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*“Estamos bien en el refugio—los 33.” For 69 days shift leader Luis Urzúa kept the trapped men in the Chilean mine organized and hopeful. On the 70th day, he was the last man safely out.*

UPI/Hugo Infante/Chilean Government/HO/Landov

## 7

# Information and Decision Making

## Nothing beats a great decision

### CHAPTER QUICK START

Decisions ... decisions ... decisions. We all make them and we all have to live with their consequences, both for ourselves and for others affected by them. Managers must gather and use information effectively in order to solve problems and explore opportunities. They must be familiar with the steps in the decision-making process and understand current issues that potentially influence the quality of their decisions and outcomes.

### Key Takeaways

- Discuss the role of information in the management process.
- Identify how managers approach problems and decisions.
- Describe the six steps in the decision-making process.
- Describe the potential pitfalls and sources of creativity in managerial decision making.

what to look for inside >

### MANAGEMENT IS REAL

**analysis**> MAKE DATA YOUR FRIEND

Intelligent Enterprises Know How to Win with Analytics

**choices**> THINK BEFORE YOU ACT

Yahoo CEO Marissa Mayer Bans Telecommuting

**ethics**> KNOW RIGHT FROM WRONG

Climber Left to Die on Mt. Everest

**insight**> LEARN ABOUT YOURSELF

Self-Confidence Builds Better Decisions

**wisdom**> LEARN FROM ROLE MODELS

Tom Szaky's Creative Decisions Fuel Sustainability Gains

### SKILLS MAKE YOU VALUABLE

- **EVALUATE Career Situations:**  
What Would You Do?

- **REFLECT** *On the Self-Assessment:*  
Cognitive Style
- **CONTRIBUTE** *To the Class Exercise:*  
Lost at Sea
- **MANAGE** *A Critical Incident:*  
Asking for a Raise
- **COLLABORATE** *On the Team Project:*  
Crisis Management Realities
- **ANALYZE** *The Case Study:*  
[Amazon.com](http://Amazon.com): One E-Store to Rule Them All

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When the San José copper and gold mine collapsed in Chile, 32 miners and their shift leader, Luis Urzúa, were trapped inside.<sup>1</sup> “The most difficult moment was when the air cleared and we saw the rock,” said Urzúa. “I had thought maybe it was going to be a day or two days, but not when I saw the rock... .” In fact, the miners were trapped 2,300 feet below the surface for 69 days. Getting them out alive was a problem that captured the attention of the entire world.

After the rescue shaft was completed, Urzúa was the last man out. “The job was hard,” he said. “They were days of great pain and sorrow.” But the decisions Urzúa made as shift leader—organizing the miners into work shifts, keeping them busy, studying mine diagrams, making escape plans, raising morale—all contributed to the successful rescue of the miners. After embracing Urzúa when he arrived at the surface, Chile’s President Sebastian Pinera said, “He was a shift boss who made us proud.”

Most managers will never have to face such an extreme crisis, but decision making and problem solving are a critical aspect of every manager’s job. Not all decisions are going to be easy; some will have to be made under tough conditions; and, not all decisions will turn out right. But as with the case of Luis Urzúa trapped in the Chilean mine with 32 other miners, the goal is to do the best you can under the circumstances.

## Information, Technology, and Management

### TAKEAWAY 1 What is the role of information in the management process?

**LEARN MORE ABOUT** | Information and information systems • Data mining and analytics  
Business intelligence and executive dashboards

Tests of our abilities to make good decisions occur every day in situations that may not be crisis driven, but which nevertheless have real consequences for ourselves and others. The challenges begin with the fact that our society is now highly information-driven, digital, socially networked, transparent, and continuously evolving. Career and personal success increasingly requires three “must-have” competencies: **technological competency**—the ability to understand new technologies and to use them to their best advantage; **information competency**—the ability to locate, gather, organize, and display information; and **analytical competency**—the ability to evaluate and analyze information to make actual decisions and solve real problems.<sup>2</sup> How about it—are you ready?

**Technological competency** is the ability to understand new technologies and to use them to their best advantage.

**Information competency** is the ability to locate, gather, and organize information for use in decision making.

**Analytical competency** is the ability to evaluate and analyze information to make actual decisions and solve real problems.

## Information and Information Systems

This sign should be on every manager's desk—*Warning: Data fi Information!* **Data** are raw facts and observations. In contrast, **information** is data made useful and meaningful for decision making. We all have lots of access to data, but we don't always gather and use this data to create useful information that meets the test of these five criteria:

**Data** are raw facts and observations.

**Information** is data made useful for decision making.

1. *Timely*—The information is available when needed; it meets deadlines for decision making and action.
2. *High quality*—The information is accurate, and it is reliable; it can be used with confidence.
3. *Complete*—The information is complete and sufficient for the task at hand; it is as current and up to date as possible.
- 4.

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*Relevant*—The information is appropriate for the task at hand; it is free from extraneous or irrelevant material.

5. *Understandable*—The information is clear and easily understood by the user; it is free from unnecessary detail.

People and organizations perform best when they have available to them the right information at the right time and in the right place. This is the function served by **management information systems** that use the latest technologies to collect, organize, and distribute data. Information departments or centers are now mainstream features on organization charts, and the CIO (chief information officer), CKO (chief knowledge officer), CTO (chief technology officer), or CDO (chief digital officer) are prominent members of the C-suite within top management teams. The number and variety of information-driven career fields are growing fast.

**Management information systems** collect, organize, and distribute data for use in decision making.

Information systems serve the variety of needs described in [Figure 7.1](#). Within organizations, people need vast amounts of *internal information* to make decisions and solve problems in their daily work. They need information from their immediate work setting and from other parts of the organization. Internal information flows downward in the form of goals, instructions, and feedback. It flows horizontally in ways that assist in cross-functional coordination and problem solving. And, it flows upward as performance reports, suggestions for improvement, and even



policy and personnel disputes. At the organization's boundaries, information in the external environment is accessed. Managers use this *intelligence information* to deal with customers, competitors, and other stakeholders such as government agencies, creditors, suppliers, shareholders, and community members. Organizations also send vast amounts of *public information* to stakeholders and the external environment. This often takes the form of advertising, public relations campaigns, social media posts, and financial reports that serve a variety of purposes, ranging from image-building to product promotion to financial documentation to damage control.

## Data Mining and Analytics

**Data mining** is the process of analyzing data to produce useful information for decision makers.

**Data mining** is the process of analyzing data to produce useful information for decision makers. There is now so much computing power available that we increasingly talk about **big data**, which is collected in huge quantities and is difficult to mine without using sophisticated mathematical and analytical techniques. UPS, for example, spends over \$1 billion per year on technology. In one big data program, some 250 million data points are run through an algorithm with over 1,000 pages of code to calculate optimum daily routes for drivers. The company expects to save some \$50 million per year from eliminating excess driving miles.<sup>3</sup>

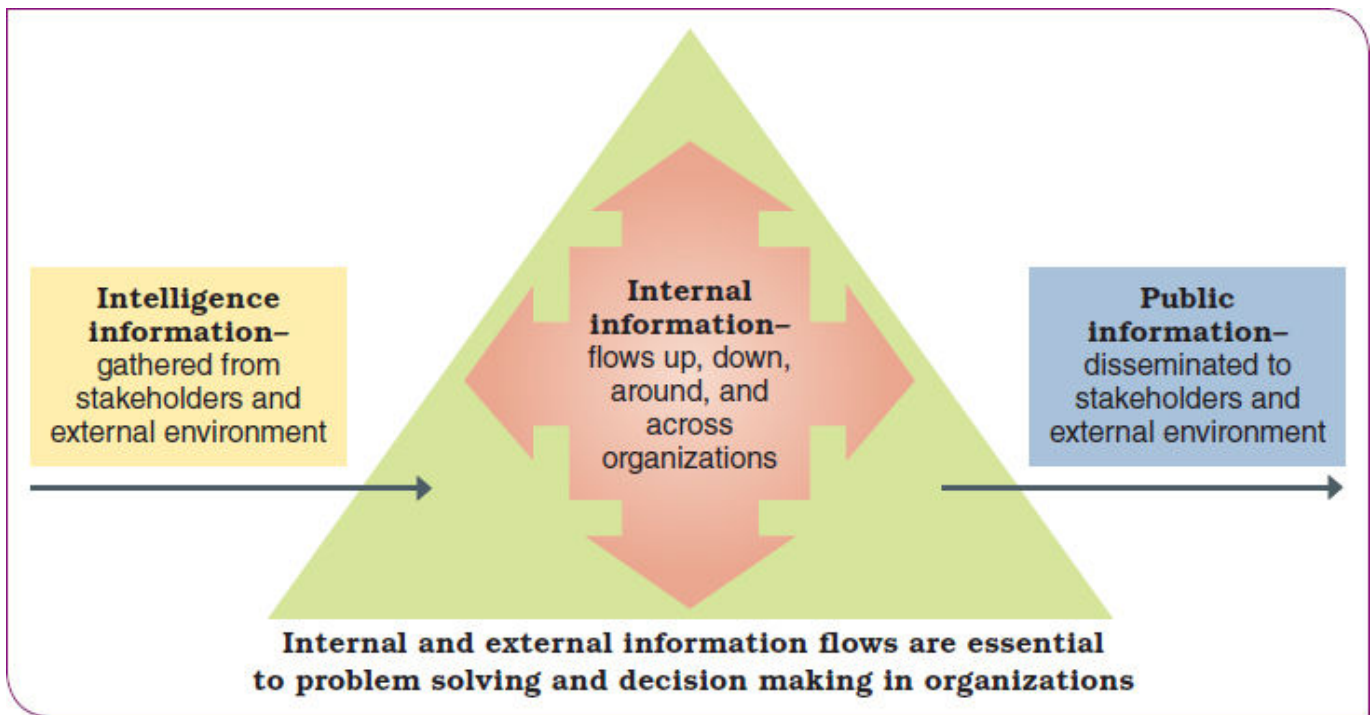
**Big data** exists in huge quantities and is difficult to process without sophisticated mathematical and computing techniques.

Even when data is available, we don't always use it well. The challenge in data mining, especially when mining big data, comes down to strength in **analytics**. This is sometimes called *business analytics* or *management analytics*, which is the systematic evaluation and analysis of data to make informed decisions. Think, for example, of the vast amounts of data being collected by

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social media sites. These sites—Facebook, Twitter, LinkedIn, and others—mine the data for their own business uses, and they also sell the data to others. Would you be surprised that the United Nations buys social data from Twitter? It does, and it mines this data for insights into social unrest around the world.<sup>4</sup> Organizations of all types are investing heavily in big data initiatives, hiring people with strong analytics skills, and setting up analytics units and teams to make available data valuable. The top management role of Chief Data Officer is appearing in more C-suites and the job of data scientist is appearing more and more often in help wanted ads.

Management with **analytics** involves systematic gathering and processing of data to make informed decisions.



