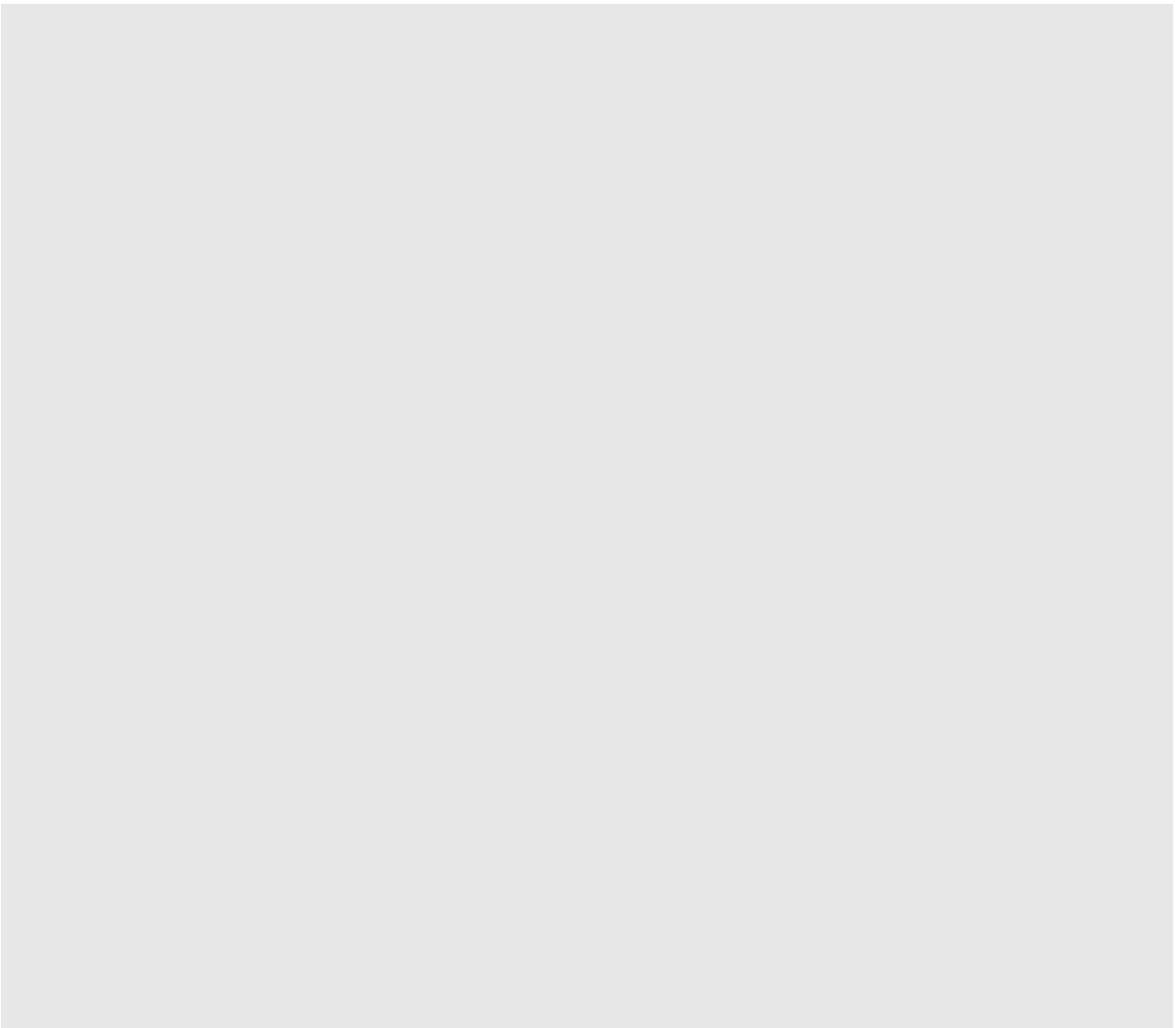


6

Managerial Problem Solving and Decision Making



Chapter Outline

Problem Analysis and Decision Making
Problem Solving
Process and Model
Influencing Problem Solving and Decision Making
Unilateral and Group Problem Solving
Problem-Solving and Decision-Making Styles

Health services organizations and health systems (HSOs/HSs) are vibrant entities in a fluid environment. The management model in Figure 5.7 reflects this dynamism. HSOs/HSs convert inputs (e.g., human resources, material and supplies, technology, information, and capital) into outputs (individual and organizational work results) to achieve objectives—work results such as delivering health services, educating, and researching. HSO/HS managers produce that conversion when they integrate structure, tasks/technology, and people. In doing so, they are accountable for allocating and using resources and for the outcomes.

