

from that set. Although this course of action is reasonable from the perspective of the purchasing manager, it may mean that a potentially superior supplier is overlooked.

March and Simon pointed out that managerial decision making is often more art than science. In the real world, managers must rely on their intuition and judgment to make what seems to them to be the best decision in the face of uncertainty and ambiguity.³⁸ Moreover, managerial decision making is often fast-paced, as managers use their experience and judgment to make crucial decisions under conditions of incomplete information. Although there is nothing wrong with this approach, decision makers should be aware that human judgment is often flawed. As a result, even the best managers sometimes end up making very poor decisions.³⁹

Steps in the Decision-Making Process

Using the work of March and Simon as a basis, researchers have developed a step-by-step model of the decision-making process and the issues and problems that managers confront at each step. Perhaps the best way to introduce this model is to examine the real-world nonprogrammed decision making that Scott McNealy had to engage in at a crucial point in Sun Microsystems' history.

In early August 1985, Scott McNealy, CEO of Sun Microsystems⁴⁰ (a hardware and software computer workstation manufacturer focused on network solutions), had to decide whether to go ahead with the launch of the new Carrera workstation computer, scheduled for September 10. Sun's managers had chosen the date nine months earlier when the development plan for the Carrera was first proposed. McNealy knew that it would take at least a month to prepare for the September 10 launch and that the decision could not be put off.

Customers were waiting for the new machine, and McNealy wanted to be the first to provide a workstation that took advantage of Motorola's powerful 16-megahertz 68020 microprocessor. Capitalizing on this opportunity would give Sun a significant edge over Apollo, its main competitor in the workstation market. McNealy knew, however, that committing to the September 10 launch date was risky. Motorola was having production problems with the 16-megahertz 68020 microprocessor and could not guarantee Sun a steady supply of these chips. Moreover, the operating system software was not completely free of bugs.

If Sun launched the Carrera on September 10, the company might have to ship some machines with software that was not fully operational, was prone to crash the system, and utilized Motorola's less powerful 12-megahertz 68020 microprocessor instead of the 16-megahertz version.⁴¹ Of course, Sun could later upgrade the microprocessor and operating system software in any machines purchased by early customers, but the company's reputation would suffer as a result. If Sun did not go ahead with the September launch, the company would miss an important opportunity.⁴² Rumors were circulating in the industry that Apollo would be launching a new machine of its own in December.

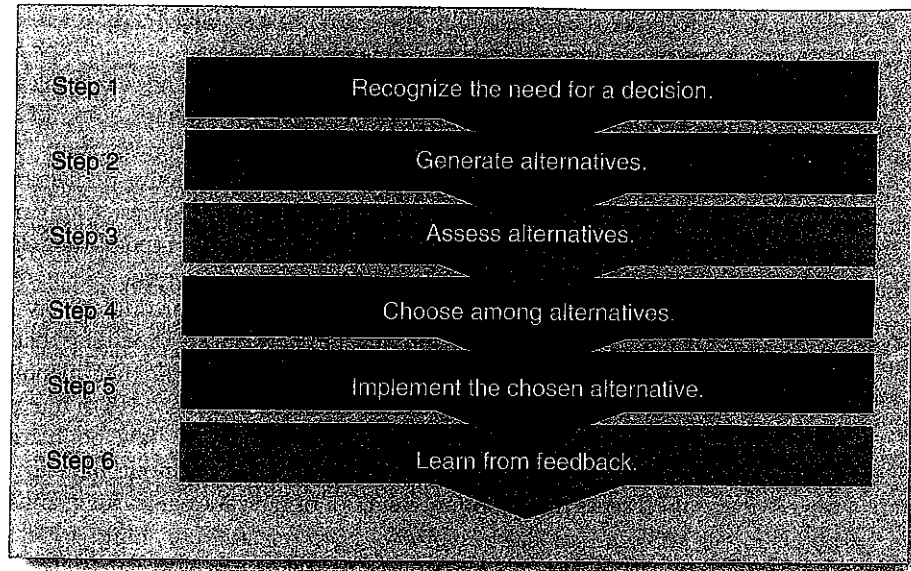
Scott McNealy clearly had a difficult decision to make. He had to decide quickly whether to launch the Carrera, but he was not in possession of all the facts. He did not know, for example, whether the microprocessor or operating system problems could be resolved by September 10; nor did he know whether Apollo was going to launch a competing machine in December. But he could not wait to find these things out—he had to make a decision. We'll see what he decided later in the chapter.

Many managers who must make important decisions with incomplete information face dilemmas similar to McNealy's. There are six steps that managers should



LO2 Describe the six steps that managers should take to make the best decisions.

Figure 5.4
Six Steps in Decision Making



consciously follow to make a good decision (see Figure 5.4).⁴³ We review them in the remainder of this section.

