity and tend to focus on people or social aspects of a work situation. This behavioral style is the most people oriented of the four styles.
5. *Explain the model of intuition and the ethical decision tree.* Intuition consists of insight or knowledge that is obtained

without the use of rational thought or logical inference. There are two types of intuition: holistic hunches and automated experiences. Intuition is represented by two distinct processes, one is automatic and the second is controlled, and there are two sources of intuition: expertise, which consists of an individual's combined explicit and tacit knowledge regarding an object, person, situation, or decision opportunity; and feelings. Intuition is based on the interaction between one's expertise and feelings in a given situation.

The ethical decision tree presents a structured approach for making ethical decisions. Managers work through the tree by answering a series of questions and the process leads to a recommended decision.

6. *Summarize the pros and cons of involving groups in the decision-making process.* There are both pros and cons to involving groups in the decision-making process. Although research shows that groups typically outperform the average individual, there are five important issues to consider when using groups to make decisions. (a) Groups are less efficient than individuals. (b) A group's overconfidence can fuel groupthink. (c) Groups tend to make more moderate decisions than individuals. (d) Groups are more accurate when they know a great deal about the issues at hand and when the leader possesses the ability to effectively evaluate the group members' opinions and judgments. (e) The composition of a group affects its decision-making processes and performance. In the final analysis, managers are encouraged to use a contingency approach when determining whether to include others in the decision-making process.
7. *Contrast brainstorming, the nominal group technique, the Delphi technique, and computer-aided decision making.* Group problem-solving techniques facilitate better decision making within groups. Brainstorming is used to help groups generate multiple ideas and alternatives for solving problems. The nominal group technique assists groups both to generate ideas and to evaluate and select solutions. The Delphi technique is a group process that anonymously generates ideas or judgments from physically dispersed experts. The purpose of computer-aided decision making is to reduce consensus roadblocks while collecting more information in a shorter period of time.
8. *Describe the stages of the creative process.* Creativity is defined as the process of using imagination and skill to develop a new or unique product, object, process, or thought. There are five stages of the creative process: preparation, concentration, incubation, illumination, and verification.
9. *Discuss practical recommendations for increasing creativity.* Creativity can be enhanced by effectively managing the stages of creativity and by fostering a positive and supportive work environment. People need the time and space to be creative. Managers are encouraged to create a "safe" work environment that encourages risk taking, autonomy, collaboration, and trusting relationships among employees. It also is important to develop a "peer environment" in which people are more concerned about working for the greater good than their own personal success.

Key Terms

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OB in Action Case Study

Faulty Decision Making Is a Cause of the Deepwater Horizon Disaster⁹²

Federal authorities investigating BP PLC's oil spill in the Gulf of Mexico are zeroing in on bad decisions, missed warnings, and worker disagreements in the hours before the April 20 inferno aboard the *Deepwater Horizon* that spawned one of the worst environmental disasters in US history.

In particular, the panel is examining why rig workers missed telltale signs that the well was close to an

uncontrolled blow-out, according to an internal document assembled by the investigators and reviewed by *The Wall Street Journal*. The document lists more than 20 "anomalies" in the well's behavior and the crew's response that particularly interest the investigators.

Investigators are also turning attention to decisions made by employees of Transocean Ltd., the rig's owner, in addition to those made by BP that day, the list indicates.

In particular, the list suggests investigators are looking at whether better coordination between the two companies might have prevented the disaster. The document includes several instances of unexpected pressure increases triggering disagreements among workers from the two firms. . . .

The list of 20 anomalies includes several irregularities in the well's behavior, some of which were already known. The list also includes instances where common well-control protocols weren't followed.

Aboard a rig, any single problem by itself might not be cause for alarm, according to industry officials with experience in deep-water drilling. But the cascade of problems on the *Deepwater Horizon* in the hours before it exploded should have been a warning to workers to try to shut the well or take other precautions to avoid potential disaster.