Anticipating and preventing problems, or solving them when prevention fails, are traditional and essential management tasks. The new paradigm emphasizes patient safety and relies on permutations of continuous improvement of quality and performance, a proactive approach that assumes all processes can be improved and that managers must create the environment and give employees the tools to make improvement possible.

This chapter distinguishes problem solving from decision making. A problem-solving model is developed, and the factors influencing managerial problem solving and decision making are discussed. The benefits of group problem-solving strategies are identified. A model assists in determining when group, rather than individual, problem solving is more effective.

Problem Analysis and Decision Making

A manager's work revolves around the elements of problem solving—problem analysis and decision making. Problem analysis includes recognizing and defining circumstances that require action (a decision) and implementing and evaluating the alternative that is chosen. Chapter 5 identifies decision making as a managerial function, defined as choosing among alternatives.¹ *Choosing* is key and defines decision making. Simply put, decision making involves two steps: identifying and evaluating alternatives, and choosing an alternative.

Decision making is integral to all management functions, activities, and roles. For example, planning involves making decisions (choosing), whether senior-level managers are formulating strategy or middle-level managers are implementing programs. Decisions about the management function of organizing range from establishing authority–responsibility relationships to designing work systems, procedures, and flows, and from establishing structure–task–people relationships to making job assignments. In the staffing function, managers decide about number of staff and qualifications, their pay and training, and performance appraisal. In leading, motivating, and communicating, managers choose the most effective management style and when, where, and to whom information is imparted.

When managers control, they compare individual and organizational work results with predetermined expectations and standards and decide whether results can be improved or standards can be raised. This means making decisions about what type of information to collect and report and which monitoring systems should be used to measure and compare HSO/HS conversion activities and outputs with expectations and standards. Managers also decide which managerial roles to adopt, choosing among the interpersonal roles of figurehead, liaison, and influencer; the informational roles of monitor, disseminator, and spokesperson; and the decisional roles of entrepreneur, disturbance handler, resource allocator, and negotiator. Figures 5.1 and 5.3 show the interrelationship of decision making with other management functions and with managerial roles, respectively.

Types of Decisions

Three types describe most managers' decisions: 1) ends–means, 2) administrative–operational, and 3) nonprogrammable–programmable.

Ends–Means

Ends decisions determine the individual or organizational objectives and results to be achieved. Means decisions choose the strategies or programs and activities to accomplish desired results. For example, a decision to emphasize quality and productivity improvement (means) accomplishes the organizational objectives of enhancing care and service, higher patient or customer satisfaction, and better resource use (ends). Ends are shown as the outputs component of the management model in Figure 5.7. Decisions about ends are inherent in strategic planning, which includes formulating objectives. Health systems may make these decisions at the corporate level. Greater specificity is found in a department's ends–means decision making, which reflects its objectives and the operational programs that contribute to the HSO's/HS's overall mission.

Administrative–Operational

Many administrative decisions that are made by senior executives significantly affect the HSO/HS and have major implications for resource allocation and utilization. Here, *policy decision* is a synonym for *administrative decision*. Examples include deciding whether to use deficit financing for facility construction or renovation, recognize a union without demanding a certification election, hire hospital-based physicians, contract for laundry services, reduce the capital equipment budget, or participate in an integrated system of HSOs. In contrast, operational decisions are made about day-to-day activities by middle- and first-level managers. Operational decisions include deciding whether to purchase noncapital equipment, reassign staff, modify work systems, and change job content.