**FIGURE 7.1** Internal and external information needs in organizations.

**analysis> MAKE DATA YOUR FRIEND**

> *Analytics-driven managers “know how to get the data to tell them the things that matter (and not the things that don’t.)”*

## Intelligent Enterprises Know How to Win with Analytics



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A survey on “The New Intelligent Enterprise” conducted by the *Sloan Management Review* asked 3,000 executives from around the world to report on how their organizations use and deal with data for business intelligence. Results included the following:

- 60% of executives said their organizations were “overwhelmed” by data and have difficulty making it useful for performance results.
- Organizations outperforming competitors were three times better at managing and acting on data.
- Top performers were two times more likely than low performers to say they needed to get even better with analytics.
- Top performers use analytics most often in finance, strategy, operations, and sales and marketing.
- Most frequent obstacles to adopting better analytics are lack of understanding, competing management priorities, and lack of skills.
- Analytic techniques expected to grow most in importance are data visualization, use of simulations and scenarios development, and use of analytics within business processes.

### YOUR THOUGHTS?

**What are the implications for your career planning and development? The consulting firm McKinsey & Co. projects that by 2018 the United States will be short 1.5 million managers who have the skills to “use data to shape business decisions.” Are you prepared to compete for jobs and promotions in career situations where analytics count? How could your local schools, small businesses, and even government agencies gain by better harnessing the power of information and analytics?**

## Business Intelligence and Executive Dashboards

**Business intelligence** is the process of tapping or mining information systems to extract data that is most potentially useful for decision makers. It sorts and reports data in organized ways that help decision makers detect, digest, and deal with patterns posing important implications. Some of that data provides *competitive information*. At Amazon, for example, a “competitive intelligence” team buys products from other retailers to check on their quality, speed, and customer service. Data on the purchases is presented to top management and analyzed to keep Amazon ahead of the competition.<sup>5</sup> Some of that data provides *big picture information*. For example, companies can now easily share the latest financial results across different levels in the organization so that employees know current profits and how they compare to past results and desired targets. Other data provides *function-specific information*. An example is ensuring that manufacturing workers are always aware of costs, marketing people are aware of sales expenses relative to sales revenues, and customer service employees know cost per service contact.<sup>6</sup>

**Business intelligence** taps information systems to extract and report data in organized ways that are helpful to decision makers.

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One of the trends in business intelligence is the use of **executive dashboards** that visually display and update key performance metrics in the form of graphs, charts, and scorecards in real time. The Chief Financial Officer of the manufacturing firm Ceradyne says: “If numbers are the language of business, then dashboards are the way we drive the business forward.” He adds that they “take the daily temperature of a business.”<sup>7</sup> Picture a sales manager whose office wall has a large flat-panel computer display much like the one you might use for TV and games at home. But this display calls up one or more dashboards filled with a wide range of real-time information including, for example, sales by product, salesperson, and sales area, as well as tracking comparisons with past performance and current sales targets. How can a manager with this kind of information fail to make well-informed decisions?

**Executive dashboards** visually display graphs, charts, and scorecards of key performance indicators and information on a real-time basis.

### Learning Check 1

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**TAKEAWAYQUESTION 1** What is the role of information in the management process?

**BE SURE YOU CAN** • define and give examples of *technological competency*, *information competency*, and *analytical competency* • differentiate data and information • list the criteria of useful information • describe the role of information systems in organizations • explain the importance of analytics and business intelligence • discuss how IT is reducing barriers within organizations and between organizations and their environments

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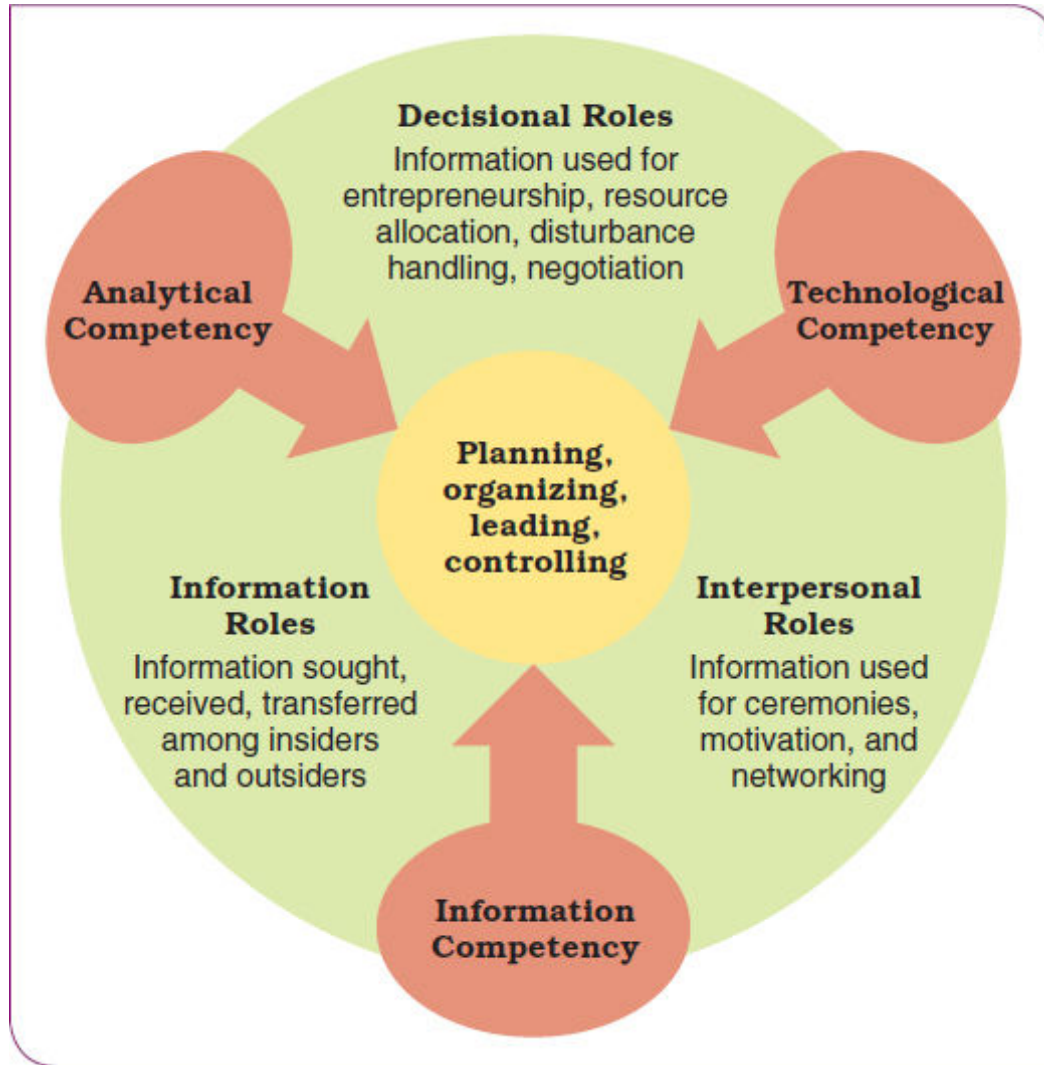
## Problem Solving and Managerial Decisions

**TAKEAWAYQUESTION 2** How do managers address problems and make decisions?

**LEARN MORE ABOUT** | Managers as problem solvers • Problem-solving approaches and styles

Types of problem-solving decisions • Types of decision environments

Information is the anchor point for effective decision making. It helps us sense the need for a decision, frame an approach to the decision, and discuss the decision with others.<sup>8</sup> An essential part of a manager's job, as depicted in [Figure 7.2](#), is to serve as a nerve center for the flow of information.<sup>9</sup> Managers are information processors who continually use relationships and technology to gather, share, and receive information. Managers who fulfill this aspect of their role well are always turned on and always connected.



**FIGURE 7.2** The manager as an information processor and nerve center for planning, organizing, leading, and controlling.

## Managers as Problem Solvers



Other times they're smaller but still consequential things—now to handle the Fourth of July holiday staffing when everyone on the team wants the day off. Sometimes it's being able to recognize and correct an outright mistake—such as when the wrong item has been shipped to an important customer. What we are talking about in all such situations is a manager's skill with **problem solving**, the process of identifying a discrepancy between an actual and a desired state of affairs, and then taking corrective action to resolve the problem.

**Problem solving** involves identifying and taking action to resolve problems.

Success in problem solving comes depends on information to make good **decisions**—choices among alternative possible courses of action. Managers, in this sense, make decisions while facing a continuous stream of daily problems. The most obvious situation is a **performance threat** in which something is already wrong or has the potential to go wrong. This happens when actual performance is less than desired or is moving in an unfavorable direction. Examples are when turnover or absenteeism suddenly increases in the work unit, when a team member falls behind in work, or when a customer complains about service delays. Another important situation emerges as a **performance opportunity** that offers the chance for better future performance if the right steps are taken. This happens when an actual situation either turns out better than anticipated or offers the potential to exceed expectations.

A **decision** is a choice among possible alternative courses of action.

A **performance threat** is a situation in which something is obviously wrong or has the potential to go wrong.

A **performance opportunity** is a situation that offers the chance for a better future if the right steps are taken.

## Problem-Solving Approaches and Styles

*Problem:* Airline aisles are clogged during boarding with frustrated passengers. Airline executives know that minutes saved in boarding can mean money saved.

*Analysis:* A study by astrophysicist Jason Steffen shows that boarding alternating rows back to front and boarding window–middle–aisle for each row beats other methods.

*Result:* Airline executives may be as stuck in their thinking as their passengers are in the aisles. Most have no plans to change current boarding systems.<sup>10</sup>

## Openness to Problem Solving

Even when presented with good information, managers often differ in their openness to problem solving. Some are more willing than others to accept the responsibilities associated with solving a problem. **Problem avoiders** ignore information that would otherwise signal the presence of a performance opportunity or threat. They only passively gather information, not wanting to make decisions or deal with problems. **Problem solvers** are willing to make decisions and try to solve problems, but only when forced into it by the situation. They are reactive in gathering information to solve problems after, but not before, they occur. They may deal reasonably well with performance threats, but they also are likely to miss many performance opportunities.

**Problem avoiders** ignore information indicating a performance opportunity or threat.

**Problem solvers** try to solve problems when they occur.

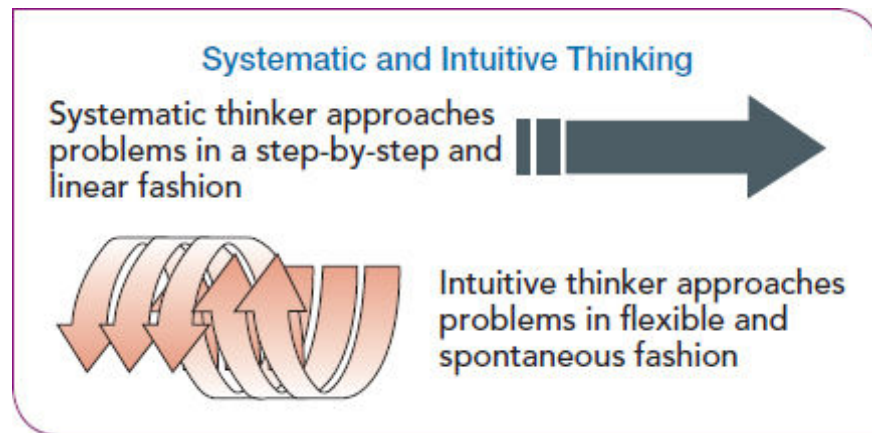
There is quite a contrast between the last two styles and **problem seekers** who constantly process information and proactively look for problems to solve, even before they occur. True problem seekers are forward thinking. They anticipate performance threats and opportunities, and they take preemptive action to generate an advantage.

