DECISION ANALYSIS

IN THIS CHAPTER

The Conditions and Elements of Making Choices
The Major Elements of Decision Analysis
The Techniques of Decision Analysis

THE CONDITIONS AND ELEMENTS OF MAKING CHOICES

Decisions must be made and actions must be taken in all or-ganizations. It is up to the appropriate people in the organization to select the actions, determine how to carry them out, and take responsibility for their successful implementation. Often, however, there is uncertainty over how to proceed. People find it hard to think together about the choices they must make. They cannot agree on where or how to start making the decision. As a result, they may overlook important information, fail to consult the proper people, and make mistakes. Organizational decision making is often not as good as it should be.

Although people enjoy being involved in decision making, many shun the task because of the controversy involved. Lacking commonly accepted, unbiased procedures, decision making becomes a shoving contest among those with differing points of view. The individuals with the most power prevail. Others accept decisions in order to save face and avoid direct confrontation.

When people are provided with a common approach to decision making, they find they can indeed work as a team. There is more sharing of relevant information. Differing positions are more succes-sfully reconciled because the process of decision making is less biased. Inevitably, the quality of decision making improves.

THE THINKING PATTERN FOR MAKING CHOICES

Decision Analysis is a systematic procedure based on the thinking pattern we use when making choices. Its techniques represent expansion and refinement of the elements in this thinking pattern:

➤ We appreciate the fact that a choice must be made.

➤ We consider the specific factors that must be satisfied if the choice is to succeed.

➤ We decide what kind of action will best satisfy these factors.

➤ We consider what risks may be attached to our final choice of action that could jeopardize its safety and success.

We may employ this thinking pattern very swiftly, even unconsciously. Although we may skip one or more of the elements in a cursory analysis, each element plays some role in determining every choice we make. When we are confronted with simple, repetitive choices, memory and experience enable us to consider in a fraction of a second the specific factors that must be satisfied. This is seen typically in the choices we make when we drive an automobile. We would be incapable of driving without the ability to make decisions and choices quickly and automatically, unconsciously using all the elements of the choice-making thinking pattern.

Nobody needs to be told that excellence in making choices is critical to individual and organizational success. Everyone knows that choices made today influence our lives tomorrow. What is not so obvious is how to use the information available to make the decision today that will be lauded as excellent tomorrow and bring credit to everyone associated with it. Nor so obvious is how we ought to use that information, how we can avoid getting bogged down in details, how we can avoid missing the details that must be recognized, and how we can escape being confused and intimidated by the uncertainties of the future.

Behind most decisions lie a myriad details. Some are highly important, some insignificant. The quality of available information may not match our needs. There may not be enough information. There may be so much that it overwhelms us. Perhaps the degree of relevance of available information is unclear. Over every decision

hovers some measure of uncertainty—for all decisions will play out their day on a stage somewhere in the uncertain future. Good decision making, like good problem solving, depends heavily on experience and judgment. In both areas of managerial responsibility, however, it is within the framework of a systematic procedure that experience and judgment produce successful results and a reputation for managerial excellence.

Case History: Hiring a New R&D Director

Making good choices depends on three elements: the quality of our definition of specific factors that must be satisfied, the quality of our evaluation of the available alternatives, and the quality of our assessment of the risks associated with those alternatives. It all sounds so straightforward that we wonder how bad decisions come to be made. Here is one simple and highly typical example.

"We need to increase the research and development capabilities of this organization." That was the statement made by a member of the Executive Committee of a fast-growing social research organization.

Over a period of two months, the committee discussed this need and considered alternative actions. With what result? The committee hired a new director of R&D, an individual who had worked for a competitor and was considered "the best."

"Best for what?" is the question that should have been asked when the statement of need was first made.

After the new director had been in the job for six months, the Executive Committee came to three conclusions: (1) The new director was not "best" for their organization; (2) The alternative of "new director" did not really address any of the firm's pressing R&D concerns; (3) The question of a suitable direction for R&D at that point in the company's life had never been adequately discussed.