Nonprogrammable–Programmable

Nonprogrammable decisions are novel, unstructured, and significant.² Examples are whether to expand facilities; add, close, or share services;

seek Medicare certification of skilled beds; restructure the organization or align with a network of HSOs; acquire a clinical information system; or add a family practice residency program. Such decisions occur infrequently. Programmable decisions are repetitive and routine; procedures and rules are used to guide them.³ Patient admitting, scheduling, and billing, and inventory and supply chain procedures are examples.

Overlap of Decision Types

The Venn diagram in Figure 6.1 shows that the three decision types overlap—decisions may include parts of each. For example, merging with another HSO or establishing a satellite urgent care center or primary care preferred provider organization is a means decision because it is a strategy to achieve the organization's objectives. Furthermore, it is an administrative decision because it involves a major commitment of resources, compared with a primarily operational decision about day-to-day activities. Finally, the decision is nonprogrammable because it is unique and occurs infrequently.

Problem Solving

Managers are problem solvers. Problems may be unstructured or structured; complex or simple; major or minor; urgent or nonurgent; and they may involve varying degrees of cost, risk, and uncertainty. Problem solving involves a series of steps “characterized by intentional reasoning about what the problem is and what the solution should be,”⁴ the result of which is to make the current state more closely match the desired state.⁵ Using terminology from the management model, problem solving causes change so that actual HSO/HS results or outputs more closely align with those desired. The process by which managers solve problems includes the following:

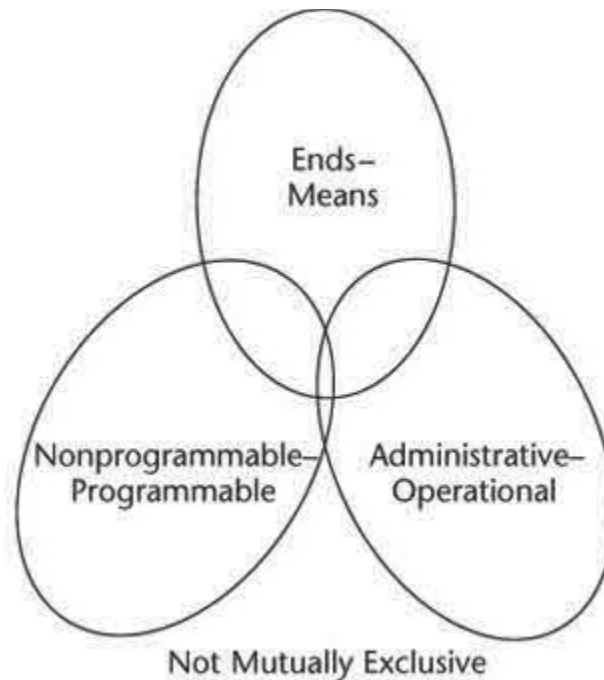


Figure 6.1. Types of decisions.

- Selecting and analyzing a situation that requires a decision
- Developing and evaluating alternative solutions to address the situation
- Choosing an alternative (sometimes called decision analysis)
- Implementing the alternative
- Evaluating the results after implementation

Figure 6.2 shows the relationships among problem solving, problem analysis, and decision making. The terms *problem solving* and *decision making* are often used interchangeably but are not synonymous. All problem solving involves decision making (i.e., choosing among alternatives), but not all decision making involves problem solving.⁶ The distinction is that problem solving includes problem analysis—predecision situation assessment and postdecision implementation and evaluation. The discussion here is relevant to both problem solving and decision making; they are distinguished as necessary.