Eleven people died aboard the rig as it burned in April and sank.

In this week's planned testimony, the investigative panel is likely to ask rig workers why none of the signs led to a halt in work. Instead, workers from BP and Transocean kept taking steps to complete the well, including removing heavy fluid, known as drilling "mud," that is used to tamp down pressure within a well, according to documents previously released to congressional investigators.

It isn't clear if the crew noticed in the hours before the explosion that more fluid was leaving the well than workers were putting into it—a potential sign of a serious imbalance deep within a well that can lead to a catastrophe. These signs continued for several hours, until the well exploded shortly before 10 P.M., according to the list.

At noon on April 20—some 10 hours before the blow-out occurred—more fluid left the pipe than was expected during routine test. And around 4 P.M., pressure on the drill pipe was higher than expected, the panel notes. Both are indications that workers were losing control.

Workers were having a tough time determining exactly how much fluid was entering and leaving the well because simultaneous operations were under way. The panel was critical of this. "Hard to track fluid volumes in the wellbore when you are pumping mud to boat . . . and also [pumping] saltwater into the hole," the list notes.

Shortly before 5 P.M., pressure built up unexpectedly on the section of pipe suspended in the well. Managers from BP and Transocean disagreed on what that meant. "Some employees recalled a disagreement between Transocean and BP on the rig floor about the negative test and pressure on the work string," the list notes.

At 7:10 P.M., BP's two top officials on the rig met near the spot where the pipe comes out of the water and through the rig's floor. They discussed the high pressure, according to the investigative panel, which has been gathering evidence for two months. Transocean rig workers, according to the panel, offered an explanation that didn't raise an alarm.

That employees of Transocean, the rig's owner, might not have realized the seriousness of the situation—and may have misunderstood the data from the well—could shift some scrutiny onto that company. Most of the spotlight so far has fallen on BP, which owned the well and hired Transocean to drill it.

BP has emerged as a target of criticism for, among other things, choosing a well design that was less costly to build than alternative designs, but which came with additional risks. The investigative panel's list of anomalies underscores how easy it can be to overlook signs that a deepwater well is in trouble and could turn deadly.

Questions for Discussion

1. Which model of decision making is represented in this case?
2. To what extent did decision-making biases impact the decisions made in this case? Identify the specific biases that were present. Is BP's and Transocean's approach more characteristic of the rational, normative, or garbage can models of decision making? Discuss your rationale.
3. How could evidence-based decision making be used to help avoid this disaster?
4. What do you think are the key causes of this disaster?
5. What are the key takeaways from this case? Explain.

Legal/Ethical Challenge

How Would You Handle the Early Reporting of Sales?⁹³

Assume the role of Jonathan in this scenario.

Jonathan has a new job. Just promoted from the accounting group at headquarters, he is now the controller for a regional sales unit of a consumer electronics company. He is excited about this step up and wants to build a good relationship with his new team. However, when the quarterly numbers come due, he realizes that the next quarter's sales are being reported early to boost bonus compensation. The group manager's silence suggests that this sort of thing has probably happened before. Having dealt with such distortion when he sat in corporate, Jonathan is fully aware of its potential to cause major

damage. But this is the first time he is working with people who are creating the problem instead of those who are trying to fix it.

This may seem like a mundane accounting matter. But the consequences . . . are very serious.

What would you do if you were Jonathan?

1. Nothing. I need to get along with my new team, and this has been standard practice in the past. Further, this really isn't that much of a big deal.

2. Let it go for now, but I will speak to the group's manager about this practice. My goal would be to understand why this practice has been going on, and then I might attempt to put an end to it.
3. Confront the issue right now and put an end to this practice. If I get any resistance, I would immediately reach out to my contacts at corporate headquarters.
4. Invent other options.

Web Resources

For study material and exercises that apply to this chapter, visit our website at www.mhhe.com/kreitner10e