The committee had made a poor decision. Why? Because the committee had no clear purpose to begin with, it had not discussed the organization's specific needs in matters of research and development. Consequently, the committee had not understood the kinds of alternatives most likely to benefit the organization. Yet, at the time the decision was made, everyone was positive and enthusiastic about the choice.

"What we said later," one member of the committee told us, "was that, given the information we had at the time, it seemed like the right way to go. But I don't buy it. Given the information we *could* have had and the actions we *might* have taken had we really thought through our situation, I don't believe that the decision to hire 'the best' away from a competitor would have seemed like the right way to go. Everyone was hung up on the assumption that there was somebody out there who could come in and work miracles. It was never put in just those words, but it was on that assumption that the whole decision was really based."

Many, many decisions are characterized by this kind of thinking. A good decision can only be made in the context of what needs to be accomplished. No alternative is any better than the opportunity it holds for us to do the job that has to be done.

The purpose of Decision Analysis is to identify what needs to be done, develop the specific criteria for its accomplishment, evaluate the available alternatives relative to those criteria, and identify the risks involved.

For the remainder of this chapter, we will explain the major elements in the process of Decision Analysis and show how the process is used. Our example involves a relatively simple, straightforward choice among four possible courses of action.

THE MAJOR ELEMENTS OF DECISION ANALYSIS

THE DECISION STATEMENT

In Problem Analysis, we begin with a problem statement, which names the situation to be resolved. In Decision Analysis, we will begin with the decision statement, or with naming the "choice" dilemma that is to be resolved.

Resolution in Problem Analysis consisted of a confirmable answer to the question "Why?" Resolution in Decision Analysis will consist of an answer to the questions "To what purpose?" "Which?" and "How?"

A decision statement provides the focus for everything that follows and sets the limits of the choice. The criteria to be developed will follow from it, describing in detail the requirements of the decision. The alternatives will be judged on their ability to meet these requirements. Because the decision statement sets all these activities in motion, it has another quality in common with the problem statement: The way it is worded deserves careful attention.

A decision statement always indicates a choice, some kind of action and its intended result: "Select a new director of quality" or "Choose a site for our new West Coast office." It also indicates the level, or implied prior decisions, at which the decision is to be made. "Select a new director of quality" indicates we have already decided that a new director is needed.

In the case we presented earlier—"We need to increase the research and development capabilities of this organization"—the decision failed chiefly because no thought was given to the level of the decision. In fact, it was not clear that there was even a choice to be made. The statement of purpose gave the decision-making team no guidance and set no limits, up or down, on the range of alternatives that would be considered. The only stage it set was one on which an alternative-driven solution could assume the starring role.

The Objectives for the Decision

Objectives, in our terminology, are the criteria for the decision—the specific results and benefits the decision is to achieve. We establish these objectives once we agree upon the correct statement of our decision. We do this before discussing alternatives, sometimes even before identifying alternatives. Decision Analysis is the antithesis of identifying a course of action and then building a case to support it. Instead, we are moving from what needs to be accomplished toward the alternative that can best accomplish it. For example, if we want to hire a new executive, we are more likely to make a good choice if we first identify the qualities of an ideal candidate and then begin the interviewing process. No experienced manager needs to have this reasoning spelled out. Objectives are clear measures of the ends we want to achieve, for only with clear measures can we make reasoned choices.

MUSTs and WANTs

We divide the objectives into two categories: MUSTs and WANTs. The MUST objectives are *mandatory*; they *must* be achieved to guarantee a successful decision. They may not be our most important objectives. Rather, they are minimum requirements that any alternative must provide to be meaningful. When the time comes to assess alternatives against our objectives, any alternative that cannot fulfill a MUST objective will immediately drop out of the analysis.

These objectives must be *measurable* because they function as a screen to eliminate unacceptable alternatives. We must be able to say, "This alternative *absolutely* cannot fulfill this objective; it cannot meet a requirement that is mandatory for success." For example, a MUST objective in a hiring decision might be "Two years' experience as a supervisor in this industry." If that length of experience is mandatory, then there is no point in considering any candidate who hasn't put in the two years.