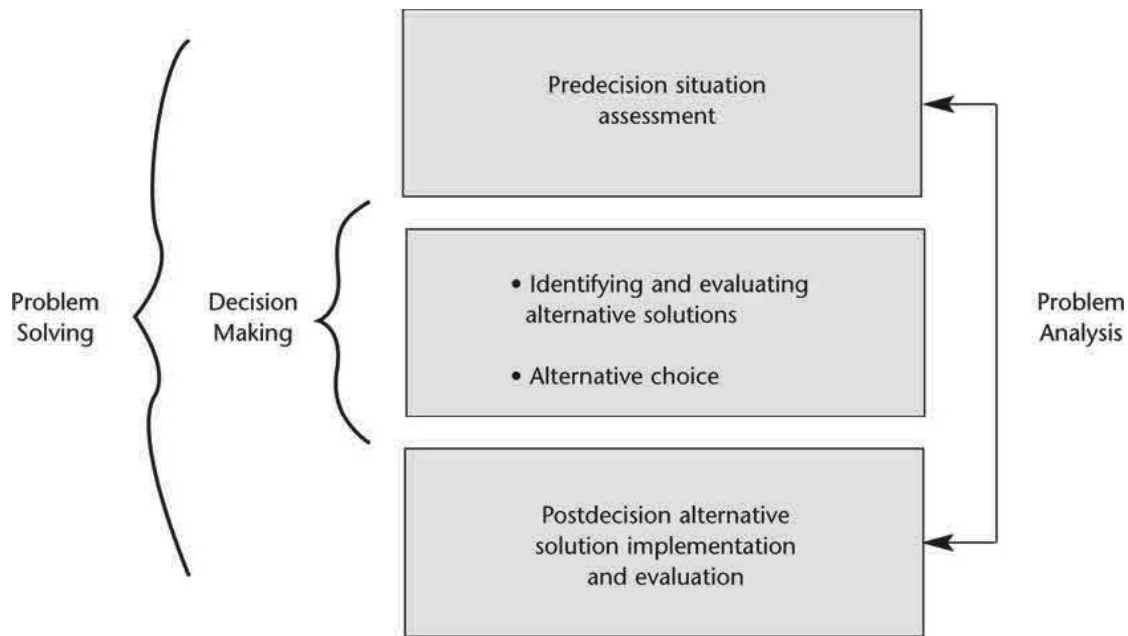


Figure 6.2. Problem solving and decision making.

Managers perform a series of steps when undertaking either problem analysis or decision making. As with all processes, there are variables, conditions, and situations that influence the approach, manner, and style that are used. Problem-solving skills are crucial to managerial success; there are situations in which being an effective problem solver is more important than are communication or interpersonal relationships skills, which is not to diminish their importance, generally. Problem solving is fundamental to everything that a manager does and to effective managerial performance.

Briefly described, a manager is a problem solver and decision maker. The role of problem solving in managerial effectiveness was demonstrated by a large Canadian study involving 4,000 HSO managers from hospitals, nursing facilities, community health centers, and medical clinics; 2,500 were chief executive officers (CEOs). Almost all of the managers identified problem solving, along with decision making, as among their most important activities.⁷ A major finding from research involving 524 U.S. hospital CEOs was the need to improve the process of problem solving. Areas ranked highest in need were external stakeholder (community) relations, business and finance, medical care and medical

staff, and staff.⁸ These findings on the importance of problem solving have been reinforced by the academic literature.^{9,10}

Process and Model

Problem solving is a process by which managers analyze situations and make decisions that cause organizational results to be more like those desired. Prospective problem solving anticipates organizational results that are more or less desirable. Retrospective problem solving identifies and corrects previous causes of deviation from desired results. Concurrent problem solving occurs in HSOs/HSs that are committed to a philosophy of continuously improving quality and performance.

Conditions that Initiate Problem Solving

Another way to classify problem solving is by the conditions that initiate it.¹¹ Figure 6.3 shows the following conditions and corresponding approaches to problem solving:

- Opportunity/threat (prospective, might)
- Crisis (immediate, will)
- Deviation (retrospective, has/is)
- Improvement (concurrent, seek)

Opportunity problem solving is prospective and anticipatory. It occurs when a favorable internal or external circumstance enables the HSO/HS to achieve or enhance desired results.¹² For example, technology and consumer expectations permit an acute care hospital to offer obstetrics services at a birth center. Developing the program involves problem analysis, which consists of predecision assessment and postdecision evaluation. The outcome is organizational results (new service) that align

more closely with desired results, including improved patient service and satisfaction and increased revenue.

Threat problem solving is also prospective and anticipatory, but is the converse of opportunity problem solving. Threats may be internal or external and, if left unaddressed, may cause future results to be less than what is desired. For example, not responding to a competitor's aggressive marketing program may cause loss of market share.