Recognize the Need for a Decision

The first step in the decision-making process is to recognize the need for a decision. Scott McNealy recognized this need, and he realized that a decision had to be made quickly.

Some stimuli usually spark the realization that there is a need to make a decision. These stimuli often become apparent because changes in the organizational environment result in new kinds of opportunities and threats. This happened at Sun Microsystems. The September 10 launch date had been set when it seemed that Motorola chips would be readily available. Later, with the supply of chips in doubt and bugs remaining in the system software, Sun was in danger of failing to meet its launch date.

The stimuli that spark decision making are as likely to result from the actions of managers inside an organization as they are from changes in the external environment.⁴⁴ An organization possesses a set of skills, competencies, and resources in its employees and in departments such as marketing, manufacturing, and research and development. Managers who actively pursue opportunities to use these competencies create the need to make decisions. Managers thus can be proactive or reactive in recognizing the need to make a decision, but the important issue is that they must recognize this need and respond in a timely and appropriate way.⁴⁵

Generate Alternatives

Having recognized the need to make a decision, a manager must generate a set of feasible alternative courses of action to take in response to the opportunity or threat. Management experts cite failure to properly generate and consider different alternatives as one reason why managers sometimes make bad decisions.⁴⁶ In the Sun Microsystems decision, the alternatives seemed clear: to go ahead with the September 10 launch or

to delay the launch until the Carrera was 100% ready for market introduction. Often, however, the alternatives are not so obvious or so clearly specified.

One major problem is that managers may find it difficult to come up with creative alternative solutions to specific problems. Perhaps some of them are used to seeing the world from a single perspective—they have a certain “managerial mind-set.” In a manner similar to that of Digital’s Olsen, many managers find it difficult to view problems from a fresh perspective. According to best-selling management author Peter Senge, we all are trapped within our personal mental models of the world—our ideas about what is important and how the world works.⁴⁷ Generating creative alternatives to solve problems and take advantage of opportunities may require that we abandon our existing mind-sets and develop new ones—something that usually is difficult to do.

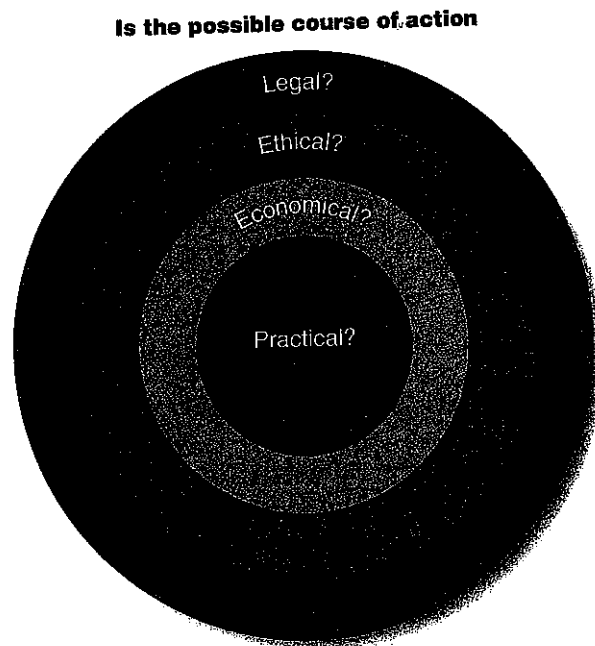
The importance of getting managers to set aside their mental models of the world and generate creative alternatives is reflected in the growth of interest in the work of authors such as Peter Senge and Edward de Bono, who have popularized techniques for stimulating problem solving and creative thinking among managers.⁴⁸ Later in this chapter, we discuss the important issues of organizational learning and creativity in detail.

Assess Alternatives

Once managers have generated a set of alternatives, they must evaluate the advantages and disadvantages of each one.⁴⁹ The key to a good assessment of the alternatives is to define the opportunity or threat exactly and then specify the criteria that *should* influence the selection of alternatives for responding to the problem or opportunity. One reason for bad decisions is that managers often fail to specify the criteria that are important in reaching a decision.⁵⁰ In general, successful managers use four criteria to evaluate the pros and cons of alternative courses of action (see Figure 5.5):

1. *Legality*: Managers must ensure that a possible course of action is legal and will not violate any domestic and international laws or government regulations.

Figure 5.5
General Criteria for
Evaluating Possible
Courses of Action



2. *Ethicalness*: Managers must ensure that a possible course of action is ethical and will not unnecessarily harm any stakeholder group. Many of the decisions that managers make may help some organizational stakeholders and harm others (see Chapter 3). When examining alternative courses of action, managers need to be very clear about the potential effects of their decisions.
3. *Economic feasibility*: Managers must decide whether the alternatives are economically feasible—that is, whether they can be accomplished given the organization's performance goals. Typically, managers perform a cost-benefit analysis of the various alternatives to determine which one will have the best net financial payoff.
4. *Practicality*: Managers must decide whether they have the capabilities and resources required to implement the alternative, and they must be sure that the alternative will not threaten the attainment of other organizational goals. At first glance, an alternative might seem to be economically superior to other alternatives, but if managers realize that it is likely to threaten other important projects, they might decide that it is not practical after all.