Of course, it is important to understand why an objective is mandatory. We might ask what benefit will we gain from a candidate with two years' experience. If there are other acceptable ways to gain that benefit, then two years' experience is not truly mandatory.

"Two years' experience" also needs to be a *reasonable* objective. Can we reasonably expect to find alternatives that satisfy this MUST objective? Given the remuneration for the position and our location, can we expect to find candidates with two years' experience? If we cannot and two years' experience is truly mandatory, then we may need to re-think the decision statement or some of the other objectives.

All other objectives are categorized as WANTs. The alternatives we generate will be judged on their *relative* performance against WANT objectives, not on whether or not they fulfill them. The function of these objectives is to give us a comparative picture of alternatives—*a sense of how the alternatives perform relative to each other.*

An objective will be stated frequently as a MUST and then be rephrased as a WANT so that it can perform both functions. For example, "Two years' experience in this industry" (MUST) may be rephrased as "Maximum experience in this industry" (WANT). Now,

when we come to evaluate the alternatives, we can make two kinds of judgments. First, candidates with less than two years' experience will be eliminated. Second, the remaining candidates will be judged relative to each other based on how many years of experience each has had.

Here is an example of a high-priority objective that could not be used as a MUST: "Interacts well with managers at all levels." No matter how important this objective may be, it concerns an ability that can be measured only in a subjective way. All four job candidates may meet this objective, but *some will meet it better than others*. This is exactly what we want to know: Who meets it best? Who is equally good? How well do others compare to the best performer?

Unlike a MUST objective, we are less concerned with finding alternatives that satisfy the objective minimally and more concerned with how the alternatives perform relative to each other. A WANT objective is not necessarily less important than a MUST; it simply serves a different purpose.

Someone once succinctly described the functions of these two kinds of objectives by saying, "The MUSTs decide who gets to play, but the WANTs decide who wins."

ALTERNATIVES

An ideal alternative perfectly fulfills every condition set for it without adding new difficulties. Unfortunately, ideal alternatives are rare. We must, therefore, evaluate each available alternative by measuring it against all of our objectives. It is the relative quality of that fit that concerns us.

If we must choose among several alternatives, we will have to decide which one will best fulfill our objectives with the smallest acceptable risk. In other words, we try to make a balanced choice. An alternative that best accomplishes the objectives but carries severe risks may not, after all, be the best choice. Another alternative, perhaps less exciting but safer, may be the best balanced choice.

If there is only one alternative, we must decide whether it is good enough to accept. In this case, our evaluation will focus on its relative worth compared with a perfect, but unobtainable, alternative.

If we must choose between a current and a proposed course of action, then we consider both to be alternatives. We evaluate their performance against our objectives just as we would if both had been proposed. Whatever is currently being done is, after all, an alternative; the choice is whether to continue that way or find another, better way.

If, in the absence of *any* alternative, we must create something new, we can usually build an alternative from available components. We then choose the best and most feasible combinations, treat each as a separate alternative, and evaluate all of them against an ideal model of an alternative.

In the next chapter, we will examine true examples of these situations and explore the sources of alternatives.

The Consequences of the Choice

The final step in Decision Analysis is the search for possible adverse consequences of all feasible alternatives.

The negative consequences of any action are as tangible as its benefits, sometimes more so. Once a decision has been made and implemented, any of its negative effects will eventually become real problems. The effects of decisions—good or bad—always outlive the decision-making process that produced them. And which effects—good or bad—are longest remembered? "The evil that men do," wrote Shakespeare, "lives after them, the good is oft interred with their bones…." Some things haven't changed at all in almost four hundred years.

We must thoroughly explore and evaluate the possible adverse consequences of any alternative *before* we make a final decision. This is the only opportunity we will ever have to deal with such effects at no cost beyond a little intellectual effort. We must recognize possible adverse consequences before they occur and take them into consideration as part of our decision. Having recognized and assessed them, we may be able to avoid them altogether or take steps in the present that will reduce their effect in the future. A risk attached to an alternative is not necessarily a totally damning factor—*provided that someone sees it while there is time to do something about it.* Any

evaluation and choice that omits a disciplined, systematic search for potential negative consequences is an invitation to disaster.