**Problem seekers** constantly process information looking for problems to solve, even before they occur.

### Systematic and Intuitive Thinking

Managers differ in their use of “systematic” and “intuitive” thinking when trying to solve problems and make decisions. In **systematic thinking**, individuals approach problems using a rational, step-by-step, analytical process. The process is slow and methodical. Systematic thinking breaks a complex problem into smaller components and then addresses them in a logical and integrated way. Managers who are systematic will typically make a plan before taking action and will carefully search for information to facilitate a step-by-step problem-solving approach.

**Systematic thinking** approaches problems in a rational and analytical fashion.



Someone using **intuitive thinking** is more flexible and spontaneous in problem solving.<sup>11</sup> This process involves a quick and broad evaluation of the situation as well as possible alternative courses of action. Managers who are intuitive will generally deal with many aspects of a problem at

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once, jumping from one issue to another, and consider “hunches” based on experience or spontaneous ideas. This approach is often imaginative and tends to work best in situations where facts are limited and there are few decision precedents.<sup>12</sup>

**Intuitive thinking** approaches problems in a flexible and spontaneous fashion.

## Issues&Trends

### *Video Games May Be Good for Decision Making*



Jerzyworks/Masterfile

Believe it or not, and contrary to public opinion, researchers are starting to talk about gaming being good for our brains. Consider these data—Starcraft players show faster thought and movements; players of action video games were 25% faster than nonplayers in decision making; game players can track six things at once, while nonplayers track four; surgeons who play games at least three hours a week make fewer surgical errors. Of course there's a lot of downside risk, too. Players of violent video games seem to have more aggressive thoughts and are less caring toward others. Perhaps your gaming, well considered, can be a decision-making asset—boosting creativity and multitasking skills.

[Amazon.com](https://www.amazon.com)'s Jeff Bezos recognizes that it's not always possible for the firm's top managers to make systematic fact-based decisions. There are times, he says, when “you have to rely on experienced executives who've honed their instincts” and are able to make good judgments.<sup>13</sup> There's clearly a place for both systematic and intuitive decision making in management. Intuition balanced by support from good solid analysis, experience, and effort can be a great combination.<sup>14</sup>

### Multidimensional Thinking

Managers often deal with portfolios of problems that encompass multiple and interrelated issues. This requires **multidimensional thinking**—an ability to view many problems simultaneously, in relationship to one another and across both long and short time horizons.<sup>15</sup> The best managers are able to “map” multiple problems into a network that can be actively managed over time as priorities, events, and demands continuously change. They are able to make decisions and take actions in the short run that benefit longer-run objectives. And, they also avoid being sidetracked while sorting through a shifting mix of daily problems. Harvard scholar Daniel Isenberg calls this skill **strategic opportunism**—the ability to remain focused on long-term objectives while being flexible enough to resolve short-term problems and opportunities in a timely way.<sup>16</sup>

**Multidimensional thinking** is an ability to address many problems at once.

**Strategic opportunism** focuses on long-term objectives while being flexible in dealing with short-term problems.

### Cognitive Styles

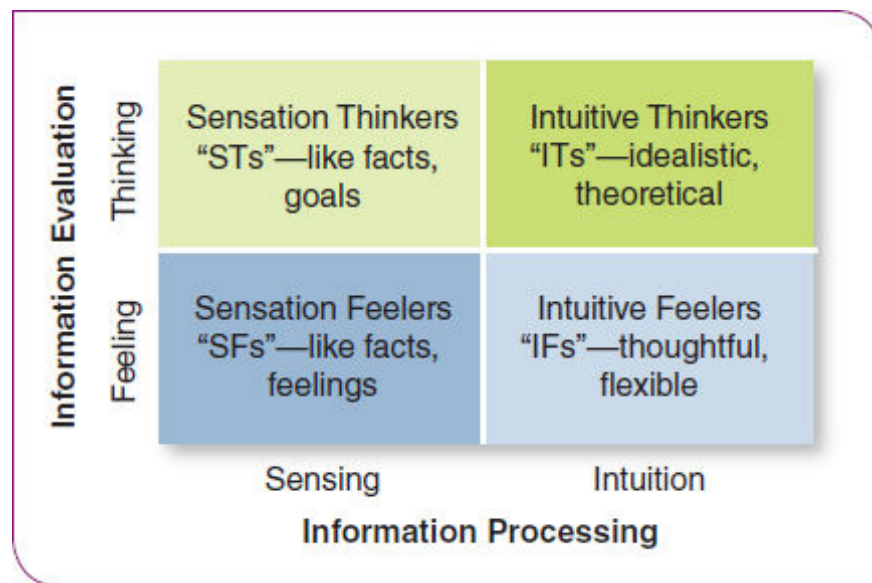
When US Airways Flight 1549 was in trouble and pilot Chesley (“Sully”) Sullenberger decided to land in the Hudson River, he had both a clear head and a clear sense of what he had been trained to do. The landing was successful and all of the 155 passengers and crew aboard the Airbus A320-214 survived. Called a “hero” for his efforts, Sullenberger described his thinking this way:<sup>17</sup>

I needed to touch down with the wings exactly level ... with the nose slightly up. I needed to touch down at ... a descent rate that was survivable. And I needed to touch down just above our minimum flying speed but not below it... . I needed to make all these things happen simultaneously.

This example highlights **cognitive styles**, or the way individuals deal with information while making decisions. If you take the end-of-chapter self-assessment, it will allow you to examine your cognitive style in problem solving as a contrast of tendencies toward information gathering—*sensation versus intuition*—and information evaluation—*feeling versus thinking*. Most likely, Sully Sullenberger would score high in both sensation and thinking, and that is probably an ideal type for a pilot.

**Cognitive styles** are shown by the ways individuals deal with information while making decisions.

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People with different cognitive styles are likely to approach problems and make decisions in very different ways. It is helpful to understand the four styles shown here along with their characteristics, both for yourself and as you see them in others.<sup>18</sup>

- *Sensation Thinkers*—STs tend to emphasize the impersonal rather than the personal and take a realistic approach to problem solving. They like hard “facts,” clear goals, certainty, and situations characterized by high levels of control.
- *Intuitive Thinkers*—ITs are comfortable with abstraction and unstructured situations. They tend to be idealistic, prone to intellectual and theoretical positions; they are logical and impersonal but also tend to avoid details.



- *Intuitive Feelers*—IFs prefer broad and global issues. They are insightful and also tend to avoid details, being comfortable with intangibles; they value flexibility and human relationships.
- *Sensation Feelers*—SFs tend to emphasize both analysis and human relations. They primarily have a realistic approach and prefer facts to speculation; they are open communicators and sensitive to feelings and values.

## Structured and Unstructured Problems

Managers sometimes face **structured problems** that are familiar, straightforward, and clear with respect to information needs. Because these problems are routine and occur over and over again, they can be dealt with through **programmed decisions** that use solutions or decision rules already available from past experience. Although not always predictable, routine problems can be anticipated. This allows for decisions to be programmed in advance and then executed as needed. In human resource management, for example, problems are common whenever decisions are made about pay raises and promotions, vacation requests, committee assignments, etc. Forward-looking managers use this understanding to decide in advance how to handle complaints and conflicts when and if they arise, essentially standardizing their approach to these decisions.

**Structured problems** are straightforward and clear with respect to information needs.

A **programmed decision** applies a solution from past experience to a routine problem.

Managers also deal with **unstructured problems** that are new or unusual situations characterized by ambiguities and information deficiencies. These problems require **nonprogrammed decisions** where novel solutions are specifically crafted to meet the demands of the unique situation at hand. Many, if not most, problems faced by higher-level managers are unstructured, often involving the choice among different strategies and objectives in uncertain situations.

**Unstructured problems** have ambiguities and information deficiencies.

A **nonprogrammed decision** applies a specific solution crafted for a unique problem.

## Crisis Problems

Think back to the opening example of shift leader Luis Urzúa and the Chilean mine disaster. This case represents one of the most challenging of all decision situations—a **crisis decision**. This appears as an unexpected problem that can lead to disaster if not resolved quickly and appropriately. The ability to handle a crisis could well be the ultimate test of any manager's decision-making capabilities.<sup>19</sup> Urzúa certainly passed this test with flying colors. Not everyone does as well in crisis situations. In fact, we sometimes react to a crisis by doing exactly the wrong things.

A **crisis decision** occurs when an unexpected problem arises that can lead to disaster if not resolved quickly and appropriately.

Researchers tell us that managers often err in crisis situations by isolating themselves and trying to solve the problem alone or as part of a small closed group.<sup>20</sup> But, this tendency to close ranks limits access to crucial information at the very time that it is most needed. And it not only sets things up for poor decisions—it may create even more problems as the situation escalates.



When Toyota recalled over 5 million vehicles for quality defects—a real disaster for the brand—one observer said: “Crisis management does not get any more woeful than this.”<sup>21</sup> The poor crisis management was blamed on a corporate culture that discouraged transparency and public disclosure of quality problems. Toyota’s CEO Akio Toyoda’s and the firm were criticized for “initially denying, minimizing and mitigating the problems.”<sup>22</sup>

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Good information systems and active problem seeking can help managers get on top of crisis situations. Good preparation helps as well; there’s no need to wait for crises to hit before figuring out how to best deal with them. Managers can be assigned to crisis management teams ahead of time, and crisis management plans can be developed to deal with various contingencies. Just as police departments and community groups plan ahead and train to handle civil and natural disasters, managers and work teams also can plan ahead and train to deal with organizational crises. Many organizations offer crisis management workshops that address issues like the rules shown in the nearby box. The intent of these programs is to prepare managers for unexpected high-impact events that threaten an organization’s health and well-being.

### Six Rules for Crisis Management

1. *Figure out what is going on*—Take the time to understand what’s happening and the conditions under which the crisis must be resolved.
2. *Remember that speed matters*—Attack the crisis as quickly as possible, trying to catch it when it is as small as possible.
3. *Remember that slow counts, too*—Know when to back off and wait for a better opportunity to make progress with the crisis.
4. *Respect the danger of the unfamiliar*—Understand the danger of all-new territory where you and others have never been before.
5. *Value the skeptic*—Don’t look for and get too comfortable with agreement; appreciate skeptics and let them help you see things differently.
6. *Be ready to “fight fire with fire”*—When things are going wrong and no one seems to care, you may have to start a crisis to get their attention.

