CHAPTER FIVE

Decision Making

INTRODUCTION

What This Chapter Is About

In problem-solving situations, decision making involves choosing which alternative solution (or solutions) to implement. In planning situations, it involves choosing which alternative set of goals and associated plans to implement. (Although alternative sets should be formulated and then compared during decision making, some people only formulate one set.) This chapter focuses on many of the concepts, principles, models, methods, tools, and practices that apply to both situations. As Cottrell (2000) and Meyer (2001) have observed, these decision-making elements are becoming ever more important to organizations operating in an increasingly complex and globalized world. Even now, most organizations need all the performance-enhancing tools and competitive advantages that are available to them.

The basics section defines and describes decision making, briefly discusses its purposes and benefits, describes the basic steps of a decision-making process, discusses types of decision-making situations, and differentiates between single-choice and multiple-choice decisions.

Going beyond the basics, the chapter describes tools for visualizing the details involved in arriving at decisions. It also discusses a number of personal, organizational, and external impediments that can undermine the effectiveness of decision-making processes. It then describes common problems and pitfalls that result, but goes on to outline what decision makers should do to avoid or compensate for the problems, impediments, or limitations involved.

What Consultants, Trainers, and Facilitators Can Get Out of This Chapter

Details can be the bane of a manager's life. At a time when more information is available than ever before, managers have less time to make sense of it all. What approaches can be used to preserve details but avoid being overwhelmed by them? That is a key issue for this chapter, and

it is a central issue on which consultants, trainers, and facilitators should focus attention. After studying the chapter, they should be able to help participants consider ways to

- Organize their thinking, despite many details
- Preserve focus, despite details
- Apply various decision-making tools on the job and in the context of a unique corporate culture
- Analyze common problems and pitfalls that managers in the organization may encounter during the decision-making process and consider ways to overcome those pitfalls

What Practicing Managers, Participants, or Students Can Get Out of This Chapter

After studying and discussing this chapter, the student or seminar participant should be able to

- More effectively structure his or her decision-making processes to compensate for mental limitations
- Use several visual decision-making tools to handle details more easily and effectively
- Use greater awareness of organizational and external impediments to good decision making in order to better deal with those obstacles
- Avoid common problems and pitfalls that occur during decision-making processes

How Instructors and Participants Can Use the CD-ROM's Supplementary Materials

The accompanying CD-ROM contains the following materials related to this chapter:

- *Chapter Five Study Guide.* This class or seminar session preparation guide should be completed by students and seminar participants for the same reasons mentioned in earlier chapters.
- *Comparison Matrix Template.* This spreadsheet can be filled in to analyze and compare financial aspects of several programs or projects. A filled-in example is shown in Table 5.2, later in the chapter.

THE BASICS

Although researchers such as Prasad, Karwan, and Zionts (1997) continue to make strides in developing management decision-making models and tools, many managers and leaders could significantly improve their decision-making effectiveness simply by learning and applying the basic process steps, insights, methods, tools, and practices discussed in this chapter.

Definition

Decision making is the process of evaluating alternative actions and choosing which to implement. It essentially involves thinking ahead and asking, "What might happen if we were to implement each of the alternatives under consideration?" The alternatives can be (a) alternative sets of goals and associated plans (strategies and tactics, programs and projects, action plans, budgets, and so forth) or (b) alternative solutions to problems.

Purposes and Benefits of a Decision-Making Process

Evaluating, testing, and comparing alternatives before actually implementing any of them are meant to ensure that (a) the most beneficial and effective courses of action are chosen; (b) the actions chosen will result in desirable outcomes rather than miscalculated, undesirable outcomes; and (c) the actions chosen will contribute to the successful achievement of organizational objectives. The process is also aimed at making the best possible decision in the face of incomplete information and uncertainty about the future.

Description of the Decision-Making Process

The decision-making process consists of several basic steps and various substeps, which are shown in the following list. As shown in Figure 2.1 on page 36, analysis is very much a part of this process.

1. *Analyze each possible alternative* and test it in terms of projections or expectations regarding the future.
    1.1. Anticipate *scenarios* (sequences of possible acts and subsequent events) that could occur as a result of implementing each alternative. Identify potential vulnerabilities, conflicts, and contingencies, and formulate courses of action for dealing with them.
    1.2. Anticipate all the *possible results, outcomes, and consequences* of implementing each alternative.
    1.3. Assess the *probability* that the possible results, outcomes, or consequences of each alternative will occur.
2. *Identify each alternative's advantages and disadvantages* in terms of its possible results, outcomes, and consequences, and use selected decision-making criteria to analyze these considerations. A list of many possible criteria is provided in Table 5.1.
3. *Analyze and compare all of the alternatives' advantages and disadvantages* in terms of the appropriate decision-making criteria. These are some of the questions to ask: Which alternatives can be expected to produce the desired results without also bringing about undesirable changes or side effects in the system of variables involved? Which alternatives could produce less desirable results while also bringing about undesirable changes or side effects in the system of variables involved? And which alternatives are most compatible with courses of action that are presently being implemented or are under consideration?
4. *Revise any alternatives,* as appropriate, and then further evaluate and compare them.
5. *Choose the best, most desirable, or most appropriate alternative (or alternatives)* for implementation. Sometimes more than one alternative may be appropriate, especially in problem-solving situations.

Basic Types of Decision-Making Situations

Decision-making situations can be divided into two main categories: (a) those that involve planning (strategic/long-range or annual) and (b) those that involve interim or ad hoc decision making concerning problems and opportunities that arise between planning processes.