Decision Analysis seldom deals with certainties. The further into the future a proposed action extends, the less certain it can be. It is because of these uncertainties that the process of Decision Analysis depends on our judgments, evaluations, experience, and intuitive feelings. All of these supply the valid data we need to support the correct decision we must make.

To set aside feelings, instincts, and the inner voice that says, "I don't feel right about this," is to throw away a valuable resource. It leads to such errors as hiring a person you don't like and can't work with just because "the résumé looked so good, and I was trying to be objective." That is not good decision making. A good decision is one that will work. Overlooking factors that make a choice unworkable is a fundamental mistake. A reasonable selection and a good decision always depend on thorough study and careful evaluation of *all* relevant information.

Decision Analysis is a methodical, systematic process. But it is also as creative and innovative a process as its users choose to make it.

THE TECHNIQUES OF DECISION ANALYSIS

The techniques of Decision Analysis are divided into these activities:

➢ State the decision.

➢ Develop objectives.

➢ Classify objectives into MUSTs and WANTs.

➢ Weigh the WANTs.

➢ Generate alternatives.

➢ Screen alternatives through the MUSTs.

➢ Compare alternatives against the WANTs.

➤ Identify adverse consequences.

➤ Make the best balanced choice.

STATE THE DECISION

CASE HISTORY: PURCHASING THE BEST PERSONNEL INFORMATION SYSTEM

The following situation illustrates the use of Decision Analysis techniques. It concerns the selection of software from among four potential suppliers.

Our client's decision statement was: "Select the Best Personnel Information System for [Our] Corporation." The people involved in making this decision were the vice president of operations, the vice president of human resources, the director of management information systems, and one of the firm's attorneys. They worked as a team to decide three things: the level of the decision, who was to delegate necessary research tasks to others in the firm, and who was to use the resulting information to reach the final conclusion. The team was not involved in the research required to make the evaluation.

Operating this way, the team arrived at its conclusion after three one-hour sessions held over a period of two weeks. Compared with previous, similar decision situations, this was considered a tremendous saving of time and effort.

The decision statement indicated not only the purpose of the decision but also the level at which it would be made. It set the stage for the kinds of alternatives that would be considered. Had the statement been worded: "Select a method to improve our method of personnel information recording and reporting," the character of the decision would have been different. The selection of a new system would have appeared as one of several alternatives.

A decision statement is, in a way, the product of previous decisions. The team had already decided that it needed a new system to replace all the present methods and procedures. Thus, the wording of the decision statement immediately vetoed a dozen other possible decisions that might have been made.

DEVELOP OBJECTIVES AND CLASSIFY
INTO MUSTS AND WANTS

What must the new system do? What would the team like it to do in addition? What constraints affect the choice of a new system? Such are the questions that every team of decision makers has to ask in order to begin setting objectives. The answers to these questions will result in a list of objectives. The objectives will then be classified as MUSTs or WANTs.

Among our client's MUST objectives for the new personnel information reporting system were these:

MUST be capable of:

- Meeting Equal Employment reporting standards.
- Providing reporting to management, using Report Writer.
- Capturing compensation information.

Each of these objectives was considered mandatory, and each was measurable: a system could offer these features or it could not. These objectives were also considered reasonable. Several alternatives were known to meet these minimum requirements.

The list of WANT objectives represented additional desirable, but not mandatory, criteria. Following are five of the seventeen WANT objectives that appeared in the analysis:

- Captures individual job histories and special capabilities.
- Can be implemented within six months.
- Meets Health and Safety reporting requirements.
- Reduces current paperwork.
- Protects employee confidentiality.

WEIGH THE WANTS

Once the WANT objectives had been identified, each one was weighed according to its relative importance. The most important objective was identified and given a weight of 10. All other objectives were then weighted in comparison with the first, from 10 (equally important) down to a possible 1 (only one-tenth as important).