## Problem-Solving Environments

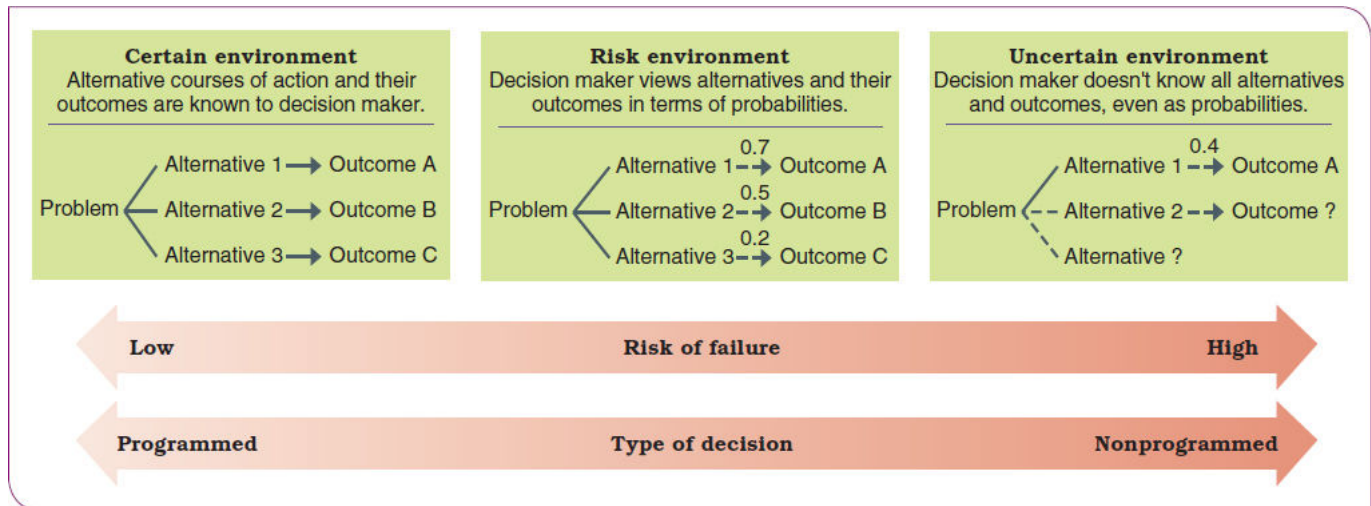
[Figure 7.3](#) shows that problems must be solved in three different decision conditions or environments—certainty, risk, and uncertainty. Although managers have to make decisions in each of these environments, the conditions of risk and uncertainty are common at higher levels of management where problems are more complex and unstructured.

### Certain Environment

The most favorable decision situation for a manager or team leader is to face a problem in a **certain environment**. This is an ideal decision-making situation because full and complete factual information is available about possible alternative courses of action and their outcomes. The decision maker’s task is simple: Study the alternatives and choose the best solution. Certain

environments are nice, neat, and comfortable for decision makers. However, very few managerial problems are like this.

A **certain environment** offers complete information on possible action alternatives and their consequences.



**FIGURE 7.3** Three environments for problem solving and decision making.

## Risk Environment

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*probabilities* to estimate the likelihood that a particular outcome will occur (e.g., 4 chances out of 10). Because probabilities are only possibilities, people vary in how they act under risk conditions. Some of us are risk takers and some are risk avoiders; some of us gain from taking risks and others lose.

A **risk environment** lacks complete information but offers “probabilities” of the likely outcomes for possible action alternatives.

Domino’s Pizza CEO J. Patrick Doyle is a risk taker. When deciding to change the firm’s pizza recipe, he ran a television ad admitting that customers really disliked the old one because it was “totally devoid of flavor” and had a crust “like cardboard.” Whereas some executives might want to hide or downplay such customer reviews, Doyle used them to help launch the new recipe. He says it was a “calculated risk” and that “we’re proving to our customers that we are listening to them by brutally accepting the criticism that’s out there.”<sup>23</sup>

General Motors’ former Vice Chairman of Global Product Development, Bob Lutz, wasn’t a risk taker. He once said: “GM had the technology to do hybrids back when Toyota was launching the first Prius, but we opted not to ask the board to approve a product program that’d be destined to lose hundreds of millions of dollars.”<sup>24</sup> He and other GM executives either miscalculated the probabilities of positive payoffs from hybrid vehicles or didn’t believe the probabilities were high enough to justify the financial risk. Their Japanese competitors, facing the same risk environment, decided differently and gained the early mover advantage.

## Uncertain Environment

When facts are few and information is so poor that managers are unable to even assign probabilities to the likely outcomes of alternatives, an **uncertain environment** exists. This is the most difficult decision-making condition. The high level of uncertainty forces managers to rely heavily on intuition, judgment, informed guessing, and hunches—all of which leave considerable room for error. Perhaps there is no better example of the challenges of uncertainty than the situation faced by government and business leaders as they struggle to deal with global economic turmoil. Even as they struggle to find the right paths forward, great political, social, and economic uncertainties make their tasks difficult and the outcomes of their decisions hard to predict.

An **uncertain environment** lacks so much information that it is difficult to assign probabilities to the likely outcomes of alternatives.

### Learning Check 2

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#### TAKEAWAY 2 How do managers address problems and make decisions?

**BE SURE YOU CAN** • describe how IT influences the four functions of management • define *problem solving* and *decision making* • explain systematic and intuitive thinking • list four cognitive styles in decision making • differentiate programmed and nonprogrammed decisions • describe the challenges of crisis decision making • explain decision making in certain, risk, and uncertain environments

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## The Decision-Making Process

#### TAKEAWAY 3 What are the steps in the decision-making process?

**LEARN MORE ABOUT** | Identify and define the problem • Generate and evaluate alternative courses of action

Choose a preferred course of action • Implement the decision

Evaluate results • At all steps—check ethical reasoning

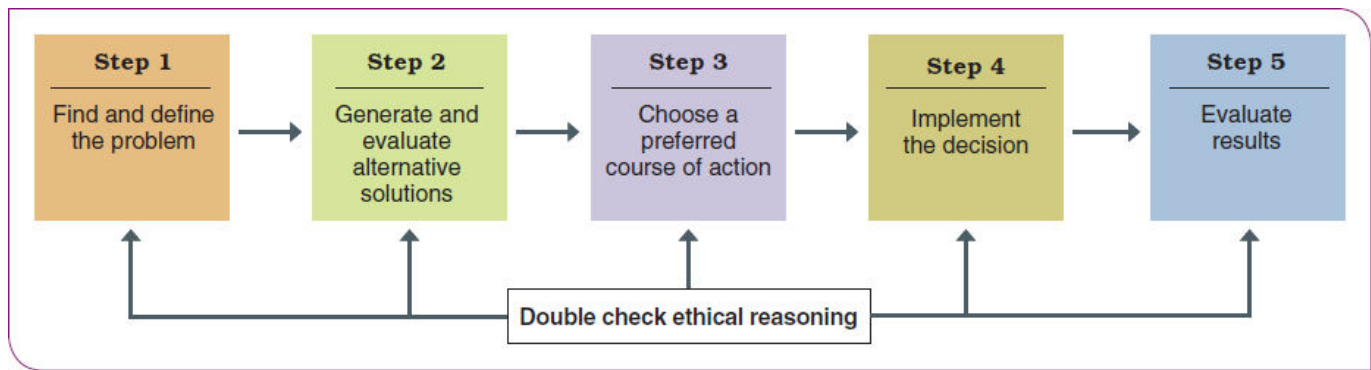
All of those case studies, experiential exercises, class discussions, and even essay exam questions in your courses are intended to get students to experience some of the complexities involved in managerial decision making, the potential problems and pitfalls, and even the pressures of crisis situations. From the classroom forward, however, it's all up to you. Only you can determine whether you step up and make the best out of very difficult problems, or collapse under pressure.

[Figure 7.4](#) describes five steps in the **decision-making process**: (1) Identify and define the problem, (2) generate and evaluate alternative solutions, (3) choose a preferred course of

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action, (4) implement the decision, and (5) evaluate results.<sup>25</sup> Importantly, ethical reasoning should be double-checked in all five steps. The decision-making process can be understood within the context of the following short case.

The **decision-making process** begins with identification of a problem and ends with evaluation of results.



**FIGURE 7.4** Steps in the decision-making process.

*The Ajax Case.* On December 31, the Ajax Company decided to close down its Murphysboro plant. Market conditions were forcing layoffs, and the company could not find a buyer for the plant. Some of the 172 employees had been with the company as long as 18 years; others as little as 6 months. All were to be terminated. Under company policy, they would be given severance pay equal to one week's pay per year of service.

This case reflects how competition, changing times, and the forces of globalization can take their toll on organizations, the people who work for them, and the communities in which they operate. Think about how you would feel as one of the affected employees. Think about how you would feel as the mayor of this small town in Illinois. Think about how you would feel as a corporate executive forced to make the difficult business decision to close the plant down.

### Step 1—Identify and Define the Problem

The first step in decision making is to find and define the problem. Information gathering and deliberation are critical in this stage. The way a problem is defined can have a major impact on how it is resolved, and it is critical here to clarify exactly what a decision should accomplish. The more specific the goals, the easier it is to evaluate results after the decision is actually implemented. But, three common mistakes can occur in this critical first step in decision making.<sup>26</sup>

*Mistake number one* is defining the problem too broadly or too narrowly. To take a classic example, the problem stated as “build a better mousetrap” might be better defined as “get rid of the mice.” Managers should define problems in ways that give them the best possible range of problem-solving options.

*Mistake number two* is focusing on symptoms instead of causes. Symptoms are indicators that problems may exist, but they shouldn't be mistaken for the problems themselves. Although managers should be alert to spot problem symptoms (e.g., a drop in performance), they must also dig deeper to address root causes (such as discovering that workers need training in the use of a new IT system).

*Mistake number three* is choosing the wrong problem to deal with at a particular point in time. For example, which of these three problems would you address first on a busy workday? 1—An e-mail message from your boss requesting a proposal “as soon as possible” on how to handle employees' complaints about lack of flexibility in their work schedules. 2—One of your best team members has just angered another by loudly criticizing her work performance. 3—Your working spouse has left you a voice mail that your daughter is sick at school and the nurse would like her to go home for the day. Choices like this are not easy. We have to set priorities and deal with the

most important problems first. Perhaps the boss can wait while you telephone the school to learn more about your daughter's illness and then spend some time with the employee who seems to be having "a bad day."

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*Back to the Ajax Case.* Closing the Ajax plant put a substantial number of people from the small community of Murphysboro out of work. The unemployment will have a significant negative impact on individuals, their families, and the town as a whole. The loss of the Ajax tax base will further hurt the community. The local financial implications of the plant closure will be great, and potentially devastating. The problem for Ajax management is how to minimize the adverse impact of the plant closing on the employees, their families, and the community.

## Step 2—Generate and Evaluate Alternative Courses of Action

Once a problem is defined, it is time to assemble the facts and information that can be used to solve it. This is where we clarify exactly what is known and what needs to be known. Extensive information gathering should identify alternative courses of action as well as their potential consequences. Key stakeholders in the problem should be identified, and the effects of possible courses of action on each of these should be considered. Importantly, a course of action can only be as good as the quality of the alternatives considered. The better the pool of alternatives and the more that is known about them, the more likely it is that a good decision will be made.

