# *Managerial and Leadership Think-Work Functions*

***and***

***Associated Concepts and Practices***

## Decision Making

**Part 1:**

**General Perspectives**

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Fourth Edition

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Human Resources Development

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## DECISION MAKING

## Part 1: General Perspectives

# DECISION MAKING

## GENERAL PERSPECTIVES

### Basic Definition and Description

#### Definition of Decision Making

Decision making is the process of evaluating alternatives and deciding (choosing) which to implement.

The following are examples of alternatives that may be under consideration: (a) alternative sets of goals and associated plans; (b) alternative programs/projects; (c) alternative action plans for implementing a particular program or project; (d) alternative budgets; (e) alternative policies, procedures, or rules; (f) alternative solutions to a problem; and (g) whether or not to take advantage of an opportunity.

#### Description of the Process

The Decision making process consists of several basic steps and various sub-steps. As shown in **Figure 1** on page I-2 of the *Introduction*, analysis is very much a part of this process.

1. Analyze/test each hypothesized alternative in terms of premises and estimates regarding the future.

    a. Identify/anticipate scenarios (series or sequences of acts and events) that could occur in connection with the alternative's implementation.

        1a. Identify areas of vulnerability (potential problem areas) and the "potentially conflicting" factors that could hamper the successful implementation of the alternative.
        1b. Formulate courses of action for neutralizing or reducing the involvement or operation of potentially conflicting factors—and incorporate them into the basic plan for implementing the alternative.

        2a. Anticipate/identify possible contingencies (problems) that still might occur.
        2b. Formulate courses of action for dealing with contingencies—and incorporate them into the plan for implementing the alternative.

    b. Anticipate/identify all the (significant) possible final outcomes (results/consequences) of the alternative's implementation.

    c. Estimate the probabilities (chances of occurrence) of all (significant) events and final outcomes associated with the alternative.

2. Identify the advantages and disadvantages of each alternative's implementation and final outcome (by analyzing outcomes in terms of selected decision-making criteria).

3. Identify and evaluate/compare the relative advantages and disadvantages of all alternatives (using selected decision-making criteria).

4. Choose the best, most desirable, or most appropriate alternative(s) for implementation. (In many decision-making situations, more than one alternative may or even should be chosen.)

It should be noted that some decision-making models cite "formulating alternatives" as the first step. A few even cite "analysis of the situation" as the first step. Our model does neither, because we have concluded that a planning or problem-solving process is conducted most effectively when the steps involved are performed in the three distinct phases illustrated in **Table 1** on page I-4 of the *Introduction*: (1) analyzing the situation (in depth); (2) (brain-storming and) formulating (well-conceived) alternatives (based on a thorough analysis); and then (3) subjecting the proposed alternatives to evaluation/testing, possible modification, comparison, and final decision making.

Essentially, this process involves thinking ahead and asking, "What if (or what would happen if) I/we were to implement each of the alternatives under consideration?" Evaluating/testing and comparing alternatives before actually implementing any of them is primarily aimed at assuring that a decision will result in a desirable outcome rather than a miscalculated, undesirable outcome.

**Purposes/Benefits of a Decision-Making Process**

1. To select the most beneficial and effective courses of action, and, as a result, increase the successfulness with which either organizational, unit, or individual objectives are met.

    a. To select the best alternative set of goals and associated plans.

    b. To select the best alternatives for organizing, staffing, guiding activities, and controlling the implementation of plans.

    c. To select the best alternatives for taking advantage of opportunities.

    d. To select the best alternatives for solving problems.

2. To determine how to respond to existing and anticipated circumstances in a functional rather than miscalculated manner.

    a. To identify the alternative(s) that can be expected to produce the desired result(s) without also bringing about undesirable changes or side effects in the system of variables involved.

    b. To identify the alternative(s) that could produce less desirable results while also bringing about undesirable changes or side effects in the system of variables involved.

    c. To identify the alternative(s) that is/are most compatible with courses of action that are either (a) presently being implemented, or (b) newly proposed and under consideration.

3. To make the best possible decision under (the condition of) uncertainty.

## Basic Types of Decision-Making Situations

Decision-making situations can be divided into three main categories: (a) those that involve planning (either strategic/long-term or annual); (b) those that involve interim decision making concerning problems and opportunities; and (c) those that involve ad hoc decision making concerning problems and opportunities.

**Decision Making During Long- and Short-Term Planning Processes**

Strategic/long-range and annual planning processes involve choosing among alternative goals and plans, each of which deals with one or more of the following:

a. solving existing problems;
b. improving factors/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. **Pages PP-14 and PP-15** outline decision-making aspects of the top-down/bottom-up approach illustrated in **Figure 8** on page PP-6: Initially, top management formulates, and tentatively chooses among, alternative (sets of) goals and associated plans (often using inputs from lower levels). Next, lower levels refine, and tentatively choose among, guideline alternative (sets of) goals and plans. During these initial and subsequent steps, separate decisions are often made with respect to the following: (a) alternative goals; (b) alternative strategies and tactics; (c) alternative programs/projects; (d) alternative plans of action for implementing particular programs/projects; (e) alternative budgets; and (f) alternative policies/procedures/rules. Finally, top management makes final choices among "filtered" and "smoothed" alternative (sets of) goals and associated plans that have been developed at lower levels.

The decision-making portions of this organizational planning process are aimed at assuring that all organizational, unit, and individual goals and plans will work together to accomplish "a" through "e" at the top of the page—and will thereby maximize organizational success.

**Interim Decision-Making Situations**

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 during the interim (between annual 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 (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 (A)" or "not do something (A)." It can also involve making a preliminary choice among alternative ways to "do something" (if it were to be done). *Examples*:

a. Replace an old machine with a newly-developed machine—or not.
b. Adopt an employee's new idea (using one of several possible plans)—or not.
c. Accept a contract opportunity (under one of several alternative conditions)—or not.

In general, better interim decisions are made when (a) 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 (b) consideration is given to strategic/long-range and annual goals and associated plans, which provide broad, extended-term contexts for analyzing situations, formulating alternatives, and determining how the implementation of alternatives might affect and be affected by previously-planned activities.

**Ad Hoc Decision-Making Situations**

Although these situations involve many of the same day-to-day problems and opportunities, there is a major difference between them and interim decision-making situations: Interim situations arise in spite of effective goal setting and planning. Ad hoc situations—especially problem-solving situations—usualy arise because there has been little or no goal setting and planning. In the absence of goals and plans, there is no broad or extended-term context within which to analyze situations, formulate alternatives, and evaluate the implications of alternatives. These are the all-too-common results: Decisions are made in an ad hoc (random, reactive, uncoordinated) manner. Chosen courses of action interfere with each other. Decisions are abruptly changed. Earlier decisions place constraints on later decisions. Opportunities are lost. Problems become more serious. Problems beget more problems. And constant "fire-fighting" becomes pervasive.

**Conditions Under Which Decisions Are Made**

Decisions are made under one of two basic conditions: the "condition of certainty"; or the "condition of uncertainty." The condition of uncertainty exists because of several other conditions: (a) the condition of "incomplete/imperfect knowledge"; (b) the "condition of conflict"; (c) the "inability to control all situational variables and events"; and (d) an "unknown future." In turn, and in one way or another, all these conditions are responsible for the "condition of risk." Two other conditions are also discussed below: (a) the "single choice condition" (being able to choose only one alternative); and (b) the "multiple choice condition" (being able to choose more than one alternative).

**The Conditions of Certainty and Uncertainty**

In order to discuss conditions of certainty and uncertainty and to illustrate them in **Figure 15** on the next page, we will be using the terms "acts," "events" or "outcomes," and "probabilities" (of events or outcomes). Although these terms relate to game theory, decision theory, payoff matrices, and decision trees (all of which are discussed later), it is appropriate to define them at this point.

An alternative course of action is also called an act. If there are several possible alternatives, there are several possible acts. (Having more than one alternative act constitutes a decision-making situation.) As illustrated in **Figure 15**, two or more alternatives can be shown on an "act fork," with each act shown on its own prong of the fork.

An event is a result or consequence of an act. It can also be an outcome. As illustrated in **Figure 15-A**, one event or outcome can be shown on a single line following the act. As illustrated in **Figures 15**-B and 15-C, several possible events/outcomes can be shown on an "event fork," with each event/outcome shown on its own prong of the fork. As shown in **Figure 15-B**, innumerable possible events/outcomes can be represented by an "event fan."

Note: A series of acts and events can occur before a final outcome is reached.

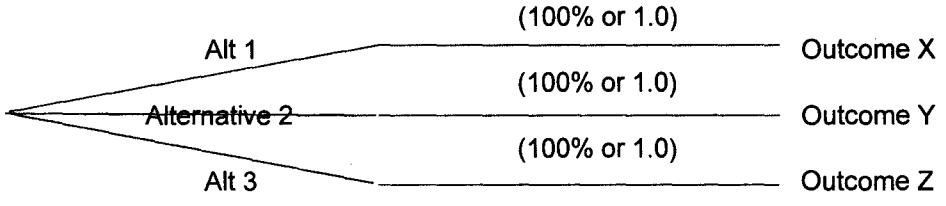
The term probability refers to the estimated like-lihood (or chance) that some event (outcome of an act)

***Figure 15: Decision Making Under Conditions of Certainty, Complete Uncertainty, and Partial Uncertainty***

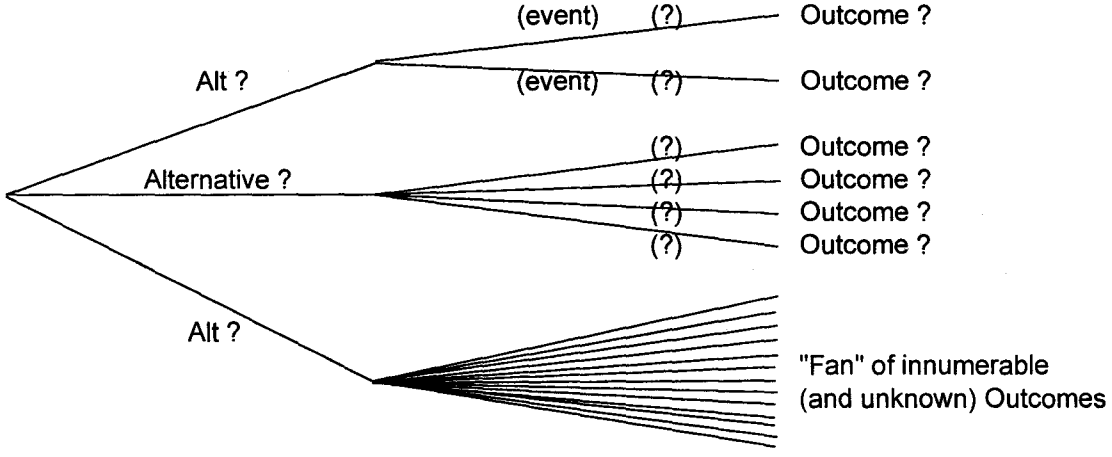
**ALTERNATIVES** (Shown on "Act Forks")