No attempt was made to rank the objectives. The purpose of the 10 to 1 weighting scale was simply to make visible the relationships among these objectives. What mattered most? What could be done without, if necessary?

When the time comes to evaluate the alternatives, we do so by assessing them relative to each other against all the WANT objectives—one at a time. This is why it is critical at the outset to identify the most important objectives. It is pointless to know that a particular alternative satisfies nine out of ten WANT objectives if, in fact, it is the tenth that is most crucial to the success of the decision. We must also examine the balance of WANT objectives and look for certain danger signals:

➢ Too many high numbers may indicate either unrealistic expectations or a faulty perception of which objectives can guarantee success.

➢ Too many low numbers suggest that unimportant details may be smothering the analysis.

➢ Too many objectives reflecting the vested interest of a single stakeholder may lead to an unworkable decision. This is especially true if other stakeholders are equally affected by the final decision.

➢ Loaded objectives—those that guarantee a smooth passage for a certain alternative and penalize all others—can make a mockery of an analysis.

These are the weights our client team assigned to the five WANT objectives:

- Captures individual job histories and special capabilities 9
- Can be implemented within six months 10
- Meets Health and Safety reporting requirements 8
- Reduces current paperwork 5
- Protects employee confidentiality 3

GENERATE ALTERNATIVES AND SCREEN
THROUGH THE MUSTS

In this case, alternatives were fairly clear-cut. The team identified four leading suppliers of the system they wanted and then launched the evaluation.

In this evaluation, an alternative either meets all the MUST objectives (GO) or does not (NO GO). A NO GO is immediately dropped from further consideration.

The MUSTs, you may remember, were:

- Meeting Equal Employment reporting standards.

- Providing reporting to management, using Report Writer.

- Capturing compensation information.

To the surprise of most people on the team, one highly regarded system failed at this point. It could not provide the Report Writer feature. The alternatives are shown in Figure 7.

Note that the information columns in Figure 7 tell us why an alternative has passed or failed. By listing this information, the process has become visible. Facts, opinions, and judgments are on record. A written summary exists for future reference, leaving nothing to be memorized or forgotten. And necessary information is available for anyone who must approve the final decision.

Having eliminated Company D, the team now carried the three remaining alternatives into the next phase: comparative evaluation on the basis of the WANT objectives.

COMPARE ALTERNATIVES AGAINST THE WANTS

Beginning with the first WANT objective—"Can be implemented within six months" (weight of 10)—the team evaluated the information it had gathered about Companies A, B, and C.

Company A had given an estimate of six months with a guarantee; Company B, six months but would not commit to a set date; Company C, four months and seemed reliable. The vice president of operations was less certain about Company B. He had heard that

two of B's customers had reported slightly delayed implementation; otherwise, they were satisfied with the service they had received.

Based on this information, the team decided that Company C, with a reliable estimate of four months, *best* met the implementation objective. They gave Company C a score of 10 on that objective, and gave relative scores of 9 to Company A and 5 to Company B. What purpose do these numbers serve? *They help to reflect our judgments.*

At this point in the analysis, all objectives have been sorted out and made visible, and the WANTS have been weighed. Now the alternatives will be sorted out, permitting us to judge the relative advantages of each one. For example, how good an implementation job can Company C do *compared with Companies A and B?* As each company is scored against each of the WANT objectives, its relative overall performance and ability to produce desirable results will gradually become clear.

Figure 8 shows the judgments the team made of the relative performances of the three alternatives, scored against all of the WANT objectives.