Long-range and annual planning processes involve choosing among alternative goals and plans, each of which can deal with one or more of the following: (a) solving existing problems,

Table 5.1. Examples of Decision-Making Criteria

QUANTITATIVE (OBJECTIVE)

Profitability
  Total revenues
  Total operating costs
  Cost savings
Growth (for example, in sales, assets, or market share)
Return on investment (ROI)
Total capital expenditures
  Installation costs
  Start-up costs
Retained earnings used
Debt incurred
Debt expense
Resources conserved
Market position
  Unit sales
  Market share
Productivity
  Productive capacity
  Utilization of capacity
Time span to completion
Time span to results
Time span of commitment
Time span to reach volume
Contribution
Sales break-even point
Profit break-even point
Payback period
Net present value (NPV)
Accounting rate of return (ARR)
Profitability index (PI)
Benefit/cost ratio
Internal rate of return (IRR)
Overall expected terminal value
Liquidity
Working capital
Debt/equity ratio
Inventory turnover rate
Net worth
Earnings per share
Stock price

QUALITATIVE (SUBJECTIVE)

Probability of success
Certainty of results
Compatibility with other goals and plans
Ease of implementation
Degree of change involved
Complication of current operations
Disruption of current operations
Flexibility (to modify plan)
Reversibility of action
Control of results
Precedent set
Competitiveness
Diversification
Financial stability
Technological innovation
Product/service quality
Product/service innovation
Effects on other products
Ability to service (customers)
Product life cycle (obsolescence)
Availability of parts or materials
R&D know-how
Production know-how
Marketing know-how
Legal acceptability
Patentability
Environmental effects
Safety
Managerial development
Organization development
Vulnerability to . . .
  Economic phenomena
  Business cycles
  Seasonality of demand
  Technological change
  Competitive responses
  Supply sources
  Governmental intervention
  Union opposition
Impact on personnel
  Employee welfare
  Employee job satisfaction
  Employee performance
Resulting relationships with . . .
  Suppliers
  Customers
  Employees or union
  Community
  Regulatory agencies

(b) improving factors or variables that affect organizational success, (c) taking advantage of present and anticipated opportunities, (d) preventing anticipated problems, and (e) dealing with contingencies that still might arise. In many organizations, *tentative decisions* are made at various organizational levels before *final decisions* are made.

During the steps shown in Figure 4.2 on page 74, separate decisions are often made with respect to the following: (a) alternative goals; (b) alternative strategies and tactics; (c) alternative programs and projects; (d) alternative plans of action for implementing particular programs or projects; (e) alternative budgets; and (f) alternative policies, procedures, and rules. The decision-making portions of this organizational planning process are aimed at ensuring that all organizational, unit, and individual goals and plans will work together to accomplish items a–e in the preceding paragraph, thereby maximizing organizational success.

Interim or ad hoc decision-making situations are slightly different. Although annual planning processes are aimed at dealing effectively with present and future circumstances, unanticipated opportunities and unanticipated or previously unrecognized problems are bound to arise from day to day between formal planning processes. Dealing with an *interim problem* actually involves dealing with two problems and making decisions with respect to two sets of alternatives: (1) alternative ways to correct the situation (to smooth over or compensate for the adverse effects); and (2) alternative ways to prevent the situation from occurring again. Dealing with an interim opportunity usually involves deciding between two basic alternatives: "do something" or "not do something." It can also involve making a preliminary choice among alternative ways to do something. Here are some examples: Replace an old machine with a newly developed machine—or not. Adopt an employee's new idea (using one of several possible plans)—or not. Accept a contract opportunity (under one of several alternative conditions)—or not.

In general, better interim or ad hoc decisions are made under two major conditions: first, when situations are fully analyzed, desired outcomes are identified, and all possible yet feasible alternative solutions or plans are formulated before final decisions are made; and second, when consideration is given to long-range and annual goals and associated plans (which provide broad, extended-term contexts for analyzing situations, formulating alternatives, and determining how implementing alternatives might affect and be affected by previously planned activities).

Types of Decision-Making Situations Based on the Number of Alternatives That Can Be Chosen

Decision-making situations can also be either single-choice or multiple-choice. In long-range and annual planning situations, both types of decisions are made, but usually at different points in the planning process.

Single-choice decisions involve a choice of (decision to implement) only one alternative. Only one can be chosen when the various alternatives are mutually exclusive—that is, when implementing any one alternative obviates or precludes the implementation of any other. When mutual exclusivity exists, several or all of the following circumstances exist: (a) none of the alternatives are meant to be implemented along with any of the others; (b) all the alternatives are aimed at accomplishing approximately the same basic purpose; (c) implementing more than one alternative would result in redundant activity; or (d) implementing any alternative would require a significant amount of resources, and implementing more than one would exceed budgetary constraints. A simple example would be whether to choose computer brand A, brand B, or brand C for an office.

Multiple-choice decisions involve the possibility of choosing to implement more than one alternative. More than one can be chosen when the various alternatives are not mutually exclusive—that is, when implementing, any one alternative does not obviate or preclude the implementation of one or more others. When the alternatives are non-exclusive, several or all of these circumstances may exist: (a) many influential factors in a system of interacting factors or variables must be improved in order to improve a situation or prevent a problem; (b) many causal factors operating together in various cause-and-effect sequences must be dealt with in order to solve a problem and prevent its recurrence; (c) several alternative courses of action can be implemented at the same time, perhaps with the aim of producing a synergistic effect in which each course of action supports the effectiveness of the others and helps to maximize the final outcome; or (d) each alternative course of action does not involve significant resources, and implementing multiple courses of action would not exceed budgetary constraints.

Figure 3.1 on page 48 illustrates a multiple-choice interim problem-solving decision. It should be noted, however, that in many interim and ad hoc problem-solving situations, it is not possible to choose and implement all the desirable solutions. Too often, adequate human, financial, and other resources for dealing with contingencies have not been set aside, and the resulting workload and budgetary constraints prevent choosing to implement certain desirable courses of action.

BEYOND THE BASICS

Visualization Tools for Better Decision Making

In decision making—just as in analyzing situations and in planning—hundreds of factors and their associated facts cannot be handled effectively without using tools to help visualize alternatives, their pros and cons, possible scenarios (involving probabilities of events), and so forth. These tools include contribution margin charts, break-even charts, various worksheets, payoff matrices, comparison matrices, gaming scenarios, and decision trees. We have chosen to discuss several of these tools here.

While Little (2004) has recommended that decision-making models be robust, controllable, easy to explain to people, and complete but simple, some of the models, methods, or tools discussed here can take some time and effort to learn and use.