It is important at this stage to avoid a very common decision-making error—*abandoning the search for alternatives and evaluation of their consequences too quickly*. This often happens due to impatience, time pressure, and plain old lack of commitment. But just because an

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alternative is convenient doesn't make it the best. It may well have less potential than others that might be discovered with the right approach and adequate time commitment.

## insight> LEARN ABOUT YOURSELF

> *Lacking in confidence, procrastination becomes easy. Too many of us have difficulty deciding, and we have difficulty acting.*

### Self-Confidence Builds Better Decisions

Does confidence put a spring into your step and a smile on your face? It's a powerful force, something to be nurtured and protected. Managers need the **self-confidence** not only to make decisions but to take the actions required to implement them. Once decisions are made, managers are expected to rally people to utilize resources and take effective action. This is how problems actually get solved and opportunities get explored. But lacking in confidence, procrastination becomes easy. Too many of us have difficulty deciding, and we have difficulty acting.



How would you proceed with the situation in the box—option A, or B, or C?

Jeff McCracken was the team leader who actually had to deal with this situation. He acted deliberately, with confidence, and in a collaborative fashion. After extensive consultations with the team, he decided to salvage the old track. The team worked 24 hours a day and finished in less than a week. McCracken called it a “colossal job” and said the satisfaction came from “working with people from all parts of the company and getting the job done without anyone getting hurt.”

Self-confidence doesn’t have to mean acting alone, but it does mean being willing to act. Management consultant Ram Charan calls self-confidence a willingness to “listen to your own voice” and “speak your mind and act decisively.” It is, he says, an “emotional fortitude” that counteracts “emotional insecurities.”

### Decision Time

**Situation:** A massive hurricane has damaged a railroad bridge over a large lake. The bridge is critical for relief efforts to aid a devastated city. You are leading a repair team of 100. Two alternatives are on the table: Rebuild using new tracks, or rebuild with old track salvaged from the lake.

**Question:** How do you proceed?

- A. Decide to rebuild with new tracks; move quickly to implement.
- B. Decide to rebuild with old tracks; move quickly to implement.
- C. Consult with team; make decision; move quickly to implement.

### GET TO KNOW YOURSELF BETTER

**Opportunities to improve your self-confidence are everywhere, but you have to act in order to take advantage of them. What about your involvement in student organizations, recreational groups, intramural sports teams, and community activities? Do a self-check: Make a list of things you are already doing that offer ways to build your self-confidence. What are you gaining from these experiences? Make another list that describes what you could do to gain more experience and add more self-confidence to your skills portfolio between now and graduation. Becoming an officer in a club where you are a member? Starting a new student organization? Organizing a community service project for you and your friends? Becoming a tutor for a class where you did well? Volunteering at a local food bank or homeless shelter?**

Decisions often have **unintended consequences** in the form of unanticipated positive or negative side effects. If alternatives are given proper attention, some of these could be identified ahead of time and their implications used to modify and strengthen a decision. A growing number of states and localities, for example, are passing minimum wage laws higher than federal standards. Although the intent is to help low-wage workers fight poverty and cope with living costs, unintended consequences have appeared as affected employers struggle to maintain profits in face of higher labor costs. On the positive side, the higher wages have sometimes driven innovation—for example, a Carl’s Jr. owner in California now filters shortening more frequently to extend its life and save costs. On the negative side, the higher wages have sometimes caused layoffs and reduced work hours—for example, a White Castle owner in Illinois eliminated two jobs to protect profit margins without raising prices.<sup>27</sup>

**Unintended consequences** are unanticipated positive or negative side effects that result from a decision.

One way to strengthen the search for alternatives is to actively seek consultation and the involvement of others. Adding more people to the process helps bring new perspectives and information to bear on a problem, generates more alternatives for consideration, reveals more about the possible consequences of the alternatives, and can result in a chosen course of action that is better for everyone involved in—and potentially affected by—the decision. Another way to strengthen the search for alternatives is to put each through a systematic and rigorous **cost-benefit analysis**. This compares what an alternative will cost in relation to what it will return in respect to expected benefits. At a minimum, the benefits of an alternative should be greater than its costs to stay in consideration. And, it should also be ethically sound.

**Cost-benefit analysis** involves comparing the costs and benefits of each potential course of action.

*Back to the Ajax Case.* The Ajax plant is going to be closed. Given that, the possible alternative approaches that can be considered are (1) close the plant on schedule and be done with it; (2) delay the plant closing until all efforts have been made to sell it to another firm; (3) offer to sell the plant to the employees and/or local interests; (4) close the plant and offer transfers to other Ajax plant locations; or (5) close the plant, offer transfers, and help the employees find new jobs in and around the town of Murphysboro.

### Step 3—Choose a Preferred Course of Action

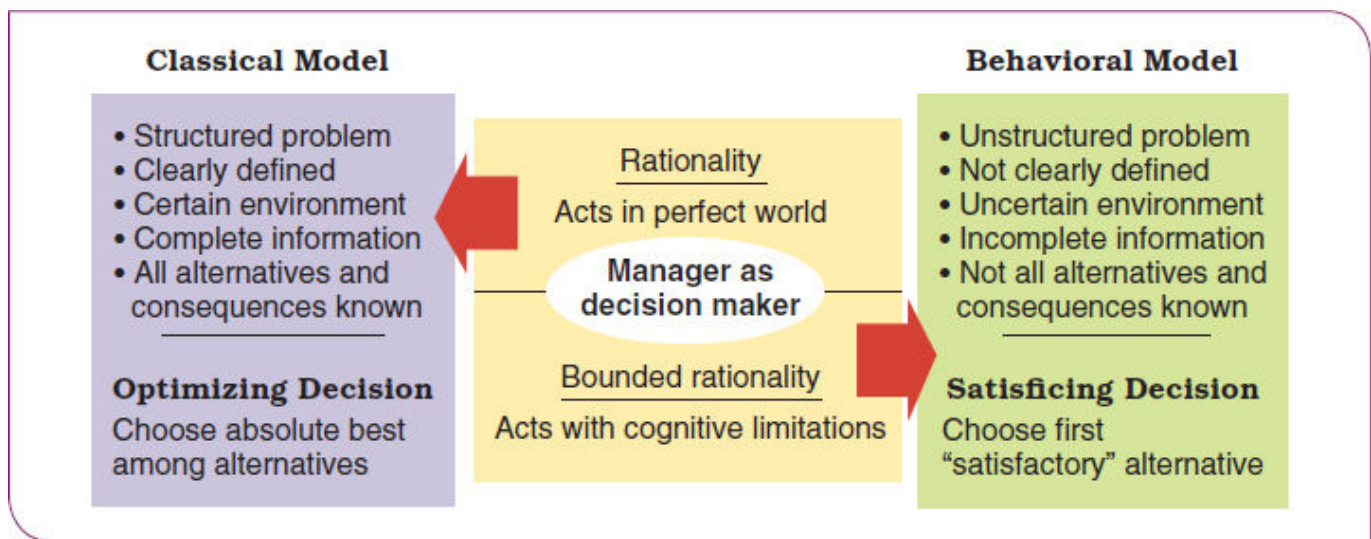
This is the point where an actual decision is made to select a preferred course of action. Just how this choice occurs and who makes it must be successfully resolved in each problem situation. Management theory recognizes rather substantial differences between the classical and behavioral models of decision making as shown in [Figure 7.5](#).

#### Classical Decision Model

The **classical decision model** views the manager as acting rationally in a certain world. The assumption is that a rational choice of the preferred course of action will be made by a decision maker who is fully informed about all possible alternatives. Here, managers face a clearly defined problem and know all possible action alternatives, as well as their consequences. As a result, managers make an **optimizing decision** that gives the absolute best solution to the problem.

The **classical decision model** describes decision making with complete information.

An **optimizing decision** chooses the alternative giving the absolute best solution to a problem.



**FIGURE 7.5** Differences in the classical and behavioral decision-making models.

### Behavioral Decision Model

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human information-processing capabilities.<sup>28</sup> These limits make it hard for managers to become fully informed and make optimizing decisions. They create a **bounded rationality**, such that managerial decisions are rational only within the boundaries set by the available information and known alternatives, both of which are incomplete.

**Bounded rationality** describes making decisions within the constraints of limited information and alternatives.

Because of cognitive limitations and bounded rationalities, the **behavioral decision model** assumes that people act with only partial knowledge about the available action alternatives and their consequences. As a consequence, the first alternative that appears to offer a satisfactory resolution to the problem is likely to be chosen. Simon, who won a Nobel Prize for his work, calls this the tendency to make **satisficing decisions**—choosing the first satisfactory alternative that comes to your attention. The behavioral model is useful in describing how many decisions get made in the ambiguous and fast-paced problem situations faced by managers today.

The **behavioral decision model** describes decision making with limited information and bounded rationality.

A **satisficing decision** is the choice of the first satisfactory alternative that comes to one's attention.

*Back to the Ajax Case.* Ajax executives decided to close the plant, offer transfers to company plants in another state, and offered to help displaced employees find new jobs in and around Murphysboro.

## Step 4—Implement the Decision

Once a decision is made, actions must be taken to fully implement it. Nothing new can or will happen unless action is taken to actually solve the problem. Managers not only need the

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determination and creativity to arrive at a decision, they also need the ability and willingness to implement it.

**ethics> KNOW RIGHT FROM WRONG**

> *“Human life is far more important than just getting to the top of a mountain.”*

## Climber Left to Die on Mount Everest



Bobby Model/Getty Images, Inc.

Some 40 climbers are winding their ways to the top of Mount Everest. About 1,000 feet below the summit sits a British mountain climber in trouble, collapsed in a shallow snow cave. Most of those on the way up just look while continuing their climbs. Sherpas from one passing team pause to give him oxygen before moving on. Within hours David Sharp, 34, is dead of oxygen deficiency on the mountain.

A climber who passed by says: “At 28,000 feet it’s hard to stay alive yourself ... he was in very poor condition ..., it was a very hard decision ... he wasn’t a member of our team.”

Someone who made the summit in the past says: “If you’re going to go to Everest ... I think you have to accept responsibility that you may end up doing something that’s not ethically nice ... you have to realize that you’re in a different world.”

After hearing about this case, the late Sir Edmund Hillary, who reached the top in 1953, said: “Human life is far more important than just getting to the top of a mountain.”

### WHAT DO YOU THINK?

**Who’s right and who’s wrong here? Should the climbers have ignored Sharp and continued on their way to the top of Mount Everest? Does this situation happen in real life—not on mountains but in our workplaces? How often do we meet people who are struggling or in trouble, but just pass them by as we pursue our own career interests and personal goals? When we encounter others who are having difficulties, what are our ethical or moral obligations to them? How do we make choices between what is best for us versus what is best for others?**



Difficulties encountered when decisions get implemented may trace to **lack-of-participation error**. This is a failure to adequately involve in the process individuals whose support is necessary to put the decision into action. Managers who use participation wisely get the right people involved in problem solving from the beginning. When they do, implementation typically follows quickly, smoothly, and to the satisfaction of all stakeholders.