People sometimes are bothered when none of the alternatives seems to deserve a 10. They are even more disturbed when none of

FIGURE 7   **ALTERNATIVES SCREENED THROUGH MUST OBJECTIVES**

MUST OBJECTIVES	COMPANY A	GO/NO GO	COMPANY B	GO/NO GO
Meets Equal Employment reporting standards	Meets government requirements. More detail available	GO	Meets government requirements. More detail available	GO
Provides management reporting using Report Writer	All reports use Report Writer	GO	Standard reports can be exported to Report Writer	GO
Captures compensation information	In standard package and can be added to	GO	In standard package	GO

the alternatives performs well on a particular objective. We give a 10 to the alternative that comes closest to meeting the objective, and score the other alternatives *relative to it*. We are not seeking an ideal through this comparative evaluation. What we are seeking, instead, is an answer to the question: "Of these (real and attainable) alternatives, which best fulfills the objective?"

There is one caution: If, during the scoring step, a statement such as "none of the alternatives is much good" comes up repeatedly from one objective to the next, then something is obviously wrong. Either more alternatives are needed or the objectives are unrealistic, and no *real and attainable* alternative can fulfill them. But this is a rare circumstance. People in a decision-making position are usually there because they have a good grasp of what is feasible; they do not devise unattainable objectives.

At the other extreme, all alternatives may perform well on nearly all objectives. This is caused by a set of objectives so loose that any of a number of similar alternatives will be equally good at satisfying the requirements of the decision. The simple remedy is to go back to the list of WANT objectives and make them tighter, more demanding, and more numerous. The alternative that really does offer more will then stand out.

COMPANY C	GO/NO GO	COMPANY D	GO/NO GO
Meets government requirements. More detail available	GO	Meets government requirements using standard reports. Cannot be modified	GO
Standard reports can be exported to Report Writer	GO	Cannot use Report Writer	NO GO
In standard package and can be added to	GO	—	

Now we need answers to two questions: How does each alternative perform across the board? How does it compare to the other alternatives on total performance against WANT objectives? We can answer the questions by computing the weighted scores of each alternative.

A *weighted score* is the score of an alternative multiplied by the weight of the objective to which the score refers. For example:

Company A scored 9 on the WANT objective "Can be implemented within six months." That objective has a weight of 10. Therefore the weighted score of Company A on that objective is 90 (9 x 10).

We continue by computing Company A's weighted scores for all the WANT objectives. Then we add up all of the weighted scores to produce the *total weighted score* for the Company A alternative. We complete this step by repeating the procedure for the other alternatives, producing the results that appear in Figure 9.

The total weighted scores function as *visible comparative measurements* of the alternatives. Their numbers indicate that one alternative is more viable than the others, that one course of action is apparently more valuable than the others. There is nothing magical

FIGURE 8   ALTERNATIVES COMPARED AGAINST WANT OBJECTIVES

WANT OBJECTIVES	WEIGHT	COMPANY A	SCORE
Captures individual job histories and special capabilities	9	Can be written into program	6
Can be implemented within 6 months	10	6 months with guarantee from vendor	9
Meets Health and Safety reporting requirements	8	Exceeds requirements; very flexible	10
Reduces current paperwork	5	Minimum forms required; can use current documentation	10
Protects employee confidentiality	3	Can customize security	10

about the numbers. A base of 10 to 1, for both the weighting of WANT objectives and the scoring of alternatives, is a simple, logical, and productive means for producing good results.

As Figure 9 indicates, the total weighted scores were 304 for Company A, 218 for Company B, and 302 for Company C. As we have said, this is a sampling of the full-blown analysis that included seventeen WANT objectives. For the record, the complete scores were: 1009 for Company A, 752 for Company B, and 878 for Company C. Company A, then, satisfied the objectives of the decision to a greater degree than either of its competitors.

Under certain conditions we can vary the way we assign numerical weights. If a manager must work with fifty or a hundred objectives, for example, these can be broken down into categories, with a weight (or percentage of influence) given to each category. In this instance, a single WANT objective may bear a weight of 10, but belong to a category with a comparatively low weight. While the logic of the Decision Analysis process remains unchanged, this modification of technique reflects the particular requirements of the decision.