A Gaming Diagram. Game theory is used by those who play checkers and chess. It is also used in competitive business situations in which decisions must be made under conditions of conflict, uncertainty, and risk. It essentially involves applying decision-making steps 1–3 (see the "Description of the Process" section earlier in this chapter) to help analyze alternative marketing strategies and tactics, which should take account of what competitors might do under various circumstances. Applying game theory is often called *gaming* (Luce and Raiffa, 1957; Von Neuman, Churchland, and Churchland, 2000; Von Neumann and Morgenstern, 1980, 2004; Williams, 1954).

As shown in Figure 5.1, the mechanics of gaming involve anticipating the future and identifying competitive scenarios. *Gaming scenarios* are chains or sequences of acts (moves) and events (including countermoves and final outcomes) involving competitive areas such as product development, pricing, promotion, and distribution. The rather simple example in Figure 5.1 illustrates a scenario involving a company's alternative pricing tactics and how it thinks the competition might respond. The figure shows only steps 1, 2, 3, and 6 in what could easily be a much more complex scenario (from left to right): (1) the organization's alternative initial pricing

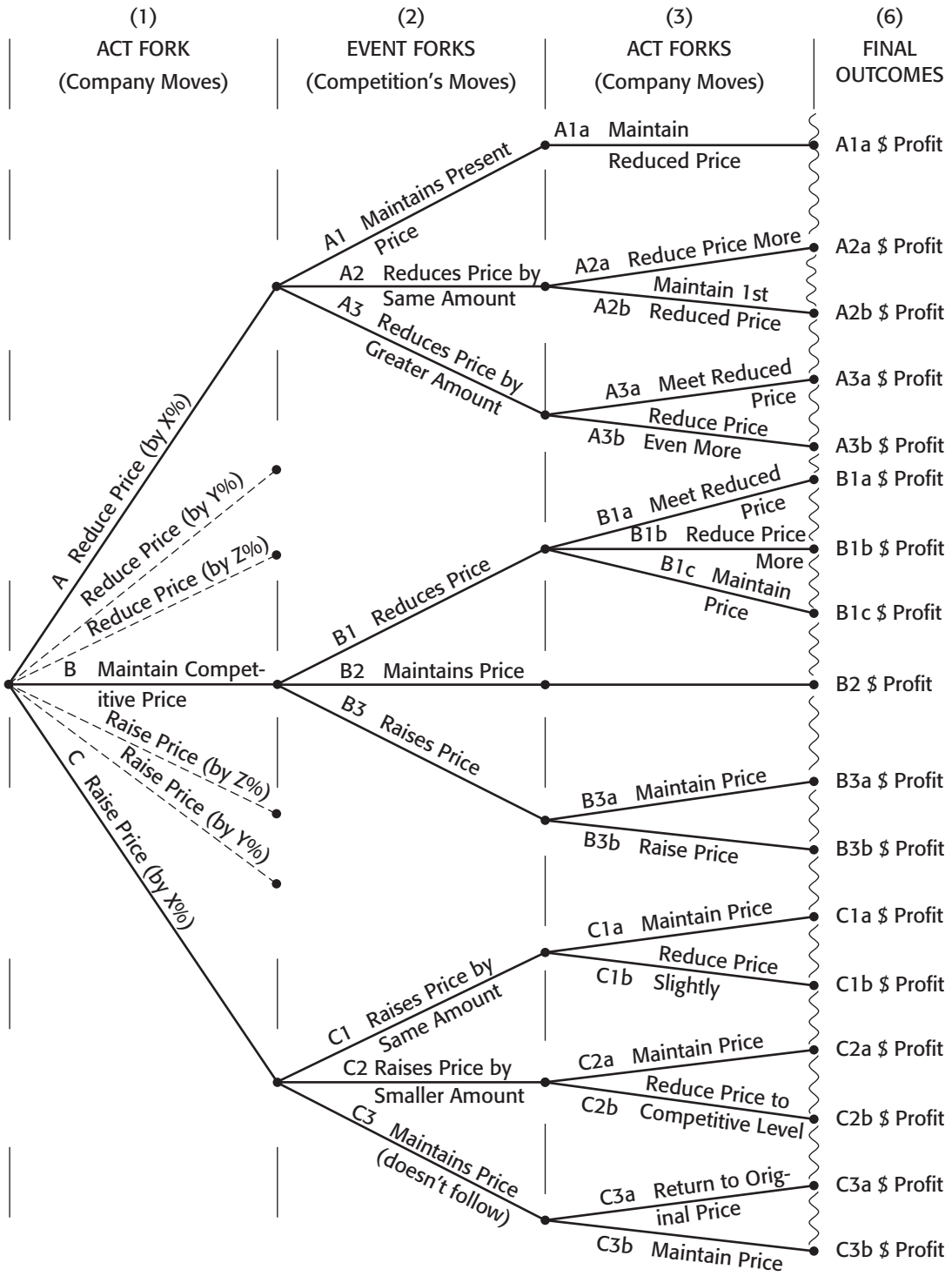

Figure 5.1. Simplified Illustration of Alternative Pricing Scenarios Developed Through Gaming

acts; (2) possible competitive responses to each alternative initial act; (3) subsequent possible organizational actions that could be taken in response to competitive responses; (4) subsequent competitive reactions to organizational responses; (5) any further acts and events; and eventually, (6) the "end-of-game" final outcomes of all possible sequences of acts and events. Much like a PERT diagram, Figure 5.1 shows a distinct series of branches for each distinct sequence of acts and events. Here, however, at the right end of each set of branches, there is a terminal expected value (final outcome), which can be expressed in terms of, for example, unit sales volume, net cash flow, or dollar profitability.

Decision Trees. A decision tree is another very useful tool for making decisions under conditions of conflict, uncertainty, and risk. It not only displays financial information (such as revenues and costs) but also accounts for the *probabilities* (chances) that possible events (such as those in a gaming diagram) will occur. A decision tree is also capable of incorporating financial techniques and several operations research techniques into a diagram.