**POSSIBLE OUTCOMES** (Shown on "Event Lines/Forks/Fans") and **THE ASSESSED PROBABILITIES OF OUTCOMES**

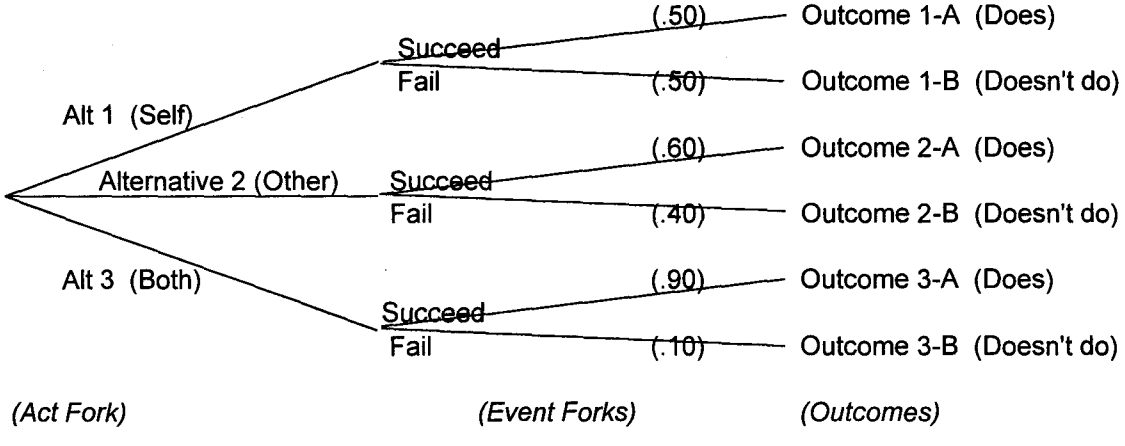
**15-A: Decision Making Under Conditions of Certainty**
[Certainty with respect to Alternatives (Acts) and Outcomes (Events)]




**15-B: Decision Making Under Conditions of Complete Uncertainty**
[Uncertainty with respect to Alternatives (Acts), Events/Outcomes, and Probabilities of Events/Outcomes]




**15-C: Decision Making Under Conditions of Partial Uncertainty**
[Uncertainty with respect to one or more Elements of a Decision]



will occur. A probability is expressed as either a percent or its decimal equivalent. Probabilities range from 0% or 0.00 (no likelihood of occurrence) to 100% or 1.00 (a certainty of occurrence). For example: If one were certain that a given act would result in a particular outcome, then one would assign a 100% (or 1.0) probability to that single outcome/ event. On the other hand, if one were uncertain as to the outcome of an act and had identified two possible outcomes (on an event fork), then one might do as follows: (a) assign a 60% (.60) probability to the outcome believed to have a 60% chance of occuring (6 times out of 10); and (b) assign a 40% (.40) probability to the outcome believed to have a 40% chance of occuring (4 times out of 10). It should be noted that, regardless of the number of possible outcomes of an act, all the probabilities of those possible events must add up to 100%, because there is a 100% chance of something occurring as a result of an act.

1. **(The Condition of) Certainty**

In theory, decisions are made under the condition of certainty when the two basic elements of decisions are known (or at least are believed to be known): (a) the various alternatives; and (b) the result or outcome of implementing each alternative. Note that we have said "outcome" rather than "possible outcomes." Knowing what will happen as a result of an act amounts to identifying a single outcome; and identifying a single known or certain outcome amounts to attributing a 100% probability to its occurrence.

Saying that decisions can be made under the condition of certainty implies that decision-makers can know everything about the past, present, and future. Although it is acknowledged that no one can know everything, decision-makers often regard alternatives and outcomes as knowns—and treat them as certainties—under these circumstances:

a. they possess considerable knowledge and experience regarding factors such as available resources, prices, costs, and volume of production and sales;
b. they possess highly accurate and verifiable past and recent data concerning the factors involved in the situation;
c. they have indentified trends (in data) that are definite and unchanging;
d. they have no reason to believe that other variables might alter the expected future outcomes; and/or
e. they believe that they can control any variables or events that might affect the desired outcomes.

**Figure 15-A** illustrates both of these two examples:

a. Faced with a decision concerning which of three U.S. Treasury bonds to buy, an individual might be "highly certain" of the following: that buying Bond 1 (Alternative 1) will return an X% yield (Outcome X); that buying Bond 2 (Alternative 2) will return a Y% yield (Outcome Y); and that buying Bond 3 (Alternative 3) will return a Z% yield (Outcome Z). The decision-maker could well be "highly certain" of the outcomes because (a) Treasury bonds return the stated yield, and (b) the government is unlikely to default.

b. Faced with a decision whether to add one, two, or three additional machines to a production facility, a decision-maker might have such accurate production and cost data that he or she is inclined to treat the following as knowns: that adding one machine (Alternative 1) has a 100% probability of resulting in Outcome X; that adding two machines (Alternative 2) is certain to result in Outcome Y; and that adding three machines (Alternative 3) will result in Outcome Z.

   In each of these situations, decision-making essentially consists of choosing the alternative having the most beneficial or desirable outcome.

   Even where alternatives and outcomes are treated as certainties, the process of making a decision can be complicated by having many possible alternatives from which to choose. In such cases, it may be necessary to use sophisticated decision-making techniques in order to select the best alternative(s).

In reality, certainty rarely exists. Regarding alternatives and outcomes as knowns is essentially either an illusion or a convenience. *Most decision-making situations involve uncertainty*.

2. **(The Condition of) Uncertainty**

Each of the following conditions involves some degree of uncertainty with respect to one or more aspects of the decision-making situation.

A. Complete uncertainty: Here, as shown in **Figure 15-B**, all aspects of the decision-making situation are uncertain. The decision-maker does not possess enough knowledge and experience to (a) identify alternatives, (b) anticipate possible outcomes of alternatives, and (c) assess the probabilities of possible outcomes. Complete uncertainty often stems from initial uncertainty with respect to alternatives: If alternatives cannot be identified, then possible outcomes cannot be identified; and if possible outcomes cannot be identified, then probabilities of those outcomes cannot be assessed. Understandably, therefore, decision making under the condition of complete uncertainty is most difficult.

This condition is more likely to exist in decision-making situations involving a high degree of novelty or complexity—e.g., launching new businesses; introducing new technologies; developing and marketing new products; and entering new domestic or foreign markets.

In reality, however, the condition of complete uncertainty is as rare as the condition of certainty. The condition of "partial uncertainty" is most prevalent.

B. Partial uncertainty: In most decision-making situations, those making the decisions may not know everything and may not be able to see the future, but they do possess enough knowledge and experience to (a) identify various feasible alternatives, (b) identify various possible outcomes of each alternative, and (c) make reasonable assessments or estimates concerning the probabilities of possible outcomes. In such situations, however, there is usually greater uncertainty associated with outcomes than with alternatives.

**Figure 15-C** illustrates this example: Wishing to persuade colleague A to do something, a decision-maker has identified three alternatives: (1) try to persuade colleague A personally; (2) ask colleague B (a person who has more influence with colleague A) to persuade Colleague A; and (3) do both Alternatives 1 and 2 (in order to produce a cumulative effect). In this decision-making situation as in most others, the decision-maker is treating the three alternatives as knowns, but is still uncertain as to their outcomes. Thus, he or she ...

has identified two possible outcomes for Alternative 1—and has assigned a 50% probability to succeeding and Outcome 1-A (colleague A does what asked); and a 50% probability to failing and Outcome 1-B (colleague A does not do what asked);

has identified two possible outcomes for Alternative 2—and has assigned a 60% probability to succeeding and Outcome 2-A (colleague A does what asked); and a 40% probability to failing and Outcome 2-B (colleague A does not do what asked); and

has identified two possible outcomes for Alternative 3—and has assigned a 90% probability to succeeding and Outcome 3-A (colleague A does what asked); and a 10% probability to failing and Outcome 3-B (colleague A does not do what asked).

In the real world, *virtually all decisions involve some degree of uncertainty with respect to alternatives and/or outcomes*.

**Conditions Underlying Uncertainty**

Four conditions (existing factors) are responsible for uncertainty: (1) incomplete and imperfect knowledge; (2) conflict; (3) the inability to control all situational variables and events; and (4) an unknown future. The first three are largely responsible for the fourth.

1. Incomplete/imperfect knowledge: All human beings' knowledge is limited or incomplete. Although we each know something about some matters, we do not know—and cannot learn—all there is to know about any matter (let alone all matters). Even collectively we do not and cannot know everything. Also, our experience, from which we gain knowledge and insight, is limited or incomplete. We have not had—and can never have—all possible experiences. Thus, we cannot know or anticipate all that could possibly happen under all possible circumstances. In addition, our knowledge is im-

perfect. Much of what we "know" is actually inaccurate or untrue. This is largely because (a) much of our data is inaccurate, incomplete, or unreliable; (b) we cannot have perfect insight into others' feelings, thoughts, and behavior; and/or (c) we assimilate observations and facts through various emotional and intellectual filters, and, as a result, often form tainted assumptions, attitudes, beliefs, conclusions, or opinions.

If our knowledge, experience, and insight could be complete and perfect, we would formulate better alternatives, be certain of outcomes, and choose better alternatives. Returning to two previous decision-making situations will illustrate this point. It will also illustrate two additional points concerning the implications of incomplete/imperfect knowledge.

In the situation illustrated in **Figure 15-C** (deciding how to persuade colleague A to do something), the decision-maker identified various alternatives and possible outcomes and assessed "reasonable probabilities" for possible outcomes. However, "various alternatives" are not necessarily "all possible (yet feasible) alternatives," "various outcomes" are not necessarily "all possible outcomes," and "reasonable probabilities" are not necessarily "the real probabilities." If the decision-maker in this situation had possessed complete/perfect knowledge and insight, then he/she would not have failed to consider these (and other) possibilities: (a) that colleague B might be unwilling to intervene in the situation; and (b) that, with respect to Alternative 3, colleague A might resent being ganged up on, and, as a result, might behave in one of four possible ways—e.g., (1) simply do what asked; (2) do what asked, but also vent displeasure; (3) simply not do what asked; or (4) not do what asked and also vent displeasure. Consideration of these (and other) possibilities would have altered the manner in which the decision was structured—and probably would have resulted in the choice of a different alternative.

In Situation "b" on page DM-5 (whether to add one, two, or three additional machines), the decision-maker regarded and treated the three alternatives and their outcomes as certainties. However, even though one may be "certain" in one's own mind that one has identified all the feasible alternatives, all the possible outcomes of those alternatives, and realistic probabilities of possible outcomes, one still cannot know that one has done so. If this particular decision-maker had possessed complete and perfect knowledge, then he or she would have been aware of these (and other) possibilities: (a) the existence of a fourth alternative involving a newly available machine capable of outproducing the two or three other machines; and (b) the worker's inabilitity and/or unwillingness to operate two or three additional machines. Consideration of these possibilities would have altered the decision's structure—and probably would have altered the choice of an alternative.