**Lack-of-participation error** is failure to involve in a decision the persons whose support is needed to implement it.

*Back to the Ajax Case.* Ajax ran ads in the local and regional newspapers. The ad called attention to an “Ajax skill bank” composed of “qualified, dedicated, and well-motivated employees with a variety of skills and experiences.” Interested employers were urged to contact Ajax for further information.

## Step 5—Evaluate Results

The decision-making process is not complete until results are evaluated. If the desired outcomes are not achieved or if undesired side effects result, corrective action should be taken. Evaluation is a form of managerial control. It involves gathering data to measure performance results and compare these results against established goals. If results are less than what was desired, it is time to reassess and return to earlier steps. In this way, problem solving becomes a dynamic and ongoing activity within the management process. Evaluation is always easier when clear goals, measurable targets, and timetables are established at the outset of the process.

*Back to the Ajax Case.* How effective were Ajax’s decisions? We don’t know for sure. But after the advertisement ran for two weeks, the plant’s industrial relations manager said: “I’ve been very pleased with the results.” That’s all we know, and more information would certainly be needed for a good evaluation of how well management handled this situation. Wouldn’t you like to know how many of the displaced employees got new jobs locally and how the local economy held up? You can look back on the case as it was described and judge for yourself. Perhaps you would have approached the situation and the five decision making steps somewhat differently.

## At All Steps—Check Ethical Reasoning

Each step in the decision-making process can and should be linked with ethical reasoning.<sup>29</sup> The choices made often have moral dimensions that might easily be overlooked. For example, job eliminations in the prior Ajax case might not be sufficiently considered for their implications on all stakeholders, including the affected persons, their families, and the local community. We sometimes have to take special care to stay tuned into *virtues*—things like fairness, kindness, compassion, and generosity—and guard against *vices*—things like greed, anger, ignorance, and lust.<sup>30</sup>

One way to check ethical reasoning in decision making is to ask and answer pointed questions that bring critical thinking into the process. Gerald Cavanagh and his associates, for example, suggest that a decision should test positive on these four ethics criteria.<sup>31</sup>

1. *Utility*—Does the decision satisfy all constituents or stakeholders?
2. *Rights*—Does the decision respect the rights and duties of everyone?
3. *Justice*—Is the decision consistent with the canons of justice?
4. *Caring*—Is the decision consistent with my responsibilities to care?

Another way to test ethical reasoning is to consider a decision in the context of full transparency and the prospect of shame.<sup>32</sup> Three **spotlight questions** can be powerful in this regard. Ask:

“How would I feel if my family found out about this decision?” Ask: “How would I feel if this decision were published in the local newspaper or posted on the Internet?” Ask: “What would the person you know or know of who has the strongest character and best ethical judgment do in this situation?”

The **spotlight questions** test the ethics of a decision by exposing it to scrutiny through the eyes of family, community members, and ethical role models.

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It also is helpful to check decisions against the hazards of undue rationalizations. Caution is called for when you hear yourself or others saying, “It’s just part of the job” ... “We’re fighting fire with fire” ... “Everyone is doing it” ... “I’ve got it coming” ... “It’s legal and permissible” ... “I’m doing it just for you.” Such comments or thoughts are warning signs. If these signs are heeded, it can prompt a review of the decision and perhaps lead to a more ethical outcome.

### Learning Check 3

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#### **TAKEAWAYQUESTION 3** What are the steps in the decision-making process?

**BE SURE YOU CAN** • list the steps in the decision-making process • apply these steps to a sample decision-making situation • explain cost-benefit analysis in decision making • discuss differences between the classical and behavioral decision models • define *optimizing* and *satisficing* • explain how lack-of-participation error can hurt decision making • list useful questions for double-checking the ethical reasoning of a decision

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## Decision-Making Pitfalls and Creativity

### **TAKEAWAY 4** What are current issues in managerial decision making?

**LEARN MORE ABOUT** | Decision errors and traps • Creativity in decision making

Once we accept the fact that we are likely to make imperfect decisions at least some of the time, it makes sense to try to understand why. Two common mistakes are falling prey to decision errors and traps, and not taking full advantage of creativity. Both can be easily avoided.

### Decision Errors and Traps

*Test:* Would you undergo heart surgery if the physician tells you the survival rate is 90%? Chances are you would. But if the physician tells you the mortality rate is 10%, the chances of you opting for surgery are likely to be substantially lower!

What is happening here? Well-intentioned people often rely on simplifying strategies when making decisions with limited information, time pressures, and even insufficient energy. Psychologist Daniel Kahneman describes this as a triumph of *System 1 thinking*—automatic, effortless, quick, and associative—over *System 2 thinking*—conscious, slow, deliberate, and evaluative.<sup>33</sup> In the above test, the simplification of System 1 thinking is called “framing” because the decision to have surgery or not varies according to whether the information is presented as a survival rate—encouraging, or a mortality rate—threatening.<sup>34</sup> This and other

simplifying strategies or rules of thumb are known as **heuristics**.<sup>35</sup> Although heuristics can be helpful in dealing with complex and ambiguous situations, they also lead to common decision-making errors.<sup>36</sup>

**Heuristics** are strategies for simplifying decision making.

### Framing Error

Managers sometimes suffer from **framing error** that occurs when a problem is evaluated and resolved in the context in which it is perceived—either positively or negatively. Suppose, for example, data show that a particular product has a 40% market share. A negative frame views the product as deficient because it is missing 60% of the market. The likely discussion would focus on: “What are we doing wrong?” Alternatively, the frame could be a positive one, looking at the 40% share as a strong market foothold. In this case the discussion is more likely to proceed with “How can we do things better?” Sometimes people use framing as a tactic for presenting information in a way that gets other people to think within the desired frame. In politics, this is often referred to as “spinning” the data.

**Framing error** is trying to solve a problem in the context in which it is perceived.

### Availability Bias

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readily available information is fallible and irrelevant. For example, the product that recently failed may have been a good idea that was released to market at the wrong time of year, or it may have belonged to an entirely different product category.

The **availability bias** bases a decision on recent information or events.

### Representativeness Bias

The **representativeness bias** occurs when people assess the likelihood of something happening based on its similarity to a stereotyped set of occurrences. An example is deciding to hire someone for a job vacancy simply because he or she graduated from the same school attended by your last and most successful new hire. The potential bias is that the representative stereotype masks factors important and relevant to the decision. For instance, the abilities and career expectations of the job candidate may not fit the job requirements; the school attended may be beside the point.

The **representativeness bias** bases a decision on similarity to other situations.

### Anchoring and Adjustment Bias

**Anchoring and adjustment bias** occurs when decisions are influenced by inappropriate deference to a previous value or starting point. An example is a manager who sets a new salary level for an employee by simply raising her prior year's salary by a small percentage.

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the employee relative to the job market. The small incremental salary adjustment, reflecting anchoring and adjustment bias, may end up prompting her to look for another, higher-paying job.

The **anchoring and adjustment bias** bases a decision on incremental adjustments from a prior decision point.

## choices> THINK BEFORE YOU ACT

> *“Bye-bye telecommuting” was the message. Mayer’s stated goal was to bring face-to face collaboration back to the Yahoo! culture and increase innovation in the process.*

### Yahoo CEO Marissa Mayer Bans Telecommuting



Mango Productions/Corbis Corp

**Situation** All eyes were on Marissa Mayer when she left a successful stint at Google to become Yahoo!’s CEO. But not everyone liked what they heard when she told employees there would be no more working from home. “Bye-bye telecommuting” was the message. Mayer’s stated goal was to bring face-to face collaboration back to the Yahoo! culture and increase innovation in the process.

**Critics of Mayer’s decision** claim it flies in the face of evidence that not only do most employees want the option of telecommuting—as high as 80 percent in some reports—but they’re both harder working and more satisfied when they can spend time working from home. “Telecommuting ... has allowed me to have a career as well as be a mother,” said a posting by “digital mom” on [Babble.com](http://Babble.com), an online website for parents.

**Those who support Mayer’s decision** point to other employers—including Bank of America, Google, and Twitter—that are either cutting back on or discouraging work-at home choices. When asked, “How many people telecommute at Google?” the firm’s chief financial officer replied: “As few as possible.”

### YOUR TAKE?

**What is your position on telecommuting? Does experience tell you that it works or that it doesn’t? Is it something that you are looking for in an employer? Does Mayer’s decision show courage in the face of a popular but not necessarily**

**performance-friendly practice? Or, was it a premature rush to blame work-at-home practices for what she perceived as Yahoo!’s failures of collaboration and innovation?**

### Confirmation Error

One of our tendencies after making a decision is to try and find ways to justify it. In the case of unethical acts, for example, we try to “rationalize” them after the fact. This is called **confirmation error**. It means that we notice, accept, and even seek out only information that confirms or is consistent with a decision we have just made. Contrary information that suggests what we are doing is incorrect or unethical is downplayed or denied.

A **confirmation error** occurs when focusing only on information that confirms a decision already made.

### Escalating Commitment

Another decision-making trap is **escalating commitment**. This occurs as a decision to increase effort and perhaps apply more resources to pursue a course of action that is not working.<sup>37</sup> Managers prone to escalation let the momentum of a situation and personal ego overwhelm them. They are unwilling to admit they were wrong and unable to “call it quits,” even when the facts indicate that this is the best alternative. This is a common decision error, perhaps one that you are personally familiar with. It is sometimes called the *sunk-cost fallacy*. The nearby box offers advice on how to avoid tendencies toward escalating commitments to previously chosen courses of action.<sup>38</sup>

**Escalating commitment** is the continuation of a course of action even though it is not working.

#### How to Avoid the Escalation Trap in Decision Making

- Set advance limits on your involvement and commitment to a particular course of action; stick with these limits.
- Make your own decisions; don’t follow the leads of others, since they are also prone to escalation.
- Carefully assess why you are continuing a course of action; if there are no good reasons to continue, don’t.
- Remind yourself of what a course of action is costing; consider saving these costs as a reason to discontinue.
- Watch for escalation tendencies in your behaviors and those of others.

### Creativity in Decision Making

*Situation*—Elevator riders in a new high-rise building are complaining about long waiting times.

*Building engineers’ advice*—Upgrade the entire system at substantial cost. Why? He assumed that any solutions to a slow elevator problem had to be mechanical ones.

*Creativity consultant’s advice*—Place floor-to-ceiling mirrors by the elevators. Why? People, he assumed, would not notice waiting times because they were distracted by their and others’ reflections.

*Outcome*—the creativity consultant was right.<sup>39</sup>



**Creativity** in decision making shows up as a novel idea or unique approach to solving problems or exploiting opportunities.<sup>40</sup> The potential for creativity is one of our greatest personal assets, although we often let it go unrecognized. One reason is that we focus too much on what researchers call **Big-C creativity**—when extraordinary things are done by exceptional people.<sup>41</sup> Think Big-C creativity when you use or see someone using an iPhone or iPad—Steve Jobs’ creativity, or browse Facebook—Mark Zuckerberg’s creativity.

**Creativity** is the generation of a novel idea or unique approach that solves a problem or crafts an opportunity.

**Big-C creativity** occurs when extraordinary things are done by exceptional people.

Don’t get sidetracked by Big-C creativity alone. There is lots of **Little-C creativity** around also. It occurs when average people come up with unique ways to deal with daily events and situations. Think Little-C creativity, for example, the next time you solve relationship problems at home, build something for the kids, or even find ways to pack too many items into too small a suitcase.