The decision tree in Figure 5.2 is a diagrammatic representation of a manufacturer's decision whether to build a prototype product or not build it. The figure illustrates these elements of the manufacturer's decision: (a) the alternatives requiring an immediate decision (at the leftmost fork); (b) the possible events resulting from an act, with their estimated probabilities of occurrence (expressed as a decimal in parentheses on each event fork); (c) future decision points (involving subsequent possible acts on an act fork); (d) net present values of positive and negative cash flows associated with acts and events (shown below the appropriate decision or event); and (e) at the terminal positions at the right-hand ends of branches, the values of outcomes of alternatives (calculated by adding the positive and negative cash flows on the branches leading to each terminal outcome). For example, as shown in the box at the top right of Figure 5.2, the $19,000 terminal value was calculated by adding up the branch values leading to it.

The tree in Figure 5.2 can be "solved" mathematically by working backward from right to left, multiplying the probabilities for each branch on an event fork by the values found for each branch. For example, in the middle box of calculations, the $19,000 terminal value multiplied by that branch's .8 (or 80 percent) probability equals $15,200; the $4,000 terminal value multiplied by the branch's .20 (or 20 percent) probability equals $800; and the two results added together equal $16,000—the value of that event fork. In this example, the best decision (at the left of the diagram) is to build the prototype, because the value of that act is $5,500, which is obviously greater than the $0 value of the not build act. It should be noted that such easy calculations assume indifference to risk.

Using a decision tree has all the advantages mentioned in the preceding paragraph. Even if a tree is not solved mathematically, it still enables decision makers to visualize, keep track of, gain insight into, and consider all the aspects of a situation. But using a decision tree also has several disadvantages: First, it can be very difficult to design and solve a tree that deals with a very complicated decision-making situation (such as a complex competitive scenario). Second, making a decision based solely on mathematical expectations regarding cash flows does not take account of other decision-making criteria that might be equally or more important in a particular situation (for example, payback period [how long it will take the project to pay for itself], loan repayment period, environmental consequences, or organizational image). Third, one must learn many concepts, rules, procedures, guidelines, and mathematical techniques in order to use this tool properly. Since it would take an entire book to explain how to design a tree that can be solved mathematically, it is strongly recommended that the reader study a text on probability theory and

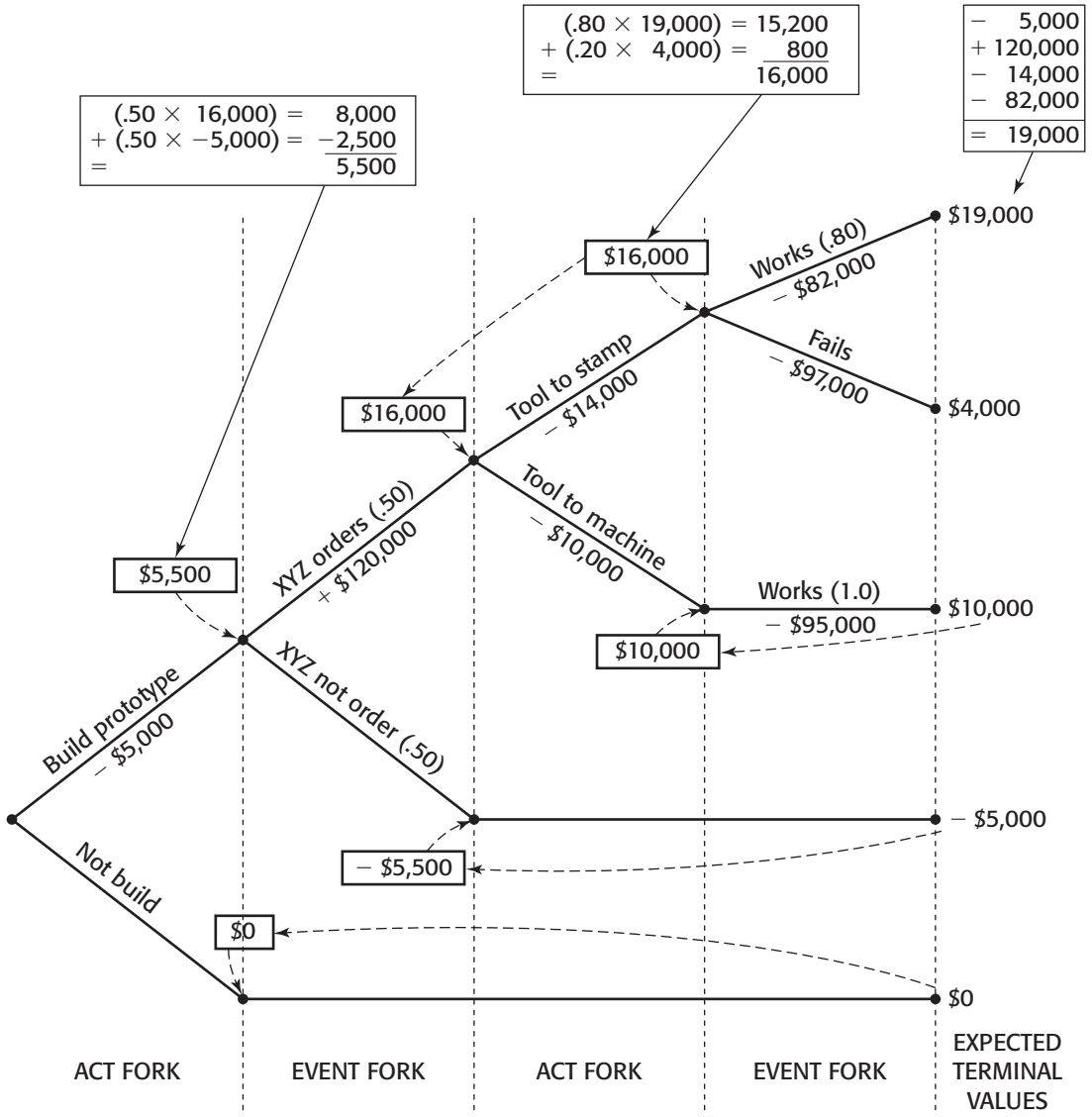

Figure 5.2. Example of a Relatively Simple Decision Tree

decision trees before fully relying on this decision-making tool. (See, for example, Anderson, Sweeney, and Williams, 2004; Hammond, Keeney, and Raiffa, 1999; Pratt, Raiffa, and Schlaifer, 1995; Raiffa and Schlaifer, 2000; and Schlaifer, 1978.)