2. **(The Condition of) Conflict:** Conflict exists when there are internal and/or external factors that will tend to hamper, resist, oppose, or otherwise interfere with (a) the formulation of effective alternatives, and/or (b) the successful implementation of alternative courses of action. Conflict is especially common in situations that involve some sort of change.

   Examples of conflicting **internal** factors or variables are: budgetary constraints; (nonfacilitative) organizational structures, systems, practices, and policies/procedures/rules; an (unconducive) organizational atmosphere; and personnel's (dysfunctional) feelings, motives and attitudes. These and many other conflicting or adverse internal factors tend to interfere most often with innovative situations. For example: Budgetary constraints often preclude considering and choosing certain innovative alternatives. Various nonfacilitative and unconducive factors will (a) sometimes hamper the formulation of effective alternatives, and (b) very often interfere with the effective implementation of courses of action that will result in change. Personnel who feel threatened by change will (a) sometimes hamper the formulation of innovative alternatives, and (b) very often resist, subvert, or oppose the effective implementation of change.

   Examples of conflicting **external** factors or forces are: (adverse) natural phenomena (such as adverse climate, weather, and geography); competitors; (cumbersome or restrictive) regulations; (adverse) consumer attitudes; and (adverse) public opinion. These and many other conflicting/adverse external factors and forces tend to interfere most often with competitive situations (which also involve some sort of change). For example: Restrictive regulations and adverse public opinion will (a) sometimes preclude considering and choosing certain

alternatives, and (b) often interfere with the implementation of particular courses of action. Competitors will (a) sometimes try to influence an organization's alternatives, and (b) usually attempt to undermine or oppose an organization's successful implementation of marketing tactics (often by making counter-moves of their own).

It is in these types of situations that one should anticipate how series of acts and events might lead up to final outcomes. For example, a particular alternative might take into account the following scenario: (1) an organization initiates the implementation of a specific alternative with a first step; (2) competitors can react to that act in various ways (as perhaps indicated on an event fork); (3) the organization responds to each possible reaction (event) with various possible predetermined acts (as perhaps indicated on act forks); (4) these subsequent acts evoke further possible competitive reactions (as perhaps indicated on event forks)—and so forth. We describe scenarios (series of acts and events) in more detail when we discuss game theory and decision trees.

In many if not most decision-making situations, therefore, the condition of conflict puts alternatives and outcomes in doubt. It can be partly responsible for some degree of uncertainty with respect to (the feasibility of) alternatives. More important, it can be largely responsible for a high degree of uncertainty with respect to outcomes. The latter case is especially true where outcomes can be affected by a number of adverse and unpredictable internal and external factors or forces. In fact, *the larger the number of potentially conflicting variables operating in a situation, the greater the resulting uncertainty*.

3. **Inability to Control All Variables and Events**: Just as potential energy and kinetic energy are two different states of energy, potential conflict is one thing and actual conflict is another. The existence of potentially conflicting factors does not necessarily mean that they will actually exert adverse effects, cause adverse or interfering events, and thereby alter expected, predicted, or desired outcomes. Whether or not they will do so largely depends on the following:

   A. The characteristics of the particular internal and external factors that are involved or operating in a situation:

      1. which factors are "potentially conflicting factors";
      2. the manner and extent to which each of these factors can interfere with expected, predicted, or desired outcomes;
      3. which potentially conflicting factors can be controlled or at least influenced in ways that might prevent, neutralize, or at least minimize their involvement or operation in a situation;
      4. the extent to which these factors can be controlled or influenced;
      5. the degree of difficulty involved in controlling or influencing these factors;
      6. the cost involved in controlling or influencing these factors;
      7. whether or not the contingencies (adverse effects/events) that these factors still might cause can be dealt with effectively (during the implementation of alternatives);
      8. the extent to which these contingencies can be dealt with effectively;
      9. the degree of difficulty involved in dealing with these contingencies effectively;
      10. the cost involved in dealing with these contingencies effectively;
      11. which potentially conflicting factors can be neither controlled nor influenced;
      12. whether or not the contingencies that these factors tend to cause can be dealt with effectively (during the implementation of alternatives).
      13. the extent to which these contingencies can be dealt with effectively;
      14. the degree of difficulty involved in dealing with these contingencies effectively;
      15. the cost involved in dealing with these contingencies effectively.

   B. The effectiveness with which decision-makers can prevent, neutralize, or at least minimize the involvement or operation of controllable/influenceable factors, thereby (a) averting some conflicts/ contingencies, and (b) reducing if not minimizing the number and seriousness of others:

      1. decision-makers' knowledge and experience concerning these factors and how to control or influence them;
      2. whether or not they formulate courses of action for controlling or influencing these factors—and incorporate them into their basic

plans for implementing alternatives;
3. the effectiveness of these courses of action;
4. the degree of difficulty involved in implementing these courses of action; and
5. the cost involved in implementing these courses of action.

C. The effectiveness with which decision-makers can deal with the conflicts/contingencies that controllable/influenceable factors still might cause:

1. decision-makers' knowledge and experience with respect to dealing with such contingencies (solving the problems and/or compensating for their adverse effects);
2. whether or not they formulate courses of action for dealing with these contingencies—and incorporate them into their basic plans for implementing alternatives;
3. the effectiveness of these courses of action;
4. the degree of difficulty involved in their implementation; and
5. the cost involved in their implementation.

D. The effectiveness with which decision-makers can deal with the conflicts/contingencies that uncontrollable/uninfluenceable factors can cause: Factors C(1-5) above apply here, also.

Below are examples of potentially conflicting factors. They are grouped together according to (a) whether they are internal or external factors; and (b) the extent to which they can be either controlled or influenced (or not). With respect to controllable/influenceable factors, we make broad generalizations concerning the degrees of difficulty and the costs involved in effectively controlling or influencing them.

Internal Factors

a. Internal factors that can be completely controlled: virtually none.

b. Several internal factors that can be controlled to a great extent are: machines; equipment; and automated processes. In general, effectively controlling machines is neither difficult nor costly, but effectively controlling automated processes can be very difficult and costly.

c. Several internal factors that can be controlled to a large extent are: organizational structures, systems, practices, and policies, procedures, and rules; subsidiary units/divisions; and employees' job-related performance and behavior. (Authoritarian organizations and managers are noted for trying to use the organizational factors to control personnel and make their activities and behavior more effective, efficient, and predictable.) In general, controlling these factors is moderately difficult and costly.

d. Several internal factors that can be influenced to varying extents are: managers', supervisors', and workers' needs/drives, feelings, motives, attitudes, knowledge, experience, skills, and behavior; and groups' norms. Influencing many of these factors effectively can be very difficult and very costly. (Thus, many organizations and managers simply attempt to control behavior. However, by failing to affect factors that underlie or significantly affect behavior, they do not maximize results.)

External Factors

a. External factors that can be completely controlled: virtually none.

b. Several external factors that can be controlled to a great extent are: suppliers and customers who are completely dependent on an organization; and parties to legal and binding contracts. In general, effectively controlling these factors is moderately difficult and moderately expensive.

c. Several external factors that can be influenced to varying extents) are: consumers' attitudes and purchasing behavior; suppliers' attitudes and behavior; competitors' attitudes and behavior; and public opinion. Effectively influencing these factors is generally very difficult and very costly.

d. Several external factors that can be influenced to a relatively small extent are large domestic, foreign, and international institutions. Effectively influencing these factors to any significant extent is generally very difficult and prohibitively expensive.

e. Several external factors that can be neither controlled nor influenced (at least in the short term) are: natural phenomena such as climate, weather, and geography.

A final generalization that can be drawn from the examples above: Internal factors can usually be controlled or influenced to a greater extent, with less difficulty, and at less cost than external factors.

The discussion above makes it apparent that those who are involved in the decision-making process should do their best to . . .

1. identify potentially conflicting factors or variables;
2. anticipate how they might adversely affect events and final outcomes;
3. identify which factors can be controlled and which can be influenced;
4. formulate courses of action for neutralizing, minimizing, or at least reducing the involvement or operation of controllable/influenceable factors (within the context of organizational, unit, or individual capabilities);
5. formulate courses of action for dealing with the contingencies that controllable/influenceable factors still might cause (within the context of organizational, unit, or individual capabilities); and
6. formulate courses of action for dealing with the contingencies that uncontrollable/uninfluenceable factors can tend to cause (within the context of organizational, unit, or individual capabilities); and
7. incorporate the courses of action formulated in Steps 4, 5, and 6 into the basic plans for implementing alternatives.

However, regardless of these efforts, it remains that decision-makers cannot (a) successfully control or even influence all potentially conflicting variables; and (b) effectively deal with all possible contingencies. Thus, even the best decision-makers and their "best laid plans" cannot completely eliminate conflict and remove uncertainty.

4. **Unknown Future**: There are no absolute certainties with respect to the future. Even though we can use our knowledge, experience, and imagination to anticipate or predict future events and outcomes, several major circumstances limit our foresight:

   a. The nature of time prevents us from witnessing the future until it actually occurs and becomes the present.

   b. Countless factors—many of them potentially conflicting factors—are involved or operating in all situations and make the future difficult to predict. These factors can interact in an inconceivable number of possible ways, and, therefore, can bring about an inconceivable number of possible events and outcomes. For example: Many people affect the future. Because there are countless ways in which their needs/drives, motives, attitudes, (limited) knowledge and experience, skills, and personality traits can interact to affect events and outcomes, the future lies at the end of countless possible turns.

   c. Incomplete and imperfect knowledge places the future beyond our control. We do not possess all knowledge concerning (a) all internal and external factors; (b) all the ways in which these factors can interact; (c) all the events or outcomes that can result; (d) how to affect the involvement or operation of the factors themselves; or (e) how to deal with all possible contingencies. Therefore, although we can formulate courses of action for controlling or influencing some factors with some success, and although we can formulate courses of action for dealing with some possible contingencies with some effectiveness, we cannot deal with all factors and all contingencies as successfully as necessary to bring about all of the most desirable events and outcomes.

It must be acknowledged that the short term is less difficult to predict than the long term. When predicting short-term events and outcomes, we have the benefit of recent data and experience. However, the further out in time we attempt to look, the greater the difficulty we experience and the less accurate our predictions. Nonetheless, regardless of the time frame, the future cannot be known—and *uncertainty pervades virtually all decision-making situations*.

**(The Condition or Element of) Risk**

The three words most often associated with the word "risk" are "uncertainty," "gamble," and "chance." When a gambler plays a game of chance, money is usually "at stake" or "at risk." Depending on the roll of a die or the turn of a card (over which the gambler has no control), the gambler stands to gain money (a positive or desirable outcome) or stands to lose money (a negative or undesirable outcome). However, before the die is rolled or the card is turned, the gambler is uncertain about the outcome and is faced with the risk (chance) of losing.