COMPANY B	SCORE	COMPANY C	SCORE
In standard package	8	In standard package and can be added to	10
Vendor says maybe 6 months	5	4 months	10
In standard package	7	In standard package	7
Uses minimum forms; cannot customize	5	Uses minimum forms and can make custom forms	7
No security on data file but can be added	5	Password security on Report Writer	7

The Tentative Choice

The total weighted score gives us a tool for selecting a *tentative choice*. Although the tentative choice often graduates to the status of *best balanced choice*, it should never do so before we explore the potential risks involved. Four decades of experience have shown us clearly that elimination of this final step of Decision Analysis—because "one alternative is so obviously the leader"—can negate the value of all work done up to this point.

IDENTIFY ADVERSE CONSEQUENCES

If exploring potential risks is so important, why do people often fail to do this step? There are several understandable reasons. If an analysis of three alternatives produces total weighted scores of 700, 350, and 210, it may seem a waste of time to brainstorm for potential risks. In another case, someone may be reluctant to inject a dose of pessimism when the rest of the team enthusiastically exclaims, "We've done all this work! And we've produced this great alternative!" That one doubtful member of an optimistic decision-making team may

FIGURE 9   **ALTERNATIVES AND THEIR TOTAL WEIGHTED SCORES**

WANT OBJECTIVES	WEIGHT	COMPANY A	SCORE	WEIGHTED SCORE
Captures individual job histories and special capabilities	9	Can be written into program	6	54
Can be implemented within 6 months	10	6 months with guarantee from vendor	9	90
Meets Health and Safety reporting requirements	8	Exceeds requirements; very flexible	10	80
Reduces current paperwork	5	Minimum forms required; can use current documentation	10	50
Protects employee confidentiality	3	Can customize security	10	30
Total Weighted Scores				**304**

very well hide those negative opinions. One last and very common reason for dropping the step of risk exploration is this: We are often unable or unwilling to apply the lessons of the past to the decisions of today.

One manager told us that, early in his career, he had meekly suggested to his boss that the potential problems of an alternative under consideration had not been adequately considered. Even more meekly he reminded his boss that a decision made in another department had seriously backfired several months before. "That," his boss replied scornfully, "was *them* and *then*. And this is *us* and *now*." The subject was dropped. The decision proved to be a good one, but that did not prove the young manager wrong. A year or two after a decision is implemented, nobody regrets the time spent probing its risks. It is a mere fraction of the time spent in regret over a risk that should have been explored but was not.

In the earlier steps of Decision Analysis, we try to make our objectives as comprehensive and our evaluation of alternatives as rigorous as possible. But these activities go just so far. They must be followed

COMPANY B	SCORE	WEIGHTED SCORE	COMPANY C	SCORE	WEIGHTED SCORE
In standard package	8	72	In standard package and can be added to	10	90
Vendor says maybe 6 months	5	50	4 months	10	100
In standard package	7	56	In standard package	7	56
Uses minimum forms; cannot customize	5	25	Uses minimum forms and cans make custom forms	7	35
No security on data file but can be added	5	15	Password security in Report Writer	7	21
		218			**302**

by the most creative and difficult step in the process: *considering the consequences of alternatives.* This entails answering at least the following questions.

If we choose *this* alternative:

➢ What are the implications of being too close to a MUST limit?

➢ Where might information about this alternative be invalid? What are the implications?

➢ What could go wrong, in the short- and long-term, if this alternative were chosen?

➢ What could keep this decision from being successfully implemented?

In this step of the process, we try to destroy our best alternatives one at a time. We become destructive, negative, and pessimistic. The degree to which managers accept this process is determined largely by how experienced they are. Experience teaches us that there are no awards for past optimism over current failures. This fact is borne out by the difficulty of finding out who, in any organization, was really responsible for the very worst decisions that were ever made.

We begin this step with the *tentative* choice—the alternative with the highest total weighted score. We examine it by itself. We examine its probabilities of failure or potential trouble. Remember that this is never an exercise in comparisons. We do *not* say, "Alternative A is more likely to produce this problem than Alternative B." Comparison is not a useful approach. Each alternative must be examined separately.