A Comparison Matrix. A comparison matrix enables users to account for the relative importance of the various decision-making criteria being applied and also enables users to calculate and compare total weighted scores for alternatives.

Table 5.2 is an example of a matrix used to make an investment decision. In the left column, decision-making criteria have been placed in two categories: (a) "must have" and (b) "want" or "nice to have." These parameters have been prioritized in the next column to the right (from a

Table 5.2. Example of a Comparison Matrix

CRITERIA OR PARAMETERS	Priority (Rank)	Weight Factor	PROJECT A Data	PROJECT A Raw Score	PROJECT A Weighted Score	PROJECT B Data	PROJECT B Raw Score	PROJECT B Weighted Score	PROJECT C Data	PROJECT C Raw Score	PROJECT C Weighted Score
Musts, Limitations, or Needs											
Highest net present value	**1**	**20**	50 million	3	60	40 million	1	20	45 million	2	40
Highest benefit-cost ratio	**2**	**19**	6:1	1	19	9:1	2	38	10:1	3	57
Least debt incurred	**3**	**18**	5 million	1	18	0	3	54	0	3	54
Subtotal					**97**			**112**			**151**
Wants											
Shortest payback period	**4**	**16**	3 years	2	32	4 years	1	16	2.5 years	3	48
Best long-term competitive position	**5**	**15**		3	45		1	15		2	30
Least time to completion	**6**	**12**	1 year	1	12	6 months	3	36	8 months	2	24
Least disruption of operations	**7**	**10**		1	10		2	20		3	30
Greatest ease of implementation	**8**	**8**		1	8		3	24		2	16
Most technological innovation	**9**	**4**		3	12		1	4		2	8
Least environmental impact	**10**	**1**		3	3		1	1		2	2
Subtotal					**122**			**116**			**158**
TOTAL WEIGHTED SCORE					**219**			**228**			**309**

high priority of "1" to a low priority of "10"). The next column contains a weight factor for each parameter, which more precisely indicates the degree of its importance, ranging from "20" (high) down to "1" (low). It is usually easier to assign weight factors once priorities have been determined. Higher priority items are assigned higher weight factors. The spread of weight factors' values should be as narrow as possible but still account for the relative importance of the items. (Weight factors used in the figure are arbitrary, but could be realistic in a given situation.) To the right are columns for three projects (A, B, and C). Each project's "Data" column contains data for each parameter in the far left column. In this example, a raw score of "3" is given to the project having the most desirable value for that parameter, and a score of "1" is given to the one having the least desirable value. (A score of "2" goes to the one in between.) The weighted score for each project is found by multiplying its weight factor for a criterion by the associated raw score. (For Project A, the weighted score for highest net present value is 20×3, or 60.) When all the weighted scores are calculated and then added up for each project, the winning project is the one with the highest total weighted score. In this example, it is Project C, with a total weighted score of 309.

Basic Phenomena That Underlie Ineffective Decision Making

The best or most rational decisions can be made when these and other factors are conducive: (a) decision makers' characteristics; (b) organizational attitudes, systems, and practices; and (c) environmental factors. Unfortunately, upon studying decision-making processes, Herbert A. Simon (1976) concluded that human decision making is bounded by factors such as limited mental capacities, emotions, inability to see into the future, and uncontrollable environmental variables. To describe the situation, he coined the term *bounded rationality.* The following are some basic reasons why people do not always make the best possible decisions.

Personal Impediments. First, human beings possess incomplete and imperfect knowledge and experience, so we cannot (a) formulate all possible yet viable alternatives; (b) anticipate all possible events and final outcomes; (c) assess the most realistic probabilities that events and outcomes will occur; and (d) identify all the advantages and disadvantages of alternatives.

Second, many people's basic mental abilities are underdeveloped. The lower or less developed their ability for propositional (or inductive) logic, the less effectively a person can process information and experience when anticipating events or outcomes and assessing their probabilities. The lower or less developed their ability for class (or deductive) logic, the less effectively a person can process information when comparing alternatives.

Third, many people are relatively low in their knowledge of and ability to use decision-making concepts, methods, and tools. The lower they are, the less well they are able to (a) structure decision-making situations and (b) compensate for various mental limitations. One major limitation is the mind's inability to juggle and interrelate numerous details without the assistance of visual diagrams and other decision-making aids.

Fourth, many people do not possess values, attitudes, and personality traits (behavioral tendencies) that are entirely functional for decision making. An entirely functional set of these characteristics would motivate and enable them to do all of the following: (a) think in terms of multi-causality; (b) think things out thoroughly; (c) deal with details; (d) insightfully anticipate all possible events and outcomes; (e) develop a well-ordered and stable set of preferences for outcomes; (f) assess realistic probabilities of the occurrence of events and outcomes; (g) identify all the advantages and disadvantages of alternatives; (h) objectively weigh and compare the advantages and disadvantages of alternatives; (i) seek optimal decisions that maximize benefits

while either alleviating or minimizing negative consequences; and (j) make difficult choices under uncertainty.

For example, a relatively high level of the *theoretical (or intellectual) value* underlies tendencies to be analytical, to think in terms of multicausality, and to think things out thoroughly. It also contributes to the inclination to assess probabilities realistically and to weigh advantages and disadvantages objectively. A relatively high level of *adaptability* underlies a tolerance for details and complexities. A relatively high level of *orderliness* underlies an inclination to deal with details and complexities in an organized, systematic manner. A relatively high level of *original thinking* underlies an inclination to think imaginatively in regard to possible events and outcomes. Relatively high levels of *self-control, emotional stability,* and *goal-orientedness* contribute to the formation of a well-ordered and stable set of preferences for outcomes. The latter personality traits also contribute to the tendencies to assess probabilities realistically and to weigh advantages and disadvantages objectively. Relatively high levels of the *achievement value* and *goal-orientedness* largely underlie an inclination to seek optimal decisions that will maximize results. Relatively high levels of *self-confidence* and *decisiveness* contribute to the ability to make difficult decisions under uncertainty. It should be noted, however, that due to the reverse or negative correlations that exist between some of these characteristics, it is virtually impossible to be relatively high in all of them. In other words, when one of them is relatively high, another tends to be relatively low.