Very often, a manager must consider these four criteria simultaneously. Scott McNealy framed the problem at hand at Sun Microsystems quite well. The key question was whether to go ahead with the September 10 launch date. Two main criteria were influencing McNealy's choice: the need to ship a machine that was as "complete" as possible (the *practicality* criterion) and the need to beat Apollo to market with a new workstation (the *economic feasibility* criterion). These two criteria conflicted. The first suggested that the launch should be delayed; the second, that the launch should go ahead. McNealy's actual choice was based on the relative importance that he assigned to these two criteria. In fact, Sun Microsystems went ahead with the September 10 launch, which suggests that McNealy thought the need to beat Apollo to market was the more important criterion.

Some of the worst managerial decisions can be traced to poor assessment of the alternatives, such as the decision to launch the *Challenger* space shuttle, mentioned earlier. In that case, the desire of NASA and Morton Thiokol managers to demonstrate to the public the success of the U.S. space program in order to ensure future funding (*economic feasibility*) conflicted with the need to ensure the safety of the astronauts (*ethicalness*). Managers deemed the economic criterion more important and decided to launch the space shuttle even though there were unanswered questions about safety. Tragically, some of the same decision-making problems that resulted in the *Challenger* tragedy led to the demise of the *Columbia* space shuttle in 2003, 17 years later, killing all seven astronauts on board.⁵¹ In both the *Challenger* and the *Columbia* disasters, safety questions were raised before the shuttles were launched; safety concerns took second place to budgets, economic feasibility, and schedules; top decision makers seemed to ignore or downplay the inputs of those with relevant technical expertise; and speaking up was discouraged.⁵² Rather than making safety a top priority, decision makers seemed overly concerned with keeping on schedule and within budget.⁵³

Choose among Alternatives

Once the set of alternative solutions has been carefully evaluated, the next task is to rank the various alternatives (using the criteria discussed in the previous section) and make a decision. When ranking alternatives, managers must be sure *all* the information available is brought to bear on the problem or issue at hand. As the Sun Microsystems case indicates, however, identifying all *relevant* information for a decision does

not mean that the manager has *complete* information; in most instances, information is incomplete.

Perhaps more serious than the existence of incomplete information is the often-documented tendency of managers to ignore critical information, even when it is available. We discuss this tendency in detail below when we examine the operation of cognitive biases and groupthink.

Implement the Chosen Alternative

Once a decision has been made and an alternative has been selected, it must be implemented, and many subsequent and related decisions must be made. After a course of action has been decided—say, to develop a new line of women's clothing—thousands of subsequent decisions are necessary to implement it. These decisions would involve recruiting dress designers, obtaining fabrics, finding high-quality manufacturers, and signing contracts with clothing stores to sell the new line.

Although the need to make subsequent decisions to implement the chosen course of action may seem obvious, many managers make a decision and then fail to act on it. This is the same as not making a decision at all. To ensure that a decision is implemented, top managers must assign to middle managers the responsibility for making the follow-up decisions necessary to achieve the goal. They must give middle managers sufficient resources to achieve the goal, and they must hold the middle managers accountable for their performance. If the middle managers are successful at implementing the decision, they should be rewarded; if they fail, they should be subject to sanctions.

Learn from Feedback

The final step in the decision-making process is learning from feedback. Effective managers always conduct a retrospective analysis to see what they can learn from past successes or failures.⁵⁴ Managers who do not evaluate the results of their decisions do not learn from experience; instead, they stagnate and are likely to make the same mistakes again and again.⁵⁵ To avoid this problem, managers must establish a formal procedure with which they can learn from the results of past decisions. The procedure should include these steps:

1. Compare what actually happened to what was expected to happen as a result of the decision.
2. Explore why any expectations for the decision were not met.
3. Derive guidelines that will help in future decision making.

Managers who always strive to learn from past mistakes and successes are likely to continuously improve the decisions they make. A significant amount of learning can take place when the outcomes of decisions are evaluated, and this assessment can produce enormous benefits.

Group Decision Making

Many, perhaps most, important organizational decisions are made by groups or teams of managers rather than by individuals. Group decision making is superior to individual decision making in several respects. When managers work as a team to make decisions and solve problems, their choices of alternatives are less likely to fall victim to the biases and errors discussed previously. They are able to draw on the combined skills, competencies, and accumulated knowledge of group