Virtually all organizational decisions, whether they involve plans or solutions to problems, are made under the condition of risk. Decision-making risk exists when . . .

a. one is faced with a decision (a choice as to which alternative course of action to take);
b. uncertainty exists (particularly with respect to outcomes, but, as will be discussed below, also with respect to alternatives);
c. given uncertainty, something is "at risk" (e.g., attitudes, performance, productivity, total sales, cash flow, profit, self-image, power, reputation, status, influence, or a relationship); and
d. given uncertainty, there is a risk (some magnitude of chance) that, instead of the most desirable outcome occurring, some undesirable (dysfunctional) or less than desirable (somewhat dysfunctional) outcome will occur as a result of a decision.

A decision can result in an undesirable or less than desirable outcome for any of these basic reasons (and many underlying reasons):

1. A poor/inappropriate alternative has been chosen and implemented.

2. A basically good alternative has been chosen, but has been implemented unsuccessfully—because its plan for implementation was poorly designed in one or more of these respects:

    a. it was ineffective —
        1. it did not identify/outline all the basic tasks/activities required to implement the chosen alternative successfully;
        2. it contained no courses of action for controlling or influencing potentially conflicting factors;
        3. it contained ineffective courses of action for controlling or influencing potentially conflicting factors;
        4. it contained no remedial courses of action for dealing with contingencies that could have been anticipated; and/or
        5. it contained ineffective remedial courses of action for dealing with contingencies that were anticipated; and/or

    b. it was inefficient (it did not outline well-coordinated tasks/activities).

3. A good, well-planned alternative has been chosen and implemented, but something has still gone wrong—because . . .

    a. contingencies that could not have been anticipated occurred, were virtually impossible to deal with effectively when they occurred, and have interfered with the alternative's (otherwise successful) implementation; or
    b. contingencies that were anticipated occurred, could not be handled with complete success (even though the "best possible" remedial plans were implemented), and have interfered with the alternative's (otherwise successful) implementation; and/or
    c. one or more people did not follow the plan—or simply performed poorly.

Although the condition/element of risk exists in virtually all decision-making situations, two aspects of risk vary from one decision-making situation to another: the "amount at risk" and the "level of risk."

A. Amount at risk: This term refers to how much of something stands to be lost if the most undesirable final outcome were to occur. [For all practical purposes, the amount at risk is essentially the greatest amount at risk—and the most undesirable outcome (of all the possible outcomes of all of the various alternatives) generally involves risking the greatest amount of something.]

*Example*: Since organizations normally attempt to place a dollar value on all possible outcomes, let us say that an organization has identified three possible outcomes and has placed a +$5,000 value on the first (a $5,000 net cash inflow), a $0 value

on the second (a neutral cash flow), and a (negative ) -$3,000 value on the third (a $3,000 net cash outflow). In this example, the organization is risking more than a $3,000 net cash outflow. Since the third outcome could occur (has some probability of occurring), the total amount at risk is $8,000—i.e., the $3,000 actual cash loss plus the missed opportunity to realize a $5,000 net cash inflow (a $5,000 "opportunity cost").

B. Level of risk: This term is more difficult to define, because risk, conflict, uncertainty, and outcomes are all related. Since uncertainty directly underlies risk, the level of risk can be defined as (1) the level of overall uncertainty with respect to alternatives and outcomes. Since conflict is largely responsible for uncertainty, "level of risk" can also be defined as (2) the level of conflict involved in a decision-making situation. In addition, since risk can be associated with outcomes, level of risk can be defined as (3) the percentage probability (magnitude of chance) that 1, 2, or 3 on page DM-11 might occur and result in some undesirable or less than desirable outcome. We prefer to use the first definition—the level of overall uncertainty with respect to alternatives and outcomes.

Note: We use the term "overall uncertainty" for a reason that we were unable to discuss earlier: uncertainty with respect to alternatives and uncertainty with respect to outcomes are actually interdependent variables that affect each other. For example:

> Uncertainty with respect to alternatives is a function of (a) uncertainty as to whether or not all possible alternatives have been identified; and (b) uncertainty as to whether or not all the alternatives are good alternatives (have been well planned and contain preventive and remedial courses of action that will deal effectively with potentialy conflicting factors and the contingencies for which they may be responsible). Since the effectiveness of preventive and remedial courses of action largely depends on the effectiveness with which uncertain events and final outcomes have been anticipated, uncertainty with respect to events and final outcomes affects (tends to increase) uncertainty with respect to alternatives.
>
> On the other hand, uncertainty with respect to events and final outcomes is a function of (a) uncertainty as to whether or not all the possible events and final outcomes (associated with all alternatives) have been anticipated; and (b) uncertainty with respect to the probabilities that the various events and final outcomes will occur. Since the probabilities associated with events and final outcomes largely depend on the degrees of effectiveness with which plans for implementing alternatives will prevent conflicts and deal with contingencies, uncertainty with respect to alternatives (and the effectiveness of their plans for implementation) affects (tends to increase) uncertainty with respect to events and final outcomes.
>
> Thus, the levels of both types of uncertainties affect each other, the level of "overall (or cumulative) uncertainty" associated with a decision, and the "level of risk" involved in making a choice. In general, the greater the overall uncertainty involved in a decision-making situation, the higher the level of risk involved in making the decision.

Basically, the level of risk depends on and varies with two types of factors: risk-generating factors; and risk-reducing factors. Both types of factors affect the resulting or actual level of risk that exists at the point where a decision is actually made.

Risk-generating factors are (a) the number of potentially conflicting factors, and (b) the seriousness of potential conflicts or contingencies. These factors are mostly responsible for the "potential or inherent level of risk" that initially exists in a decision-making situation (before anything is done to deal with conflicts and contingencies). The greater the number and seriousness of these factors, the greater the potential or inherent level of risk.

Risk-reducing factors include: (a) risk-reducing activities (and the effectiveness with which they are performed); and (b) the characteristics of the analysts, planners, and decision-makers who are (or have been) involved in the planning or problem-solving situation. These factors affect the extent to which the "potential or inherent level of risk" is reduced to a lower "resulting or actual

level." Essentially, they reduce the potential or inherent level of risk by dealing with (reducing) potential conflicts.

a. The effectiveness of conflict/uncertainty/risk-reducing activities: The extent to which risk is reduced to a lower resulting/actual level directly depends on:

    1. how well (how thoroughly, knowledgeably, and insightfully) the situation has been analyzed and influential or causal factors and potentially conflicting factors have been identified (during the analysis phase);
    2. how many possible (yet feasible) alternatives have been brainstormed and formulated (during the planning or formulation of solutions phase);
    3. the effectiveness with which the (basic) plans for implementing alternatives have been developed (during the planning or formulation of solutions phase);
    4. how knowledgeably and insightfully the possible events and final outcomes associated with each alternative have been identified or anticipated (during the decision-making phase);
    5. the effectiveness of preventive courses of action (aimed at controlling or influencing potentially conflicting factors) that have been incorporated into basic plans for implementing alternatives (during the decision-making phase);
    6. the effectiveness of remedial courses of action (aimed at resolving problems or compensating for the effects brought about by contingencies) that have been incorporated into basic plans for implementing alternatives (during the decision-making phase); and
    7. the realism or accuracy of the probabilities that have been assessed for possible events and final outcomes (during the decision-making phase).

b. Analysts'/planners'/decision-makers' characteristics: The following determine how effectively conflict/uncertainty/risk-reducing activities are performed: (a) motivational characteristics (needs/drives, values, attitudes); (b) informational knowledge and experience; (c) knowledge and experience regarding the use of think-work methods and tools; (d) mental skills; and (e) behavioral tendencies. If the individuals involved possess desirable characteristics and perform effectively, they can reduce and perhaps even minimize the levels of conflict and risk.

**Number of Alternatives That Can Be Chosen**

Many decision-making situations are basically multiple choice situations. In these, more than one of the alternatives can be chosen for implementation. Many other decision-making situations are basically single choice situations. In these, only one of the alternatives can be chosen. In strategic/long-range and annual planning situations, however, both multiple choice decisions and single choice decisions are made—but at different points in the planning process.

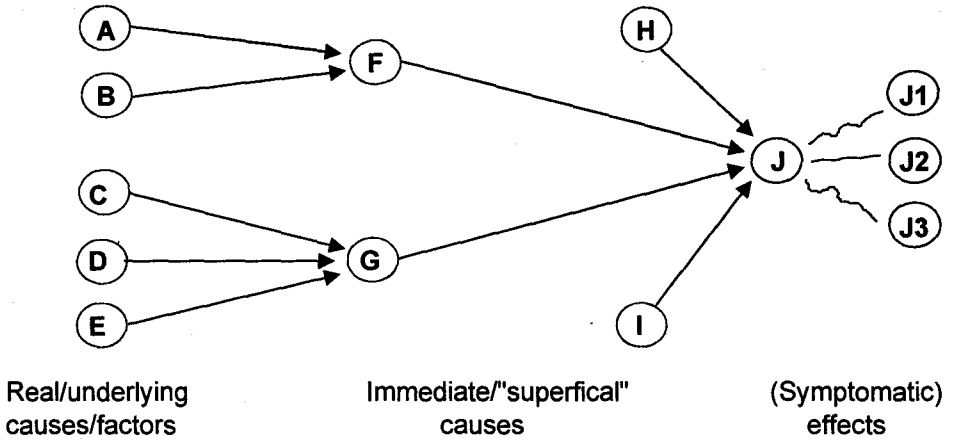
1. **Multiple Choices** — choice of (decision to implement) more than one alternative

    More than one alternative can be chosen for implementation when the various alternatives are not mutually exclusive—i.e., when implementing any one alternative does not obviate or preclude the implementation of any other(s). Where the alternatives are non-exclusive, several or all of these circumstances can exist:

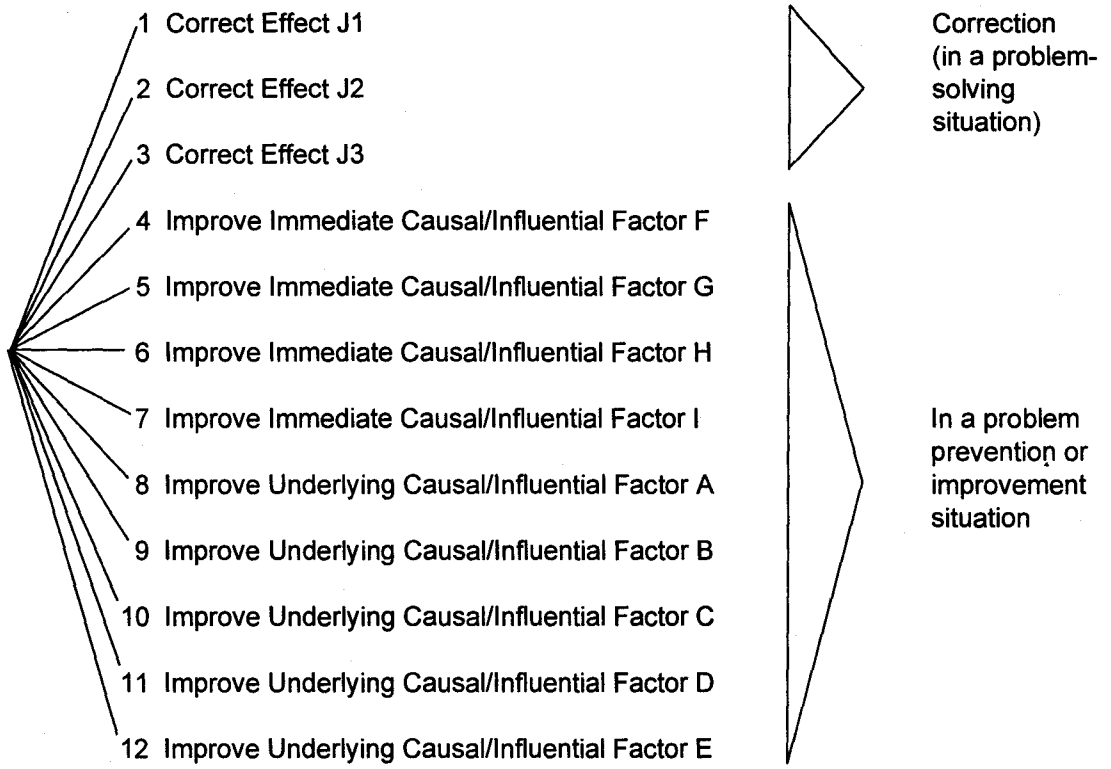
    a. many influential factors (in a system of interacting factors or variables) must be improved in order to either improve a situation or prevent a problem;
    b. many causal factors, operating together in various cause-and-effect sequences, must be dealt with in order to solve (correct) a problem and 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, wherein each course of action supports the effectiveness of the others and helps to maximize the final outcome; and/or
    d. each alternative course of action does not involve significant resources, and implementing various courses of action would not exceed budgetary constraints.

***Figure 16: Example of a Multiple Choice Decision in a Problem-Solving Situation (or in a Problem Prevention Situation or an Improvement Situation)***

**16-A: Chain of Causes and Effects Involved in a (Simplified) Problem Situation**




**16-B: Act Fork Indicating Various "Non-Exclusive" Alternative Courses of Action for Solving a Problem (or Preventing a Problem or Improving a Situation)**



a. Multiple choice decisions involved in interim and ad hoc problem-solving situations — The following is a typical example of such situations:

**Figure 16-A** illustrates a group's analysis of departmental problem "J." The group quickly identified the symptoms (adverse effects) of the problem situation as being J1, J2, and J3. Next, it identified the immediate/superficial causes as being (causal) factors F, G, H, and I. Then, by probing more deeply into the system of factors or variables that could be involved in the situation, by identifying cause-and-effect relationships among factors or variables, and by tracing backwards through sequences of causes and effects, the group identified the real/underlying causes as being (causal) factors A and B and factors C, D, and E.

**Figure 16-B** indicates the group's list of possible/alternative courses of action for dealing with problem situation J. Several group members focused on the problem's symptoms—and suggested courses of action 1 through 3 for correcting or compensating for (symptomatic) effects J1, J2, and J3. Other group members focused on the problem's causes —and brain-stormed courses of action 4 through 12 for improving/correcting causal factors A through I and preventing the situation from recurring. (In effect, their list of alternative courses of action became the twelve-pronged act fork in Figure 16-B.) Recognizing that solving the problem situation effectively would require dealing with all the causes and effects in a systematic manner, determining that none of the courses of action would conflict with any others, and determining that the total cost of implementing all these courses of action would be negligible, the group decided to implement all the courses of action. In other words, the group decided to implement a system of solutions to deal with a system of causes and effects. So that the various courses of action would be carried out in a logical and coordinated manner, the group designed a small project (and integrated action plan) for solving problem situation J.

> Note: In many interim and ad hoc problem-solving situations, it is not possible to choose and implement all the desirable solutions. Too often, adequate funds for dealing with contingencies have not been set aside, and the resulting budgetary constraints prevent choosing to implement certain desirable but costly courses of action.

b. Multiple choice decisions involved in the annual planning process

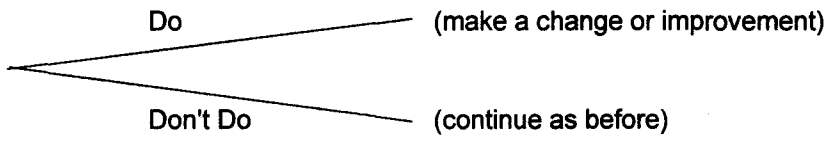
Note: Although initial multiple choice decisions (and subsequent single choice decisions) are made during both annual and strategic/long-range planning processes, our discussions at this point deal only with the annual process. The much more complicated strategic/long-range process will be discussed in a later section that describes planning/decision-making tools for handling complexity.

Especially when the annual process is conducted within the context of previously established strategic/long-range goals and plans, it tends to be focused on (a) solving existing and anticipated short-term problems, (b) making short-term improvements, and (c) taking advantage of short-term opportunities. Therefore, as in the cases of interim and ad hoc problem-solving and improvement situations, multiple choice decision-making generally results from (and follows) the analyzing of problem and improvement situations. For example:

> During the analysis phase, a multi-factor analytic diagram can be developed for each particular existing problem situation, anticipated problem situation, and improvement situation. (Although each diagram would resemble Figure 16-A on page DM-14, it could easily involve more factors/variables and be much more complex.) Since many of the factors/variables operating in an organizational/environmental system are interrelated and can be involved in more than one situation, a number of these diagrams may be integrated at some point.
>
> Next, during the planning phase, both planning and decision-making steps are performed. The following are the initial steps of a common scenario:
>
> > First, based on the multi-factor analysis of each particular situation, possible courses of action for correcting, improving, or otherwise dealing with causal/influential factors are formulated and listed.

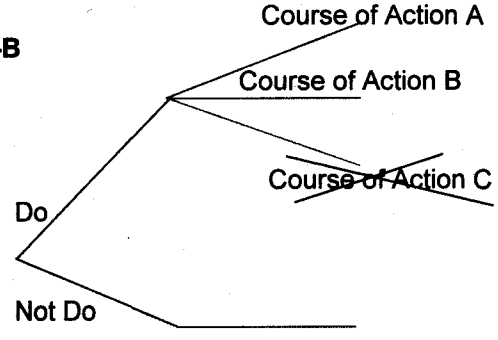
## *Figure 17: Examples of Single Choice Decisions Involving Opportunities*

### 17-A: One Opportunity -- Choose One of Two Alternatives



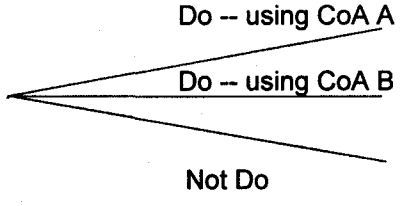

### 17-B and C: One Opportunity -- Choose One of Several Alternatives

**17-B**




(Initial Diagram)

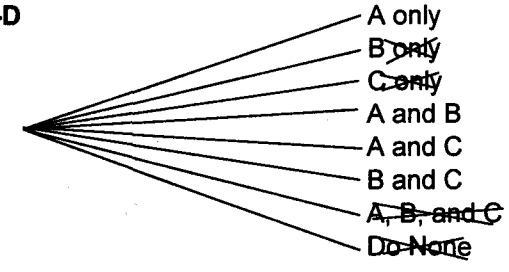
**17-C**




(Final, Corrected Diagram)

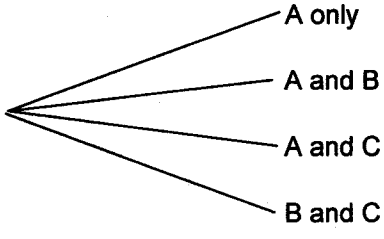
### 17-D and E: Several Opportunities -- Choose One of Several Alternatives (or Combinations)

**17-D**




(Initial diagram)

**17-E**




(Final diagram)

(An act fork resembling Figure 16-B on page DM-14 might be used to show the set of alternative courses of action relating to a particular situation—but it could easily have more prongs for more courses of action for dealing with more factors.)

Then, with respect to each particular situation, a multiple choice decision is made—i.e., various courses of action (for dealing with various factors or variables involved in a particular situation) are (tentatively) chosen for implementation.

Once these initial multiple choice decisions have been made, the following planning/budgeting steps are taken in preparation for making single choice decisions concerning alternative programs/projects and action plans:

1. The courses of action associated with each particular situation are organized into a particular program/project. Courses of action associated with several closely-related situations may be organized into a more encompassing program/project.
2. Alternative action plans for implementing each particular program/project are formulated. Each alternative action plan for a particular program/project will have the previously-chosen courses of action incorporated into it.
3. The benefits and costs associated with each alternative action plan are projected/estimated.

2. **Single Choice** — choice of (decision to implement) only one alternative

Only one alternative can be chosen when the various alternatives are mutually exclusive—i.e., when implementing any one alternative essentially obviates or precludes the implementation of any other(s). Where mutual exclusivity exists, several or all of these circumstances can exist:

a. none of the alternatives are meant to be implemented along with any 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; and/or
d. implementing any alternative would require a significant amount of resources, and implementing more than one would exceed budgetary constraints.

a. Single choice decisions where interim or ad hoc opportunities have arisen — The following are examples of several common situations:

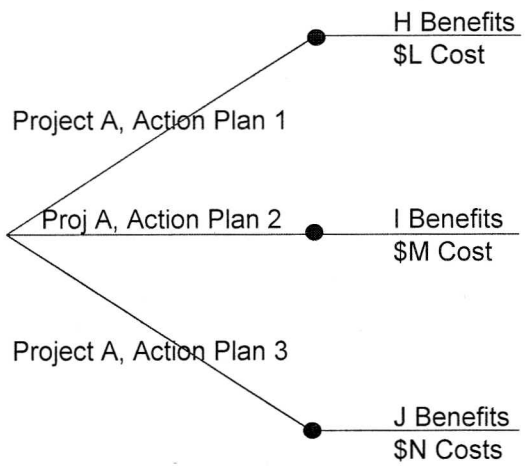
1. One opportunity, two alternatives — i.e., choose whether to do something (make a change) or to not do something (and continue as before). *Example*: "Replace a reliable but older machine with a newly-developed machine—or not." As shown in **Figure 17-A** on page DM-16, this decision is diagramed using a two-pronged act fork.