Organizational Impediments. Organizations can also cause ineffective problem solving.

First, many organizations do not create an environment that both promotes and enables effective decision making. They often value action more than thought. This is usually because they associate results with action rather than thought.

Second, many value short-term results more than long-term results, usually because they are preoccupied with their current profit, earnings per share, and stock price.

Third, due to the first two reasons, many organizations stress immediate and apparent results—especially results that will increase their current bottom line. As a consequence, decision making tends to be oriented to the short term rather than the long term.

Fourth, many do an inadequate job of goal setting and planning. They also "solve" their problems unsystematically and ineffectively. As a result, opportunities are lost, improvements are seldom made, many problems get worse, and the number of problems actually increases. Consequently, personnel are constantly "fighting fires" and are often unwilling or unable to take the time to think more deeply and make better decisions.

Fifth, many organizations inadequately or ineffectively develop their personnel's decision-making and problem-solving skills.

Sixth, many do not establish organizational structures, systems, methods, and procedures that facilitate effective decision making.

Seventh, many organizations discourage risk taking.

External Impediments. External forces and factors also reduce decision-making effectiveness. For example, highly unstable technologies and marketplaces make many decisions uncertain and risky. Also, many outside variables are beyond an organization's control. Even attempting to influence them can be very difficult and costly.

Common Pitfalls and How to Address Them

Decision-making situations are fraught with a number of problems and pitfalls. The following are descriptions of (a) what managers and their personnel often do and (b) what they should do.

In most cases, the dysfunctional phenomena can be traced to some combination of the personal, organizational, and external causes mentioned in the previous section. Many phenomena have become bad habits that managers have difficulty breaking, even after being well trained in decision-making concepts, principles, methods, and tools.

Making Decisions Before Planning Rather Than Planning Before Making Decisions
What managers often do: Especially in ad hoc situations involving either problems or opportunities, authoritarian managers will often make a decision to do something and then have subordinates analyze the situation and plan how to achieve the desired results. Because the managers have not thoroughly analyzed the situation first, they often make decisions that (a) do not deal with the most important factors involved or (b) are based on inappropriate criteria. Because they have not brainstormed other possible alternatives before making these decisions, they often overlook better or more cost-effective alternatives. Because they have not formulated alternative action plans or budgets before making a decision, they must often reverse or alter their decision once alternatives have been formulated and the necessary resources have been identified and found to be too costly.

What managers should do: Managers should make decisions based on (a) a thorough situational analysis and (b) a choice among well-conceived alternatives.

Relying on Past Solutions Rather Than Conceiving Fresh Solutions
What people often do: Especially when a present problem situation seems to be similar to a past problem situation, people are inclined to skip all problem-solving and decision-making steps, draw on their past experience, and simply implement one or more solutions that seemed to work well before. However, in many situations, doing something that has been done before will make matters worse, for several reasons: First, seemingly similar past and present situations are usually dissimilar in various important respects. The facts that corresponded to the factors involved in the past situation are likely to have changed considerably, and different factors are likely to have become the most significant. Therefore, using one or more past solutions will probably not deal effectively with the causal variables involved in the present situation. In fact, it may actually worsen the situation or create even more problems. Second, a present problem may simply be a past problem that has recurred because it was not completely solved before. Problems tend to recur when the previously used solutions either (a) dealt with symptoms rather than underlying causes, (b) dealt with superficial causes, or (c) dealt ineffectively with the real, underlying causes. Therefore, using one or more past solutions usually will not solve the present problem. In fact, if the solution affects causal factors dysfunctionally, the situation may be made worse or additional problems may be created.

What people should do: People should certainly consider any solutions that have produced desirable results before. But they should also brainstorm fresh solutions that deal with the entire system of symptoms, superficial causal factors, and underlying causal factors.

Falling into the "Dual-Option Syndrome" Rather Than Evaluating a Number of Alternatives
What managers tend to do: Although some managers will formulate a number of alternatives, many others have a tendency to identify only one action-oriented alternative. As a result, they begin the decision-making phase with only two options: "do X" (the active alternative) or "don't do X" (a passive alternative). We call this phenomenon the "dual-option syndrome." It occurs most often in interim decision-making situations involving opportunities, but it also occurs in many ad hoc problem-solving situations.

What managers should do: As a general rule, the best decision cannot be made unless a number of alternatives are available for consideration. This is particularly true in problem-solving and

improvement situations, in which a number of courses of action are usually required to deal effectively with a number of causal or influential factors. Even when making a capital investment decision, it is advisable to list, evaluate, and compare other possible capital investment opportunities. Thus, as suggested by most experts, individuals should brainstorm a number of alternatives and then, during the decision-making phase, subject them all to testing, evaluation, and comparison. In other words, the choice should not be whether to do A or not do A, but, for example, whether to do A, or B, or C; or A and B; or A and C; or B and C; or A, B, and C; or, perhaps, do nothing at all.

Using Active Trial and Error Rather Than Mental Trial and Error

What people often do: Rather than subjecting alternative solutions or improvements to steps 1 through 5 of the decision-making process presented earlier in this chapter, people will often implement courses of action on a trial-and-error basis. If the first solution does not work, they will try a second and then a third and so on, until they do something that brings about the desired result (success rather than error). However, in many situations, randomly trying alternatives until one works can make matters worse. Although adjusting, changing, improving, influencing, or otherwise affecting various factors in functional ways can bring about desirable results, these actions can simultaneously affect other variables in dysfunctional ways that bring about undesirable results. These undesirable results usually make the situation worse or cause even more problems.