**Little-C creativity** occurs when average people come up with unique ways to deal with daily events and situations.

Just imagine what can be accomplished with all the creative potential—Big-C and Little-C—present in an organization. How do you turn that potential into creative decisions? David Kelley, founder of the design firm IDEO, believes that a lot, perhaps most, of us start to lose our creativity skills in primary school.<sup>42</sup> It’s something about being taught to look for

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answers to assigned problems and fearing failure when taking standardized tests. But, he also believes our creativity can be reenergized when we stop fearing failure and commit to **design thinking**. First comes *experiencing*—defining problems by research and observation; not simply accepting the parameters of a problem or issue as delivered. Second comes *ideation*—visualizing and brainstorming potential solutions in collaboration with others. Third comes *prototyping*—testing and modifying the potential solution over and over to achieve the best outcome.

**Design thinking** unlocks creativity in decision making through a process of experiencing, ideation, and prototyping.

## wisdom> LEARN FROM ROLE MODELS

> “This is our strength—creatively solving the ‘what the hell do we make from it’ issue.”

### Tom Szaky’s Creative Decisions Fuel Sustainability Gains



Mel Evans/AP/Wide World Photos

Tom Szaky is founder of the Company TerraCycle that makes consumer products from waste, and an “eco-capitalist”—someone who turns sustainability into profits. While a freshman at Princeton University, Szaky ordered a million red worms, thinking he could use them to recycle campus waste. In conversations with classmate Jon Beyer, the idea shifted to selling liquid fertilizer made from worm excrement. But, they couldn’t afford the expensive plastic bottles for packaging.

Many conversations led to the creation of TerraCycle with a mission to “find a meaningful use for waste materials.” Szaky’s book, *Revolution in a Bottle*, is all about “upcycling”—the art of turning waste that isn’t recyclable into reusable packaging.

TerraCycle upcycles waste products like cookie wrappers, drink containers, and discarded juice packs into usable products like tote bags and other containers. Szaky says: “First we identify a waste stream, then we figure out what we can make from that material. This is our strength—creatively solving the ‘what the hell do we make from it’ issue.”

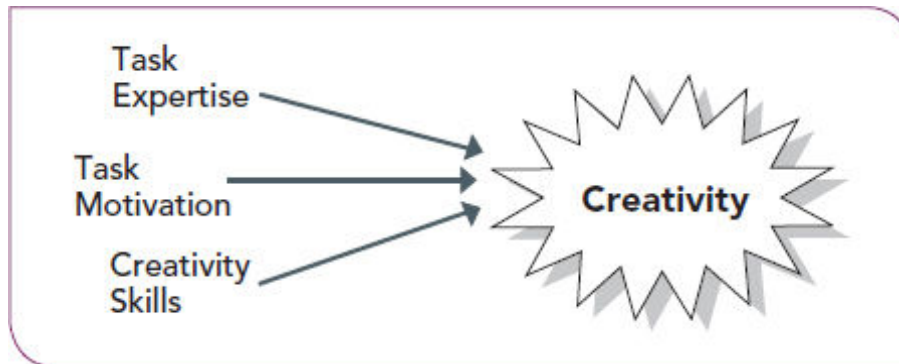
Szaky’s foray into the entrepreneurial world of eco-capitalism could have ended with the red worms experiment. But he and his friends didn’t stop there. Learning from experience, they persevered and made decisions that turned ideas into accomplishments.

### FIND INSPIRATION

**How does Szaky’s focus on sustainability match with your views on the environment, ecological conservation, and the planet in general? In what ways does this focus reflect a generational shift toward taking responsibility for the environment and ethical manufacturing processes? Are there areas of your own life where you can support sustainability—riding your bike, recycling, reusable water bottles, eco-friendly products, and so on? Do you see sustainability as an advantage in the marketplace? Would you be more willing to buy a product manufactured completely out of post-consumer waste, because it was an upcycled product? Why or why not?**

## Personal Creativity Drivers

The small figure identifies task expertise, task motivation, and creativity skills as personal creativity drivers.<sup>43</sup> This three-component model points us in useful directions for personal creativity development as well as toward management actions that can boost creativity in teams or work units.



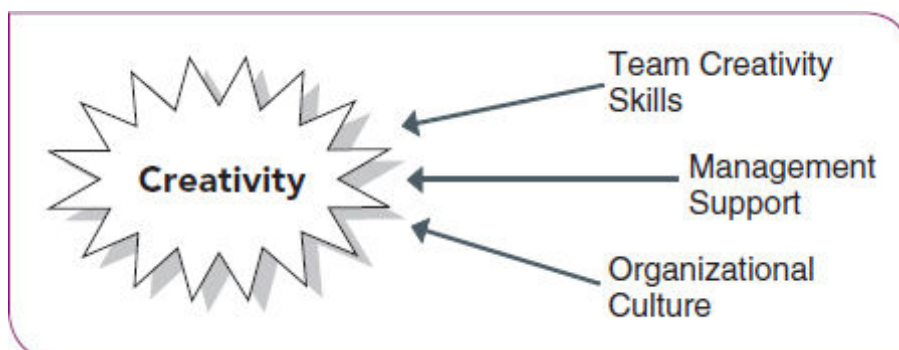
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Creative decisions are more likely to occur when an individual has a lot of *task expertise*. Creativity grows from something one is good at or knows about, while extending it in new directions. And, creative decisions are more likely when someone is highly *task-motivated*. Creativity tends to occur in part because people work exceptionally hard to resolve a problem or exploit an opportunity.

Creative decisions also emerge when people have strong personal *creativity skills*. Creative people tend to work with high energy, hold their ground in the face of criticism, and respond in a resourceful way in difficult situations. They have strong associative skills, meaning they are good at making connections among seemingly unrelated facts or events. Creative people also have strong behavioral skills of questioning, observing, networking, and experimenting.<sup>44</sup> They are good at synthesizing information to find correct answers (convergent thinking), looking at diverse ways to solve problems (lateral thinking), and thinking “outside of the box” (divergent thinking).<sup>45</sup>

## Situational Creativity Drivers

If you mix creative people and traditional organization and management practices, what will you get? You may not get much. It takes more than individual creativity alone to make innovation a way of life in organizations. Situational creativity drivers are important too.



Managers should, of course, staff their organizations and teams with creative members. But they should also realize these *team creativity skills* are most likely to blossom when buoyed by *management support* and the right *organizational culture*. This means things like having a team leader with the patience to allow for creative processes to work themselves through a decision situation. It means having top management that is willing to accept and even celebrate failure, and to provide the resources—time, technology, and space—that are helpful to the creative processes. It also means making creativity a top organizational priority and a core value of the organizational culture.

*Think creativity gained* the next time you see a young child playing with a really neat toy. It may be from Fisher-Price Toys—part of Mattel, Inc. In the firm’s headquarters you’ll find a special place called the “Cave,” and it’s not your typical office space. Picture bean-bag chairs, soft lighting, and casual couches. It’s a place for brainstorming, where designers, marketers, engineers, and others can meet work together without any strings attached to come up with the next great toy for preschoolers. Consultants recommend that such innovation spaces be separated from the normal workplace and be large enough for no more than 15 to 20 people.<sup>46</sup>

*Think creativity wasted* the next time you watch TV on a beautiful, large, flat-panel screen. In 1964, George H. Heilmeyer showed his employers at RCA Labs his new discovery—a liquid-crystal display, or LCD. They played with it until 1968 when RCA executives decided the firm was so heavily invested in color TV tubes that they weren’t really interested. Today the market is dominated by Japanese, Korean, and Taiwanese producers, with not a single U.S. maker in the market. Ironically, Heilmeyer received the Kyoto Prize, considered the Nobel Prize of Japan, for his pioneering innovation.<sup>47</sup>

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## Learning Check 4

### TAKEAWAYQUESTION 4 What are current issues in managerial decision making?

**BE SURE YOU CAN** • explain the availability, representativeness, anchoring, and adjustment heuristics • illustrate framing error, confirmation error, and escalating commitment in decision making • identify key personal and situational creativity drivers

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## Management Learning Review

### Get Prepared for Quizzes and Exams

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#### Summary

#### TAKEAWAYQUESTION 1

#### What is the role of information in the management process?

- Technological, information, and analytical competencies are all needed to take advantage of information technology in decision making.



- Data are raw facts and figures; information is data made useful for decision making; useful information is timely, high quality, complete, relevant, and understandable. Management information systems collect, organize, store, and distribute data to meet the information needs of managers.
- Analytics is the systematic evaluation and analysis of information for decision making.
- Business intelligence systems organize and display data, often in the form of dashboards, so that patterns and trends are evident to decision makers.

**FOR DISCUSSION** What are the potential downsides to the ways IT is changing organizations?

### TAKEAWAYQUESTION 2

**How do managers address problems and make decisions?**

- Managers serve as information nerve centers in the process of planning, organizing, leading, and controlling activities in organizations.
- Managers can display problem avoidance, problem solving, and problem seeking in facing problems.
- Managers vary in the use of systematic and intuitive thinking, and in tendencies toward multidimensional thinking.
- Managers must understand the different cognitive styles people use in decision making.
- Programmed decisions are routine solutions to recurring and structured problems; nonprogrammed decisions are unique solutions to novel and unstructured problems.
- Crisis problems occur unexpectedly and can lead to disaster if not handled quickly and properly.
- Managers face problems and make decisions under conditions of certainty, risk, and uncertainty.

**FOR DISCUSSION** When would a manager be justified in acting as a problem avoider?

### TAKEAWAYQUESTION 3

**What are the steps in the decision-making process?**

- The steps in the decision-making process are (1) find and define the problem, (2) generate and evaluate alternatives, (3) decide on the preferred course of action, (4) implement the decision, and (5) evaluate the results.
- An optimizing decision, following the classical model, chooses the absolute best solution from a known set of alternatives.
- A satisficing decision, following the behavioral model, chooses the first satisfactory alternative to come to attention.
- To check the ethical reasoning of a decision at any step in the decision-making process, it is helpful to ask the ethics criteria questions of utility, rights, justice, and caring.
- To check the ethical reasoning of a decision at any step in the decision-making process, it is helpful to ask the spotlight questions that expose the decision to transparency in the eyes of family, community members, and ethical role models.

**FOR DISCUSSION** the steps in the decision-making process have to be followed in order?



## TAKEAWAYQUESTION 4

### What are current issues in managerial decision making?

- Common decision errors and traps include the availability, representation, and anchoring and adjustment biases, as well as framing error, confirmation error, and escalating commitment.
- Creativity in decision making can be enhanced by the personal creativity drivers of individual creativity skills, task expertise, and motivation.
- Creativity in decision making can be enhanced by the situational creativity drivers of group creativity skills, management support, and organizational culture.

### FOR DISCUSSION Which decision trap seems most evident as an influence on bad choices made by business CEOs today?

## Self-Test 7

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is one of its most noteworthy characteristics.