2. One opportunity, several alternatives — i.e., choose whether to do something in one of several possible ways—or to not do it. *Example*: "Adopt an employee's new idea using one of three possible courses of action—or not adopt it." **Figure 17-B** (page DM-16) shows how this decision might be initially but incorrectly diagramed. Figure 17-C is a final, corrected, three-pronged diagram of the decision. It reflects the discarding of the third alternative course of action for implementing the idea (because that alternative was immediately determined to be unfeasible). It also combines the two connected act forks in Figure 17-B. According to decision tree diagraming conventions, an act fork should not be followed by another act fork. Instead, all possible acts—including combinations of acts—should be shown on a single fork.

3. Several opportunities, several alternatives (including combinations of basic alternatives) *Example*: A company has received three unexpected orders at the same time—a large order from regular customer A; a medium order from occasional customer B; and a medium order from new customer C.

***Figure 18: Examples of Single-Choice Decisions Involved in the Annual Planning Process***

**18-A: Choice of One Action Plan**




**18-B: Choice of Program(s)/Project(s)**

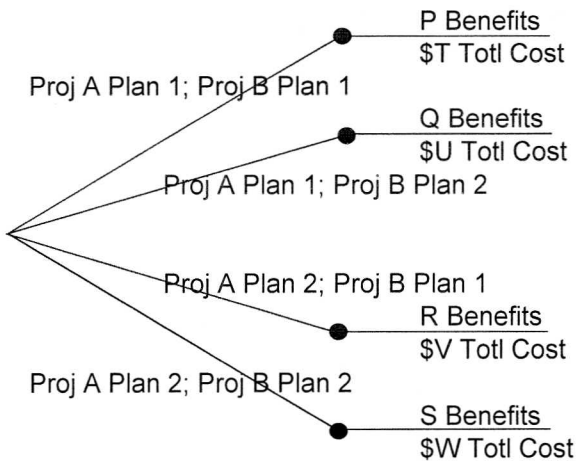



**Figure 17-D** (page DM-16) is an initial diagram of the company's alternatives: fill A's order; fill B's order; fill C's order; fill orders of A and B; fill orders of A and C; fill orders of B and C; fill orders of A, B, and C; or fill none of the orders. Wishing to fill as many orders as plant capacity will allow, the sales manager initially sorts out the alternatives by comparing combinations of total orders with remaining capacity. As a result, she draws the final act fork in **Figure 17-E**, which indicates that filling several combinations of orders would be possible, but filling all three orders would exceed capacity.

To help make a decision in each of the situations described above, a manager might construct a "decision tree" by adding the following to the initial decision forks in Figures 17 A, C, and E: (a) event forks representing possible events (including cash flows); and (b) subsequent act forks representing possible responses to various events. [Decision trees are discussed on pages DM-67 to DM-71.]

b. Single choice decisions involved in the (annual) planning process (at the unit level)

Units are ready to make single choice decisions concerning alternative plans once they have (1) organized the previously chosen courses of action into programs/projects; (2) formulated one or more alternative action plans for implementing each program/project; and (3) identified/estimated the outcomes (budgetary benefits and costs) of each program's/project's action plan(s).

In the examples below, we assume that, for each program/project, units will have formulated (or at least roughed out) three alternative action plans (which are essentially three budgetary versions of a basic action plan): (1) a maximum cost alternative aimed at maximizing results; (2) a minimum cost or bare bones alternative aimed at producing acceptable results; and (3) a medium cost or "in between" alternative aimed at producing medium results. Although formulating three alternative action plans (budgets) for each program/project takes time, it provides planning, budgeting, and decision-making flexibility. When confronted by

budgetary constraints and cutbacks, units can rather quickly and easily piece together a coherent, integrated package of action plans and budgets that will enable them to conduct all of their operating and resources/structural programs/projects within budgetary limitations.

> Note: In many if not most organizations, units simply formulate (and, in effect, choose) one best (and rather costly) action plan for each program/project. However, when faced with having to pare their budgets in order to meet budgetary limitations or cutbacks, they often spin wheels and spend a great amount of time trying to identify areas in various programs'/projects' action plans and budgets where costs can be reduced without significantly impairing overall results.

The two examples below actually represent two separate approaches for choosing among alternatives. Both have advantages and disadvantages.

1. With respect to each proposed unit program/project, units (tentatively) choose one of the alternative action plans (budgets) for implementation Here, units choose one alternative action plan (or budget) for each particular program/project (in its turn). The three-prong act fork in **Figure 18-A** on the facing page illustrates one such decision: "With respect to the alternatives for implementing project A, (tentatively) choose either action plan (budget) 1, action plan (budget) 2, or action plan (budget) 3."

   When making each decision, managers can use a table to compare action plans based on criteria such as these: (a) feasibility; (b) benefits; (c) total cost; (d) cost-effectiveness; (e) cost/benefit ratio; (f) net present value (of discounted cash flows); and (g) budgetary implications. [See the comparative matrix in **Exhibit AF** on page DM-74, where action plans 1, 2, and 3 can be substituted for programs A, B, and C.] (After choosing the "best" plan/budget for each program/project, managers may later resort to implementing lower-cost but less effective action plans when having to make budgetary cuts.)

   In order to make a decision that accounts for possible future events and subsequent acts relating to alternative action plans, a unit/manager might construct a decision tree by adding event forks and additional act forks to the basic decision fork in Figure 18-A. [Again, see pages DM-67 to DM-71.]

   This approach has two advantages: (a) it is relatively easy to use; and (b) it can be used in conjunction with the next approach. However, it also has these two related disadvantages: (a) it does not account for degrees of compatibility among different programs'/projects' action plans; and (b) it does not account for the total costs and overall benefits that would result from implementating each possible combination of programs'/projects' alternative action plans.

2. Units (tentatively) choose one combination of action plans (budgets) from all the possible combinations of action plans (budgets) for implementing all programs/projects Here, in other words, units choose the one best combination (or integrated package) of alternative action plans (budgets) for implementing all their (proposed) operating and resources/structural programs/projects. The four-prong act fork in **Figure 18-B** illustrates a highly simplified example that involves only two alternative actions plans for only two programs/projects: "(Tentatively) choose to implement one of the following combinations: project A plan 1 and project B plan 1; project A plan 1 and project B plan 2; project A plan 2 and project B plan 1; or project A plan 2 and project B plan 2."

   Since formulating three alternative action plans for a total of six operating and resources/structural programs/projects results in 324 possible combinations (and, therefore, 324 prongs on a decision fork), units will find it necessary to reduce the number of combinations to manageable proportions so that they can construct a much less complicated decision fork (or comparative matrix). They can take several of the following steps in order to do so:

1. use the previously-described approach (as a preliminary step) to select the best alternative action plan (budget) associated with each of the highest-priority programs/ projects;
2. disregard/eliminate alternative action plans that are budgetarily or otherwise incompatible with those of high-priority programs/projects —e.g., disregard/eliminate the two higher-cost alternative action plans associated with the lowest-priority programs/projects; and/or
3. use the previously-described approach (as a preliminary step) to select the two best action plans (budgets) associated with each of the lowest-priority programs/projects.

Once the number of combinations of alternative plans has been reduced, managers can use the comparative matrix mentioned above to help compare the alternatives in terms of various decision-making criteria. It should be obvious, however, that a matrix having, say, ten to twenty alternatives will be much more complicated than a matrix having only three alternatives.

Here, too, it is possible to construct a decision tree having event forks and subsequent act forks that account for possible future events and organizational responses. However, a tree having more than, say, five or six alternatives on the decision fork can be very difficult to construct and can become phenomenally complicated. Using such a tree generally requires the development of a computer model.

This approach has two advantages: (a) it enables managers to account for the compatibility of alternative action plans; and (b) it enables managers to make a decision based on the total costs and overall benefits that are expected to result from implementing each alternative combination of plans. However, it also has one great disadvantage: because of its complexity, it can be very difficult to use.

If given a choice between the two approaches described above, most managers would choose to use the first approach because of its relative simplicity. In most organizations, however, units/managers actually use the even simpler approach described in the note at the top left of page DM-19.

## Psychological and Other Phenomena That Underlie Decision-Making Problems and Pitfalls

### Basic Impediments to Effective Decision Making

The "best" or "most rational" decisions can be made when the following are conducive to effective decision-making: (a) the characteristics of decision-makers; (b) organizational attitudes, systems, and practices; and (c) environmental factors. Unfortunately, upon studying decision-making processes, Herbert Simon[34] concluded that human decision making is "bounded" by factors such as mental capacities, emotions, the inability to see the future, and uncontrollable environmental variables. To describe the situation, he coined the term, "bounded rationality."

The following are basic reasons why people generally do not make the best possible decisions:

1. Basic personal impediments to more effective decision making:

   a. People possess incomplete and imperfect knowledge and experience. Consequently, they cannot (a) formulate all possible yet viable alternatives; (b) anticipate all possible events and final outcomes; (c) assess the most realistic probabilities that events/outcomes will occur; and (d) identify all the advantages and disadvantages of alternatives.

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

c. Most people are relatively low in their knowledge of and ability to use decision-making concepts, methods, and tools. The lower they are, the less they are able to (a) structure decision-making situations effectively, 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.

d. People in general do not possess a set of values, attitudes, and behavioral tendencies (personality traits) that is entirely functional for decision making. An "entirely functional set" of these characteristics would motivate and enable them to do all 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 regarding the occurrence of events and outcomes; (g) identify all the advantages and disadvantages of alternatives; (h) very 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:

    1. A relatively high level of the theoretical (or intellectual) value underlies tendencies to be analytic, to think in terms of multi-causality, and to think things out thoroughly. It also contributes to tendencies to assess probabilities realistically and to weigh advantages and disadvantages objectively.
    2. A relatively high level of adaptability underlies a tolerance for details and complexities.
    3. A relatively high level of orderliness underlies an inclination to deal with details and complexities in an organized, systematic manner.
    4. A relatively high level of original thinking underlies an inclination to think imaginatively regarding possible events and outcomes.
    5. 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. They also contribute to tendencies to assess probabilities realistically and to weigh advantages and disadvantages objectively.
    6. Relatively high levels of the achievement value and goal-orientedness largely underlie an inclination to seek optimal decisions that will maximize results.
    7. Relatively high levels of self-confidence and decisiveness contribute to the ability to make difficult decisions under uncertainty.

    Note: Due to the reverse correlations that exist between many 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.)

2. Basic organizational impediments to more effective decision making: Many if not most organizations do not create an environment that both promotes and enables effective decision making.

    a. Many if not most organizations value action more than thought. This is usually because they associate results with action rather than thought.

    b. Many organizations value short-term results more than long-term results. This is usually because they are preoccupied with their current profit, earnings per share, and stock price.

    c. Due to (a) and (b) above, many if not most 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.

    d. Many organizations 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. As a consequence, personnel are constantly "fighting fires" and are often either unwilling or unable to take the time to make better decisions.

e. Many if not most organizations either inadequately or ineffectively develop their personnel's decision-making (and problem-solving) skills.
f. Many organizations do not establish systems, methods, and procedures that facilitate effective decision making (and problem solving).
g. Many organizations discourage risk-taking.