What people should do: Because implementing untested plans or solutions can cause both desirable and undesirable events and outcomes, people should perform all five of the decision-making steps. The decision-making phase (before any action is taken) is the point at which (a) events, subsequent acts, and final outcomes should be anticipated and (b) the advantages and disadvantages of alternatives should be identified and evaluated. In effect, individuals should subject their alternatives to mental trial and error in order to avoid taking any action that might turn out to be dysfunctional.

Satisficing Rather Than Optimizing

What people tend to do: During earlier discussions of the analysis phase and the formulation of alternatives phase, several of Herbert Simon's (1976) findings were mentioned: people tend to reduce the complexity of situations by constructing simplified models containing only the information they feel able to handle, and they tend to identify a limited number of alternatives. With respect to decision making, he found that people are inclined to select the first alternative perceived to be more or less satisfactory, and they are inclined to identify a limited number of possible events and final outcomes. To describe all these behavior patterns, he coined the term *satisficing behavior*—as opposed to optimizing behavior. In other words, Simon found that people tend to behave in a manner that results in a satisfactory decision that will suffice.

What people should do: It must be acknowledged that satisficing can be appropriate when situations are obviously unimportant and better analysis, planning, and decision making would be unjustifiably time-consuming and costly. However, the point here is that individuals should attempt to maximize the efficacy of decisions (and their outcomes) when appropriate. It is appropriate under these circumstances: (a) when conducting strategic/long-range or annual planning processes; (b) when solving problems and making improvements involving variables that are key to organizational performance; or (c) when considering opportunities that will significantly affect organizational success.

Maximizing the efficacy of decisions and their outcomes necessitates the following: (a) acquisition of appropriate knowledge and experience; (b) development of mental skills and skills

involved in using analytic, planning, and decision-making tools; (c) development of functional motives, attitudes, and behavioral tendencies; and (d) a conscious attempt to compensate for or deal with personal, organizational, and environmental impediments.

Choosing Near-Sighted Options Rather Than Thinking Further Ahead

The following discussion applies to analyzing alternatives in terms of the future—that is, possible events, possible subsequent acts, and possible final outcomes.

What people tend to do: Many individuals do not think ahead, use their ability in propositional logic, and ask "What might happen if we were to implement each particular alternative?" Instead, they simply anticipate some desirable immediate or near-term outcome. In other words, just as they often fail to identify sequences of causes and effects when analyzing a problem situation, they also fail to identify sequences of possible events and subsequent acts that could occur during the implementation of alternative plans or solutions. As a result, they formulate, choose, and implement near-sighted plans or solutions that do not contain courses of action for minimizing problems and dealing with contingencies. Consequently, they obtain less than desirable results, experience more problems, and perpetuate "fire fighting."

What people should do: First, they should establish long- and short-term goals and plans that will promote and enable more future-oriented decision making. Second, during interim decision-making situations, they should anticipate the series of possible events, subsequent acts, and final outcomes that could occur when implementing various alternatives. Third, taking long-range and annual goals and plans into account, they should perform the remaining steps of the decision-making process (see the "Description of the Process" section earlier in this chapter).

Identifying Only One Event, Act, or Final Outcome Rather Than Anticipating Various Possibilities

What people tend to do: When they do think ahead about what might happen in connection with the implementation of a particular alternative, some individuals fail to anticipate more than one possible event, subsequent act, and final outcome. For example, one of their typical scenarios might consist of the following: (a) only one of the various possible events that could immediately follow some initial act; (b) only one of the various alternative actions that could be taken in response to some previous event; and (c) only one of the various possible final outcomes of the alternative's implementation. As a consequence of not identifying other possibilities, these individuals also fail to (a) plan for various contingencies and (b) make decisions that account for more significant possibilities. In effect, these people are essentially regarding each single event or outcome as a certainty (having a 100 percent probability of occurrence). (Acts, by the way, are not assigned probabilities.)

What people should do: When people are thinking forward, they should think in terms of (a) event forks (such as those in Figures 5.1 and 5.2) that indicate various possible events, (b) act forks representing various possible responses to events, and (c) event forks representing various possible final outcomes.

Assessing "Tainted" Probabilities Rather Than Realistic Probabilities

What people tend to do: Most of those who have anticipated various possibilities and actually take this step tend to taint their assessments of probabilities with their preferences for and aversions to various events and final outcomes. For example, when estimating the probability of an event

or outcome for which they have a preference, they are inclined to assess a higher than realistic probability (for example, an 80 percent probability rather than, say, a more realistic 65 percent probability). On the other hand, when estimating the probability of an event or outcome to which they have an aversion, they are inclined to assess a lower than realistic probability (for example, a 30 percent probability rather than, say, a more realistic 50 percent probability). In either case, they are mixing their preferences and aversions into their probabilities. Consequently, they are increasing the likelihood that they will choose to implement an alternative they preferred all along—an alternative that may not be the best. Both cases constitute wishful thinking.

What people should do: In order to assess the probability of any particular event or final outcome as objectively and realistically as possible, individuals should do the following: First, they should use the best information available. This may require supplementing their existing knowledge, experience, historical data, and projected data with additional research, further analysis of data, or expert input. Second, they should anticipate how their motives, attitudes, and personality traits might inappropriately influence their judgment and then take those insights into account when making an assessment. Third, they should determine whether the probabilities of all events on an event fork add up to 100 percent (or 1.0). If not, they should adjust each event's assessed probability as appropriate.

Identifying Mostly an Alternative's Advantages or Mostly Its Disadvantages Rather Than Identifying All of Its Advantages and Disadvantages

What people often do: The outcomes or results of any particular alternative plan or solution are bound to meet some decision-making criteria better than others. Thus, purely in terms of the criteria being used, any particular alternative is bound to have at least some basic advantages and at least some basic disadvantages. (Relative advantages and disadvantages are identified when alternatives are compared with each other in step 3 of the decision-making process.) However, due to different sets of circumstances, people often do one of the following in regard to a particular alternative: (a) identify only its advantages, (b) identify more of its advantages than its disadvantages, (c) identify only its disadvantages, or (d) identify more of its disadvantages than its advantages. If *all* the advantages and disadvantages of *all* alternatives have not been identified, individuals cannot properly evaluate and compare alternatives' pros and cons and thus cannot choose the best alternative.