- a. eliminating need for top managers
  - b. reducing information available for decision making
  - c. breaking down barriers internally and externally
  - d. decreasing need for environmental awareness
2. Whereas management information systems use the latest technologies to collect, organize, and distribute data, \_\_\_\_\_ involves tapping the available data to extract and report it in organized ways that are most useful to decision makers.
    - a. analytics
    - b. business intelligence
    - c. anchoring and adjustment
    - d. optimizing
  3. A manager who is reactive and works hard to address problems after they occur is known as a \_\_\_\_\_.
    - a. problem seeker
    - b. problem avoider
    - c. problem solver
    - d. problem manager
  4. A(n) \_\_\_\_\_ thinker approaches problems in a rational and an analytic fashion.
    - a. systematic

- b. intuitive**
- c. internal**
- d. external**

- 5.** A person likes to deal with hard facts and clear goals in a decision situation; she also likes to be in control and keep things impersonal. This person's cognitive style tends toward \_\_\_\_\_.
- a. sensation thinking**
  - b. intuitive thinking**
  - c. sensation feeling**
  - d. intuitive feeling**
- 6.** The assigning of probabilities for action alternatives and their consequences indicates the presence of \_\_\_\_\_ in the decision environment.
- a. certainty**
  - b. optimizing**
  - c. risk**
  - d. satisficing**
- 7.** The first step in the decision-making process is to \_\_\_\_\_.
- a. identify alternatives**
  - b. evaluate results**
  - c. find and define the problem**
  - d. choose a solution**
- 8.** Being asked to develop a plan to increase international sales of a product is an example of the types of \_\_\_\_\_ problems that managers must be prepared to deal with.
- a. routine**
  - b. unstructured**
  - c. crisis**
  - d. structured**
- 9.** Costs, timeliness, and \_\_\_\_\_ are among the recommended criteria for evaluating alternative courses of action.
- a. ethical soundness**
  - b. competitiveness**
  - c. availability**
  - d. simplicity**
- 10.** A common mistake made by managers in crisis situations is that they \_\_\_\_\_.
- a. try to get too much information before responding**
  - b. rely too much on group decision making**
  - c. isolate themselves to make the decision alone**
  - d. forget to use their crisis management plan**

11. The \_\_\_\_\_ decision model views managers as making optimizing decisions, whereas the \_\_\_\_\_ decision model views them as making satisficing decisions.
- a. behavioral, human relations
  - b. classical, behavioral
  - c. heuristic, humanistic
  - d. quantitative, behavioral
12. When a manager makes a decision about someone's annual pay raise only after looking at his or her current salary, the risk is that the decision will be biased because of \_\_\_\_\_.
- a. a framing error
  - b. escalating commitment
  - c. anchoring and adjustment
  - d. strategic opportunism
13. When a problem is addressed according to the positive or negative context in which it is presented, this is an example of \_\_\_\_\_.
- a. framing error
  - b. escalating commitment
  - c. availability and adjustment
  - d. strategic opportunism
14. When a manager decides to continue pursuing a course of action that facts otherwise indicate is failing to deliver desired results, this is called \_\_\_\_\_.
- a. strategic opportunism
  - b. escalating commitment
  - c. confirmation error
  - d. the risky shift
- 15.

Personal creativity drivers include creativity skills, task expertise, and \_\_\_\_\_.

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- c. organizational culture
- d. task motivation

### Short-Response Questions

16. What is the difference between an optimizing decision and a satisficing decision?
17. How can a manager double-check the ethics of a decision?

18. How would a manager use systematic thinking and intuitive thinking in problem solving?
19. How can the members of an organization be trained in crisis management?

### EssayQuestion

20. As a participant in a new mentoring program between your university and a local high school, you have volunteered to give a presentation to a class of sophomores on the challenges in the new “electronic office.” The goal is to sensitize these high school students to developments in information technology and motivate them to take the best advantage of their high school academics so as to prepare themselves for the workplace of the future. What will you say to them?
- 

## ManagementSkills& Competencies Make yourself valuable!

### Evaluate Career Situations

#### What Would You Do?

##### 1. Tired of Excuses

Little problems are popping up at the most inconvenient times. They make your work as team leader sometimes difficult and even aggravating. Today it's happened again. Trevor just called in “sick,” saying his doctor advised him yesterday that it was better to stay home than to come to work and infect others with the flu. It makes sense, but it's also a hardship for you and the team. What can you do to best manage this type of situation since it's sure to happen again?

##### 2. Social Loafing Problem

You are under a lot of pressure because your team is having performance problems. They trace, in part at least, to persistent social loafing by one team member in particular. You have come up with a reason to remove her from the team. But, the decision you are about to make fails all three of the ethics spotlight questions. As team leader, what will you do now?

##### 3. Task Force Selection

You have finally caught the attention of senior management. Top executives asked you to chair a task force to develop a creative new product that can breathe fresh life into an existing product line. To begin, you need to select the members of the task force. What criteria will you use to choose members who are most likely to bring high levels of creativity to this team?

### Reflect on the Self-Assessment

#### Cognitive Style

#### Instructions

This assessment is designed to get an impression of your cognitive style based on the work of psychologist Carl Jung. For each of the following 12 pairs, place a “1” next to the statement that best describes you. Do this for each pair, even though the description you choose may not be perfect.<sup>48</sup>

1.

- a. I prefer to learn from experience.
- b. I prefer to find meanings in facts and how they fit together.

**2.**

- a.** I prefer to use my eyes, ears, and other senses to find out what is going on.
- b.** I prefer to use imagination to come up with new ways to do things.

**3.**

- a.** I prefer to use standard ways to deal with routine problems.
- b.** I prefer to use novel ways to deal with new problems.

**4.**

- a.** I prefer ideas and imagination.
- b.** I prefer methods and techniques.

**5.**

- a.** I am patient with details, but get impatient when they get complicated.
- b.** I am impatient and jump to conclusions, but I am also creative, imaginative, and inventive.

**6.**

**a.**

I enjoy using skills already mastered more than learning new ones.

**b.**

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**7.**

- a.** I prefer to decide things logically.
- b.** I prefer to decide things based on feelings and values.

**8.**

- a.** I like to be treated with justice and fairness.
- b.** I like to be praised and to please other people.

**9.**

- a.** I sometimes neglect or hurt other people's feelings without realizing it.
- b.** I am aware of other people's feelings.

**10.**

- a.** I give more attention to ideas and things than to human relationships.
- b.** I can predict how others will feel.

**11.**

- a.** I do not need harmony; arguments and conflicts don't bother me.
- b.** I value harmony and get upset by arguments and conflicts.

**12.**



- a. I am often described as analytical, impersonal, unemotional, objective, critical, hardnosed, rational.
- b. I am often described as sympathetic, people-oriented, unorganized, uncritical, understanding, ethical.

## Self-Assessment Scoring

Sum your scores as follows, and record them in the parentheses. (Note that the *Sensing* and *Feeling* scores will be recorded as negatives.)

- (– ) *Sensing (S Type)* 5 1a 1 2a 1 3a 1 4a 1 5a 1 6a  
 ( ) *Intuitive (N Type)* 5 1b 1 2b 1 3b 1 4b 1 5b 1 6b  
 ( ) *Thinking (T Type)* 5 7a 1 8a 1 9a 1 10a 1 11a 1 12a  
 (– ) *Feeling (F Type)* 5 7b 1 8b 1 9b 1 10b 1 11b 1 12b

## Interpretation

This assessment contrasts personal tendencies toward information gathering (sensation vs. intuition) and information evaluation (feeling vs. thinking) in one's approach to problem solving. The result is a classification of four cognitive styles and their characteristics. Read the descriptions provided in the chapter text and consider the implications of your suggested style, including how well you might work with people whose styles are very different.

## Contribute to the Team Exercise

### Lost at Sea

#### Situation

You are sailing on a private yacht in the South Pacific when a fire of unknown origin destroys the yacht and most of its contents. You and a small group of survivors are now in a large raft with oars. Your location is unclear, but you estimate that you are about 1,000 miles south-southwest of the nearest land. One person has just found in her pockets five \$1 bills and a packet of matches. Everyone else's pockets are empty. The items below are available to you on the raft.<sup>49</sup>

|                              | Individual ranking | Team ranking | Expert ranking |
|------------------------------|--------------------|--------------|----------------|
| Sextant                      |                    |              |                |
| Shaving mirror               |                    |              |                |
| 5 gallons water              |                    |              |                |
| Mosquito netting             |                    |              |                |
| 1 survival meal              |                    |              |                |
| Maps of Pacific Ocean        |                    |              |                |
| Floatable seat cushion       |                    |              |                |
| 2 gallons oil-gas mix        |                    |              |                |
| Small transistor radio       |                    |              |                |
| Shark repellent              |                    |              |                |
| 20 square feet black plastic |                    |              |                |
|                              |                    |              |                |

|                      |  |  |  |
|----------------------|--|--|--|
| 1 quart 20-proof rum |  |  |  |
| 15 feet nylon rope   |  |  |  |
| 24 chocolate bars    |  |  |  |
| Fishing kit          |  |  |  |

## Instructions

1. *Working alone*, rank the 15 items in order of their importance to your survival (“1” is most important and “15” is least important).
2. *Working in an assigned group*, arrive at a “team” ranking of the 15 items. Appoint one person as team spokesperson to report your team ranking to the class.
3. *Do not write in Column C* until your instructor provides the “expert” ranking.

## Manage a Critical Incident

### Asking for a Raise

*Situation:* You want a raise. [50](#)

*Problem:* The question is: How do you get your boss to decide that you deserve one?

*Insight:* Researchers tell us that when negotiating a raise it’s better to not use a round number as a target—such as “about \$65,000,” and better to use a precise number—such as “\$63,750.” The round number suggests a person has only a general idea of the market for their skills, whereas the precise number gives the impression that they’ve done the research and know their facts.

*Task:* Describe what you will say and do to get your boss to agree that you deserve a raise. Prepare a narrative that presents the exact words, justifications, and dollar target you would use to ask for a raise in your current job. Alternatively, assume you have been working in your chosen career field for

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five years, have developed lots of expertise and earned high performance reports, and now want a raise.

## Collaborate on the Team Project

### Crisis Management Realities

*Questions:* What types of crises do business leaders face, and how do they deal with them?

## Instructions

- Identify three crisis events from the recent local, national, and international business news.
- Read at least three different news reports on each crisis, trying to learn as much as possible about its specifics, how it was dealt with, what the results were, and the aftermath of the crisis.

- For each crisis, use a balance sheet approach to list sources or causes of the conflict and management responses to it. Analyze the lists to see if there are any differences based on the nature of the crisis faced in each situation. Also look for any patterns in the responses to them by the business executives.
- Score each crisis (from 1 = low to 5 = high) in terms of how successfully it was handled. Be sure to identify the criteria that you use to describe “success” in handling a crisis situation. Make a list of “Done Rights” and “Done Wrongs” in crisis management.
- Summarize the results of your study into a report on “Realities of Crisis Management.”

## Analyze THE AMAZON.COM CaseStudy : One E-Store to Rule Them All

Go to ***Management Cases for Critical Thinking*** at the end of the book to find this case.