3. Basic outside/environmental impediments to more effective decision making:

a. Factors such as markets and technologies are highly unstable and uncertain, and, therefore, make many decisions uncertain and risky.
b. Many outside/environmental factors/variables are beyond organizations' control. Even attempting to influence them can be very difficult and costly.

Decision-making situations are fraught with a number of problems and pitfalls. As we discuss several major phenomena, we will describe what individuals often do (or tend to do), why, and what they should do.

**Planning Before Making Decisions vs.**
**Making Decisions Before Planning**

A. What many people often do: Especially in ad hoc situations involving either problems or opportunities, (authoritarian) managers and leaders will often make a decision to do something and then have subordinates analyze the situation and plan how to achieve the desired results. As a consequence of not having thoroughly analyzed the situations first, they often make decisions that (a) do not deal with the most important factors involved, and (b) are based on inappropriate criteria. As a consequence of not having brainstormed other possible alternatives before making these decisions, they often overlook better and more cost-effective alternatives. As a consequence of not having formulated alternative action plans and budgets before making these decisions, they must often reverse or alter their decisions once alternatives have been formulated and the necessary resources have been costed.

B. Some reasons they do so:

1. They have big egos, and, being "the boss," perceive themselves as being "the decision makers."
2. They are not well-trained in the relationships between planning (formulating alternatives) and decision making.
3. They are high in the political (power) value and dominance (self-assertiveness). Thus, they attempt to control decisions and drive events so that events will not drive them.
4. They have difficulty dealing with uncertainty, and, therefore, try to make decisions that will make events less uncertain and more predictable.
5. They are not details people—i.e., they have a low tolerance for details. Therefore, they prefer to have others (e.g., subordinates) deal with details and complexities.
6. They themselves are not competent analysts and planners.
7. Their organizations do not emphasize goal setting and planning. Consequently, they are often confronted with ad hoc decision-making situations.
8. Their organizations value (decisive) action more than thought.
9. They have many fires to fight and are under pressure to resolve them quickly.

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

**Fresh Solutions vs.**
**Past Solutions**

A. What people often do: Especially when a present problem situation seems to be similar to a past problem situation, people have a tendency 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 if not most situations, doing something that has been done before can make matters worse. There are several reasons: First, seemingly similar past and present situations are usually dissimilar in several 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 factors involved in the present situation. In fact, it may actually worsen the situation and/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 of the past solutions will usually not solve the present problem. In fact, if the solution(s) affect various factors dysfunctionally, the situation may be made worse and/or additional problems may be created.

B. Some reasons they do so:

1. They are more action-oriented than thought-oriented by nature, and, therefore, tend to be impatient and to want quick results.
2. It seems to them that the situation requires an immediate response.
3. Time constraints, which are often imposed by constant fire-fighting, discourage them from thinking things out more fully.
4. They are mentally lazy. They simply use past solutions in order to avoid going to the trouble of thinking things out more fully.
5. They are accustomed to "using band-aids" on problems (smoothing over symptoms) rather than "performing major surgery" on them (thoroughly analyzing them and dealing with the real, underlying causes). We call this phenomenon the "band-aid syndrome."
6. Their analyses are superficial. They do not have enough knowledge and experience to recognize that there may be more to the situation than meets the eye.
7. Largely because of ego, they overly trust their experience and assume that they already have "the answer." Many fail to recognize that their experience is relatively limited—that is, rather than having had a large number of experiences from which to draw alternatives, they may have had only a few experiences a number of times.
8. They are risk averse by nature, and, therefore, prefer to implement solutions that have seemed to produce adequate results without making waves.
9. Their organizations value action much more than thought, and therefore, stress quick results.
10. Their organizations discourage risk-taking, so they take a previously-used course of action—because they are afraid to do something new or different that might not work well and could jeopardize their organizational status.

C. What people should do: They 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.

**A Number of Alternatives vs. the "Dual Option Syndrome"**

A. What many people tend to do: Although some people will identify or formulate a (limited) number of alternatives, many others have a tendency to identify or formulate only one action-oriented alternative. As a result, they begin the decision-making phase with only two options—i.e., "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 ad hoc and interim decision-making situations involving opportunities, but it also occurs in many ad hoc and interim problem-solving situations.

B. Some reasons they do so:

1. Their analytic, planning, and decision-making effectiveness is being diminished by various basic personal and organizational impediments mentioned on pages DM-21 and DM-22.
2. In situations involving opportunities, they fail to do the following: (a) formulate alternative action plans for taking advantage of an opportunity; (b) recognize other existing opportunities; and (c) anticipate additional opportunities that might soon arise. As a result, they deal only with the one opportunity at hand—and make their decision "in a vacuum."
3. In problem situations, they do not think in terms of multi-causality. Consequently, they identify only one cause of a problem situation—and then formulate only one action-oriented solution to deal with that one causal factor.
4. They avoid dealing with external and internal factors that they perceive as being either uncontrollable or difficult to influence.
5. Instead of brainstorming alternatives until all possibilities have been listed, they stop when they have identified an alternative that seems viable and/or "comfortable." In effect, they make a decision during the formulation of alternatives (planning) phase—and then enter the decision-making phase with only one activeoption and one passive option.

6. They are accustomed to making two-option decisions. Largely because they have not performed goal-setting and planning processes (and, therefore, have not systematically dealt with present and anticipated problems and opportunities), they have become accustomed to dealing with frequent ad hoc situations involving problems and opportunities.

C. What they 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, where 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 Simon and many others, individuals should brainstorm a number of alternatives, and then, during the decision-making phase, subject them all to testing, evaluation, and comparison (Steps 1 through 4 on page DM-1). In other words, the decision (choice) should not be whether to Do 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) nothing at all.

**Mental Trial and Error vs.**
**Active Trial and Error**

A. What people often do: Rather than subjecting alternative solutions or improvements to decision-making process Steps 1 through 4 on page DM-1, people will often implement courses of action on a trial and error basis. If the first solution does not work, they will try the second, and then the third—and so on—until they do something that brings about the desired results (brings about success rather than error). However, in many if not most situations, simply trying alternatives until one works can make matters worse. Although adjusting, changing, improving, influencing, or otherwise affecting some of the involved factors/variables in functional ways can bring about some desirable results, it can also affect other, interrelated factors/variables in dysfunctional ways that bring about undesirable results. These undesirable results usually make the situation worse and/or cause even more problems.

B. Some reasons they do so:

1. Their decision-making effectiveness is being diminished by various basic personal and organizational impediments mentioned on pages DM-21 and DM-22.
2. Time constraints discourage them from performing decision-making steps.
3. They are more action-oriented than thought-oriented by nature, and, therefore, are inclined to be impatient and seek quick results.
4. The situation seems to require an immediate response, and they hope that their first response will quickly bring about the desired results.
5. They are mentally lazy. They use the trial and error approach in order to avoid having to think.

C. What people should do: Because implementing (untested) plans or solutions can cause both desirable and undesirable events and outcomes, people should perform all the decision-making steps on page DM-1. The decision-making phase is the point at which (a) events, subsequent acts, and final outcomes should be predicted, and (b) the advantages and disadvantages of alternatives should be identified and evaluated—before any course of action is taken. In effect, individuals should subject their alternatives to mental trial and error in order to prevent taking any action that might turn out to be miscalculated and dysfunctional. Even experiments and market tests should involve well-planned trials—i.e., courses of action that are tested either mentally or on paper before they are actually implemented.

**Maximizing vs. "Satisficing"**

Even when individuals do not simply use the trial and error approach, they still tend to think things out to a limited extent. The following discussion basically applies to the entire group of decision-making steps on page DM-1.

A. What people tend to do: During our discussions concerning the analysis phase and the formulation of alternatives phase, we mentioned several of Herbert Simon's findings: (a) people tend to reduce the complexity of situations by constructing simplified models containing only the information they feel able to handle; and (b) they tend to identify a limited number of alter-

natives. With respect to decision-making, he found the following: (a) people tend to select the first alternative perceived to be more or less satisfactory; and (b) they tend 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 "maximizing behavior").[35] In other words, Simon found that people tend to behave in a manner that results in a satisfactory decision that will suffice.

B. Some reasons people "satisfice" when making decisions:

1. Their decision-making effectiveness is being diminished by various basic personal and organizational impediments mentioned on pages DM-21 and DM-22.
2. They are less thought-oriented than action-oriented.
3. They do not view a situation as being important enough to warrant more (analytic, planning, and) decision-making effort. [This can be due to either or both of the following factors: (a) a lack of knowledge and experience that would enable them to recognize a situation's actual importance; and (b) the absence of prioritized goals, which aid the identification of a situation's importance.]
4. They are accustomed to "using band-aids" on problems (smoothing over symptoms) rather than dealing effectively with causes.
5. They want to implement a quick fix so that they can move on to fighting other fires.
6. They avoid dealing with factors/variables that are relatively difficult and costly to control or influence.
7. Top management or leadership does not recognize what is occurring, and, therefore, is doing little or nothing to develop and improve personnel's thinkwork skills and practices.

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

Maximizing decisions and their outcomes necessitates the following: (a) the acquisition of appropriate knowledge and experience; (b) the further development of basic mental skills and skills involved in using (analytic, planning, and) decision-making tools; (c) the development of functional motives, attitudes, and behavioral tendencies; and (d) a conscious attempt to compensate for, or deal with, various personal, organizational, and environmental impediments.

**Forward Thinking vs.**
**The "Near-Sightedness Syndrome"**

The following discussion applies to Decision-Making Process Steps 1(a) and 1(b) on page DM-1 (testing/analyzing alternatives in terms of possible events, possible subsequent acts, and possible final outcomes).

A. What many people tend to do: Many individuals do not think ahead, use their ability for propositional logic, and ask, "What might happen if I/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/solutions that do not contain courses of action for minimizing problems and dealing with contingencies. As a consequence, they obtain less than desirable results, experience more problems, and perpetuate fire-fighting.

B. Some reasons they do so:

1. Their decision-making effectiveness is being diminished by various basic personal and organizational impediments mentioned on pages DM-21 and DM-22.
2. They are more action-oriented than thought-oriented and future-oriented by nature, and, therefore, are mostly concerned about immediate or near-term results/outcomes.
3. Their organizations value action and short-term results more than thought and long-term results.

4. Neither they nor their organizations have established strategic/long-range and annual goals and plans, which provide contexts for thinking ahead and making decisions that account for future occurrences.
5. Constant fire-fighting has imposed time constraints that discourage them from thinking things out more fully.

C. What people should do: First, they should establish strategic/long-range 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 as a result of choosing/implementing various alternatives. Third, taking strategic and annual goals and plans into account, they should perform the other sub-steps under Step 1 on page DM-1.

**Anticipating Various Possibilities vs.**
**Identifying Only One Event, Act, or Final Outcome**

The following discussion also applies to decision-making steps 1(a) and 1(b) on page DM-1.

A. What some 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 or identify 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 anticipating or identifying other possibilities, these individuals also fail to (a) plan for various contingencies, and (b) make decisions that account for more significant possibilities.