What people should do: Individuals should attempt to identify all the advantages and disadvantages of each alternative. In order to do so, they should thoroughly evaluate each alternative in terms of all previously selected decision-making criteria and make a conscious effort to keep their motives and attitudes from impairing their objectivity.

Thought-Oriented Vacillation and Action-Oriented Decisiveness

When they are deciding which alternative plans or solutions to implement, thought-oriented and action-oriented people usually behave differently.

What thought-oriented individuals tend to do—and why: Thought-oriented, analytic individuals are inclined to do the following in a very thorough manner: (a) compare alternatives' relative advantages and disadvantages, (b) evaluate trade-offs among alternatives, and (c) weigh the probabilities of both desirable and undesirable outcomes. However, because they are inclined to wrestle with the complexities of a decision, they also have a tendency to become frustrated and indecisive. This is particularly the case when their analyses do not point to an alternative that

is clearly the best choice and they are experiencing what has been called the "55–45 syndrome." This term was originally used to describe a "do" versus "not do" decision-making situation in which individuals had estimated that doing X had a 55 percent chance of yielding desirable results and a 45 percent chance of yielding less desirable results, and the probabilities were too close (the uncertainty was too great) for them to choose "do X" with confidence. In general, the closer the probabilities are to 50–50, the more difficult it is for most people to make a decision. On the other hand, when the probabilities are 60–40 or, better yet, 80–20, they usually find it easier to make a decision. The term "55–45 syndrome" can also be used to describe two similar situations: first, a situation in which 55 percent of the analysis points to "do X" and 45 percent of the analysis points to "not do X" (that is, the advantages of doing X are almost countered by the disadvantages of doing X) and, second, a situation in which 55 percent of the analysis points to "do A," and 45 percent of the analysis points to "do B."

When faced with a 55–45 decision, individuals—especially analytic individuals—usually attempt to gain additional information that will (a) help reduce uncertainty, (b) clearly shift the analysis in the direction of one alternative, and, as a result, (c) help them feel more confident and comfortable in their choice.

Thought-oriented individuals tend to be more effective in some respects and less effective in others. Although they usually optimize decisions to the extent possible, many of their chosen plans or solutions are either implemented ineffectually or not implemented at all. This is often because they are uncertain and not confident and enthusiastic about their decisions and therefore have difficulty motivating and mobilizing others to implement them.

What action-oriented individuals tend to do—and why: Action-oriented people are inclined to be much more decisive than thought-oriented people, largely because they are inclined to simplify the decision-making process. Instead of wrestling with trade-offs and probabilities, they generally overlook complexities and simply compare alternatives based on the one, two, or three criteria that seem most important. As a result, they (a) regard most decisions as being rather simple, (b) regard most of their choices as being rather clear-cut, (c) seldom experience the 55–45 syndrome, (d) seldom vacillate, and (e) are generally confident of their decisions. Action-oriented people, too, are more effective in some respects and less effective in others. On one hand, largely because they are confident of their decisions, they rather easily motivate and mobilize others to implement those decisions. On the other hand, because they tend to satisfice rather than optimize their decisions, they (a) leave many problems unsolved, (b) sometimes create more problems, (c) often change or reverse their decisions, and (d) exacerbate fire fighting and time constraints.

What individuals and organizations should do: Most organizations recognize that thought-oriented behavior and action-oriented behavior are both necessary in order to operate successfully. However, because organizations also recognize that it is difficult to change the values and personality traits that underlie the two orientations, their typical solution is to place the more action-oriented individuals in managerial or decision-making positions and place the more thought-oriented individuals in analytic and planning positions. In many cases, however, this practice simply perpetuates dysfunctional managerial tendencies, such as (a) putting much greater emphasis on the action orientation, (b) inadequately developing their own and their subordinates' thinking skills, and (c) making decisions before situations are thoroughly analyzed and alternative courses of action are well planned.

It almost goes without saying that all individuals could be more effective managers and better decision makers if they were to develop all their skills to the fullest extent possible and make a conscious effort to compensate for their weaker orientation. For example, thought-oriented

individuals should make an effort to develop their action-oriented traits and skills. In the meantime, they should continue to optimize each important decision. Then, assuring themselves that they have made the best possible decision under uncertainty, they should consciously shift gears into action mode and implement their decision enthusiastically, effectively, and efficiently. Conversely, action-oriented individuals should make an effort to develop their thought-oriented traits and skills. In the meantime, they should purposefully make an effort to optimize each important decision, with the help of decision-making concepts and tools. Having done so, they can then shift gears into their normal action mode.

Organizations should promote and assist these personal efforts by

- Establishing systems, policies, and practices that will help individuals develop their thought-oriented and action-oriented skills
- Providing training that will broaden and deepen individuals' knowledge and experience
- Adopting more advanced analytic, planning, and decision-making methods, procedures, and tools
- Providing training in analytic, planning, and decision-making concepts, methods, steps, and tools
- Further developing individuals' thought-oriented and action-oriented skills

CONCLUDING REMARKS

Let us summarize and make a few additional points concerning think-work functions and problem-solving activities.

First, before thinking about any goals or plans and before taking action, analyze the situation in real depth and breadth. Think outside the box. Use checklists of factors so as not to overlook important causal or influential factors that should be addressed.

Second, remember that to be most effective in this day and age, a manager should guide subordinates' participation in performing the thought-oriented integrative functions. This helps subordinates take part in managing themselves, their personal activities, and their interactions with others. The managerial functions are not just for managers to perform. Admittedly, team-oriented management takes more integrative knowledge and interpersonal skill than simply making decisions and telling people what to do.

Third, effective managers should not simply manage by objectives, manage by results, manage by delegation, manage by exception, or manage by whatever. Effective managers must manage by performing *all* of the integrative functions with their teams. They must do the right things, and they must do them all well.

Once the analysis, planning, and decision-making (think-work) phases of the integrative process have been performed, managers and their personnel must take action. They must carry out their plans for operating, managing resources, organizing, staffing, coordinating, measuring and evaluating performance, and taking corrective action. These are the topics of Chapter Six, which addresses the implementation functions of management.