We then rate the adverse consequences of an alternative on the basis of *probability* and *seriousness*: What is the probability that this (adverse consequence) will occur? If it (the adverse consequence) does occur, how serious will it be? We can use ratings of High, Medium, and Low (H,M,L) or a scale of 10 (highly probable/very serious) to 1 (unlikely/not at all serious). The 10 to 1 system is fine—provided that we avoid the temptation to start multiplying: "Probability of 9 x Seriousness of 3 = 27." (We did this in our first book, *The Rational Manager*, and went on to add these numbers for each alternative. This produced "adverse consequence totals" for all the alternatives. We have found over the years that this is not useful information.) If we

permit the numbers to obscure the information that produced them, we can lose sight of the serious adverse consequences.

We will not lose any sleep over an adverse consequence of low probability and minimal seriousness. But we will be very attentive if an adverse consequence is considered both highly probable and very serious.

Following are some of the adverse consequences for the alternatives that scored the highest. These were identified during the final step of the Personnel Information System decision.

Company A:	If the company is to be sold soon, then support could be affected.
Probability?	Medium
Seriousness if it occurs?	High
Company C:	If this is a new company with inexperienced employees, then they may not meet future needs.
Probability?	Low
Seriousness if it occurs?	Medium

Three factors determine the number and importance of potential adverse consequences we identify for the alternatives: the extent of their existence, our ability to find them, and our willingness to address those we find.

MAKE THE BEST BALANCED CHOICE

Having clearly identified the value each alternative can deliver and the risks each alternative poses, we are prepared to weigh the potential gains against the potential pitfalls. We ask ourselves whether or not we are willing to accept the risks of a choice to gain the benefits. If the answer is yes, then we should commit to the choice. If not, we should consider less risky, more beneficial choices.

How useful is the Decision Analysis process if potential adverse consequences can knock out the very alternative that scored the

highest on the objectives we worked so hard to develop? It is because of the previous steps in the process, the visibility of information, and the tracking of our thinking from the decision statement to this point that we can best assess the potential adverse consequences. It is only now, with all the data before us, that we can stretch our imaginations beyond the body of facts we have amassed, survey it all, and ask: "What did we miss? Can we afford the risks involved with this choice?"

The outcome of this particular case was that our client chose to go with Company C, the runner-up in the numerical scoring. Someone had picked up a rumor that Company A might sell out within the next three years. The rumor was never substantiated but was there just the same. Moreover, Company C's youth and relatively small size seemed to offer at least as many potential advantages as disadvantages. Its management team was aggressive, ambitious, and preoccupied with service as a means of getting and retaining new business. Our client's service needs were unlikely to outstrip Company C's ability to meet them. The team made the best decision possible based on the available information and on the experience and judgment of the team members.

So how did it all turn out?

Company A did not sell out within three years. But by that time its reputation for service had been eclipsed—by Company C, the team's choice. Company C did an excellent job. It had the system in full operation within four months as promised, and it continued to treat our client as a key customer. The decision-making team remained satisfied that it had made the right choice and never regretted having considered the rumor about Company A in its deliberations.

In three one-hour sessions conducted over a period of two weeks, the team had reached a prudent decision that produced exactly the results they had hoped for: a balanced, reasoned choice of action that all could subscribe to and support—a *choice that worked* for the organization.

CHAPTER SUMMARY

Through the process of Decision Analysis, we expand from a concise statement of purpose to a number of criteria for completely defining the achievement of that purpose. These criteria give us something specific against which to evaluate available alternatives. Then, by narrowing those judgments through a systematic method of evaluation and risk assessment, we reach a final conclusion.

The power of the process lies in the ability it gives managers to make *productive* use of all available information and judgments. The process does not guarantee that perfect decisions will be made every time. Given human fallibility and the usual inadequacy of available information, there can always be errors. At the very least, however, the Decision Analysis process enables the manager to reduce the incidence of errors by providing a systematic framework for evaluating alternatives. Going beyond this simplest level of efficiency, the examples in the next chapter illustrate how much more effective Decision Analysis can be when creative and innovative managers apply the basic logic of the process to their most important choices.