   Note: These people are essentially regarding each single event or outcome as being a certainty (as having a 100% probability of occurrence). [Acts are not assigned probabilities.]

B. Some reasons they do so:

   a. They are relatively low in the theoretical (intellectual) value and original thinking, and, therefore, are less inclined to think more imaginatively.
   b. They are relatively low in the ability for propositional logic, and, therefore, are less able to think more imaginatively.
   c. They are rather egotistical, and, therefore, are overly confident of their knowledge and experience. They assume that they know all there is to know. (This is a fairly common assumption, because people are usually unaware that they do not know something.)
   d. They are overly reliant on, and/or too confident of, their historical and/or projected data.
   e. They simply assume that what happened before in a similar situation will happen again.
   f. They tend to associated a single event, effect, or outcome with a given action. This tendency is the flip side of the tendency to think in terms of single-causality. We call this phenomenon the "single-eventuality syndrome."

C. What they should do: When people are "thinking forward," they should think in terms of event forks representing various possible events, act forks representing various possible responses to events, and event forks representing various possible final outcomes.

**Assessing Realistic Probabilities vs.**
**Assessing Tainted Probabilities**

The following discussion applies to decision-making step 1(c) on page DM-1 (estimating/assessing the probabilities/chances that the possible events and final outcomes will occur).

   Note: Those who have failed to anticipate more than one event or final outcome skip this step. In effect, they have already attributed a 100% probability to each event or outcome.

A. What (other) 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 (e.g., an 80% probability rather than a more realistic 65% probability). On the other hand, when estimating the probability of an event or outcome to which they have an aver-

sion, they are inclined to assess a lower than realistic probability (e.g., a 30% probability rather than a more realistic 50% probability). In either case, they are "mixing their preferences and aversions into their probabilities." As a consequence, 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.

B. Some reasons they do so:

1. Their knowledge, experience, historical data, and projected data are either incomplete, innaccurate, or unreliable. Thus, they possess inputs that are inadequate for assessing more realistic probabilities.
2. They possess relatively low levels of the theoretical (intellectual) value, self-control, and emotional stability.
3. Their highest values, highest interests, likes, and desires generally underlie preferences for certain events and outcomes.
4. Their lowest values, lowest interests, dislikes, and fears generally underlie aversions to certain other events and outcomes.
5. Because they have preferences for particular events/outcomes, they (unconsciously) hope that these events/outcomes will occur (and are therefore inclined to assess higher than realistic probabilities for them). Because they have aversions to particular events/outcomes, they (unconsciously) hope that these events/outcomes will not occur (and are therefore inclined to assess lower than realistic probabilities for them). Both of these phenomena constitute what we call the "wishful thinking syndrome."

C. 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 utilize the best information available. This may require supplementing their existing knowledge, experience, historical data, and projected data with (a) additional research, (b) further analysis of data, and/or (c) expert input. Second, they should (1) anticipate how their motives, attitudes, and personality traits might inappropriately influence their judgment, and then (2) take these insights into account when making an assessment. Third, they should determine whether or not the probabilities of all events on an event fork add up to 100% (or 1.0). If not, they should adjust each event's assessed probability as appropriate.

**Identifying All an Alternative's Advantages and Disadvantages**
**vs.**
**Identifying Only/Mostly Its Advantages or Its Disadvantages**

The following discussion deals with decision-making process step 2 on page DM-1 (identifying the advantages and disadvantages of each alternative's implementation).

A. What people often do: The outcomes (e.g., resulting benefits and costs) of any particular alternative plan or solution are bound to meet some decision-making criteria better than others. Thus, purely in terms of decision-making criteria, any particular alternative is bound to have at least some basic advantages (pluses or pros) and at least some basic disadvantages (minuses or cons). (Relative advantages and disadvantages are identified when alternatives are compared with each other in Step 3.) However, because of different sets of circumstances, people often do one of the following in connection with 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.

Although doing any of the above is dysfunctional for decision-making, identifying only the advantages or disadvantages of an alternative is more dysfunctional than identifying more of its advantages than its disadvantages (or vice versa). Even so, if all the advantages and disadvantages of all alternatives have not been identified, individuals cannot (1) properly evaluate and compare alternatives' pros and cons, and (2) choose the best alternative.

B. Some reasons they do so —

1. When oversights are unintentional — When individuals inadvertently fail to identify all of an alternative's (basic) advantages and disadvantages, it is usually due to one or more of the following reasons:

a. They lack the knowledge or experience that would have enabled them to recognize or identify certain advantages and/or disadvantages.
b. They have not effectively evaluated the alternative in terms of various decision-making criteria. (This is often because they failed to formulate criteria during the analysis phase, and now have no clear-cut bases for identifying any alternative's advantages and disadvantages.)
c. Their preferences for certain outcomes of the alternative impede their recognition of certain disadvantages of that alternative.
d. Their aversions to certain outcomes of the alternative impede their recognition of certain advantages of that alternative.
e. They are relatively low in characteristics such as the theoretical (intellectual) value, self-control, emotional stability, and goal-orientedness.

2. When omissions are intentional —

When people purposefully identify (a) only the advantages of an alternative, or (b) more of its advantages than its disadvantages, it is often due to one or more of these reasons:

a. They formulated the alternative and have an emotional stake in it.
b. They will personally benefit from the implementation of the alternative.
c. They want to persuade others that the alternative is better than other alternatives.

When people purposefully identify (a) only the disadvantages of an alternative, or (b) more of its disadvantages than its advantages, it is often due to one or more of these reasons:

a. They did not formulate the alternative and do not have an emotional stake in it.
b. They are somehow threatened by the implementation of the alternative.
c. They want to persuade others that the alternative is worse than other alternatives.

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

**(Action-Oriented) Decisiveness vs. (Thought-Oriented) Vacillation**

The following discussion revolves around decision-making steps 3 and 4 on page DM-1 (identifying and comparing/evaluating the relative advantages and disadvantages of alternatives, and finally choosing the best all-around alternative).

A. What two types of people tend to do — and why:

1. Thought-oriented individuals: These very analytic individuals tend to do the following in a very thorough manner: (a) compare alternatives' relative advantages and disadvantages; (b) evaluate any tradeoffs among alternatives; and (c) weigh the probabilities of 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 experience what has been called the "55-45 syndrome."

The "55-45 syndrome" — This term was originally used to describe a "do vs. not do" decision-making situation where individuals had estimated that "doing X" had a 55% chance of yielding desirable results and a 45% chance of yielding less desirable results—and the probabilities were too close (the uncertainty was too great) for them to choose to do anything with any confidence. (In general, the closer the probabilities are to 50%-50%, the more difficult it is for many if not 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.)

We also use the term to describe two similar situations:

1. A situation where 55% of the analysis points to "do X," and 45% of the analysis points to "not do X" (or the advantages of "doing X" are almost countered by the disadvantages of "doing X").

2. A situation where 55% of the analysis points to "do A," and 45% 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 help (a) reduce uncertainty, (b) clearly shift the analysis in the direction of one alternative, and, as a result, (c) make them feel more confident of, and comfortable with, their choice.

Thought-oriented individuals tend to be more effective in some respects and less effective in others. Although they usually maximize 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 not confident and enthusiastic about their decisions, and, therefore, have difficulty motivating and mobilizing others to implement them.

Some reasons for their behavioral tendencies:

a. They are relatively high to very high in characteristics that motivate analytic behavior—e.g., the theoretical (intellectual) value, the achievement value, original thinking, responsibility, and self-control. (On the other hand, they tend to be lower in action-oriented characteristics such as the economic and political values, practical-mindedness, vigor, and dominance.) As a result, they tend to (a) maximize rather than satisfice; (b) be risk averse; and (c) avoid making mistakes.
b. They normally possess high levels of inputs and traits that enable them to be analytic—knowledge; experience; basic mental skills.
c. They are familiar with decision-making concepts and steps.
d. They are not as familiar with decision-making tools such as decision trees and comparison matrices, which would help them deal more effectively with decision-making criteria, priorities, advantages, disadvantages, and probabilities.
e. They may not agree with (or may not have prioritized) the decision-making criteria being used. Thus, they may be having difficulty sorting out pros, cons, and tradeoffs.
f. The amount of something at risk is relatively high, and not making the best decision would be costly.
g. Their organizations have not adequately developed their decision-making skills.
h. Their organizations have not adopted procedures and tools that aid decision-making.
i. Their organizations discourage risk-taking.

2. Action-oriented individuals: These people tend to be much more decisive. This is 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 two or three criteria that seem to be 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.

   These 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 their decisions. On the other hand, because they tend to satisfice rather than maximize their decisions, they (a) leave many problems unsolved; (b) create more problems; (c) often change or reverse their decisions; and (d) exaccerbate fire-fighting and time constraints.

   Some reasons for their behavioral tendencies:

   a. They are relatively high to very high in characteristics that motivate action-oriented behavior—e.g., the economic and political values, practical-mindedness, vigor (activity), self-confidence, and dominance (self-assertiveness). (On the other hand, they are lower in the thought-oriented characteristics mentioned earlier.) As a result, they tend to (a) assume away complexities; (b) satisfice rather than maximize; and (c) be risk-takers.
   b. Although they may be relatively high in knowledge and experience, their basic mental abilities are not as fully developed as possible. Thus, they do not recognize and deal with uncertainties, risks, and tradeoffs among alternatives as effectively as they might.

c. They are unfamiliar with decision-making concepts, methods, steps, and tools.
d. They make a quick decision so as to move on more quickly to the next problem.
e. Their organizations have not adequately developed their decision-making skills.
f. Their organizations have not adopted procedures and tools that aid decision-making.

B. 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, also recognizing that it is difficult to change the values and personality traits that largely underlie the two types of orientations, their typical solution is to place the more action-oriented individuals in decision-making positions, and place the more thought-oriented individuals in analytic and planning positions. In many cases, however, this practice simply perpetuates these and other dysfunctional managerial tendencies: (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 is our view that all individuals could be more effective managers and leaders and better decision-makers if they were to (a) develop all their skills to the fullest extent possible, and (b) make a conscious effort to compensate for their "weaker orientation." For example:

The more thought-oriented individuals should make an effort to develop their action-oriented traits and skills. In the meantime, they should continue to maximize each important decision. Then, assuring themselves that they made the best possible decision under uncertainty, they should consciously shift gears into the action mode and implement their decision enthusiastically, effectively, and efficiently.

The more 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 maximize each important decision with the help of beneficial decision-making methods and tools. Having done so, they can then shift gears into their action mode.

Their organizations should promote and assist these personal efforts by . . .

a. establishing systems, policies, and practices that will help individuals do the above;
b. providing training that will broaden and deepen individuals' knowledge and experience;
c. adopting more advanced analytic, planning, and decision-making methods, procedures, and tools;
d. providing training in analytic, planning, and decision-making concepts, methods, steps, and tools; and
e. further developing individuals' thought-oriented and action-oriented skills.

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