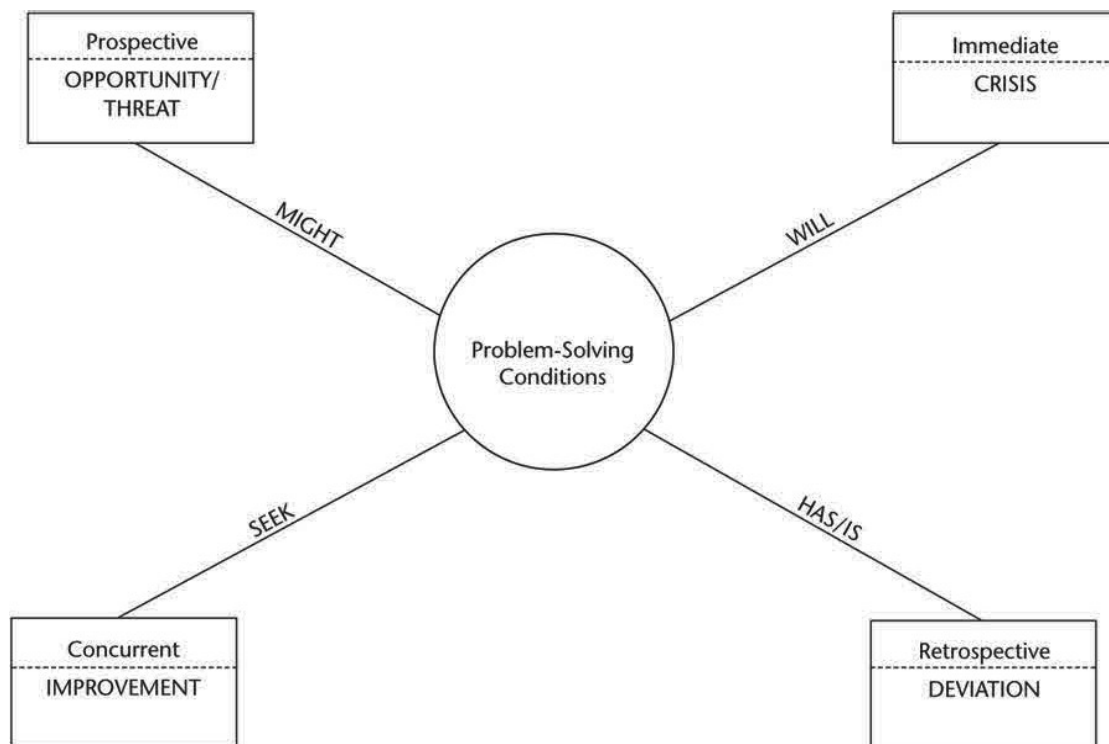


Figure 6.3. Problem-solving conditions.

Crisis problem solving is immediate. It responds to a current or predictable threat. Failing to act promptly will cause untoward results, such as a decline in near-term performance. Examples of crisis problem solving are a local natural disaster, a wildcat strike by unionized employees, bypass equipment malfunction during surgery, or a sudden reduction in Medicaid payments. Loss of an essential employee may be a crisis.

Deviation problem solving is retrospective and occurs when actual and desired results differ. Even small deviations may indicate large problems

that must be clearly identified and solved.

Improvement problem solving reduces the need for future deviation problem solving or improves performance. The perspective and process of continuous improvement differ from other problem-solving conditions in two important ways. First, continuous improvement is rooted in a philosophy that further improvement is always possible and management's job is to support these efforts. This leads to continuously examining processes and seeking ways to improve them. Second, analysis is concurrent, broad based, and organizationwide and focuses on inputs and the conversion process. The management model in Figure 5.7 shows this relationship. Improvement problem solving involves managers and staff as problem seekers who systematically seek opportunities for improvement.¹³

The condition of deviation is specifically referenced in the problem-solving process model that is depicted in Figure 6.4. The model is generic and is applicable to all problem solving except that conducted under the condition of improvement, where problem analysis differs. Historically, managers engaged most frequently in problem solving under conditions of deviation.¹⁴ The contemporary emphasis on quality and performance improvement, which is undertaken without a condition of deviation, is likely to make it the most common type of problem solving. Chapters 7 and 8 detail improvement problem solving.

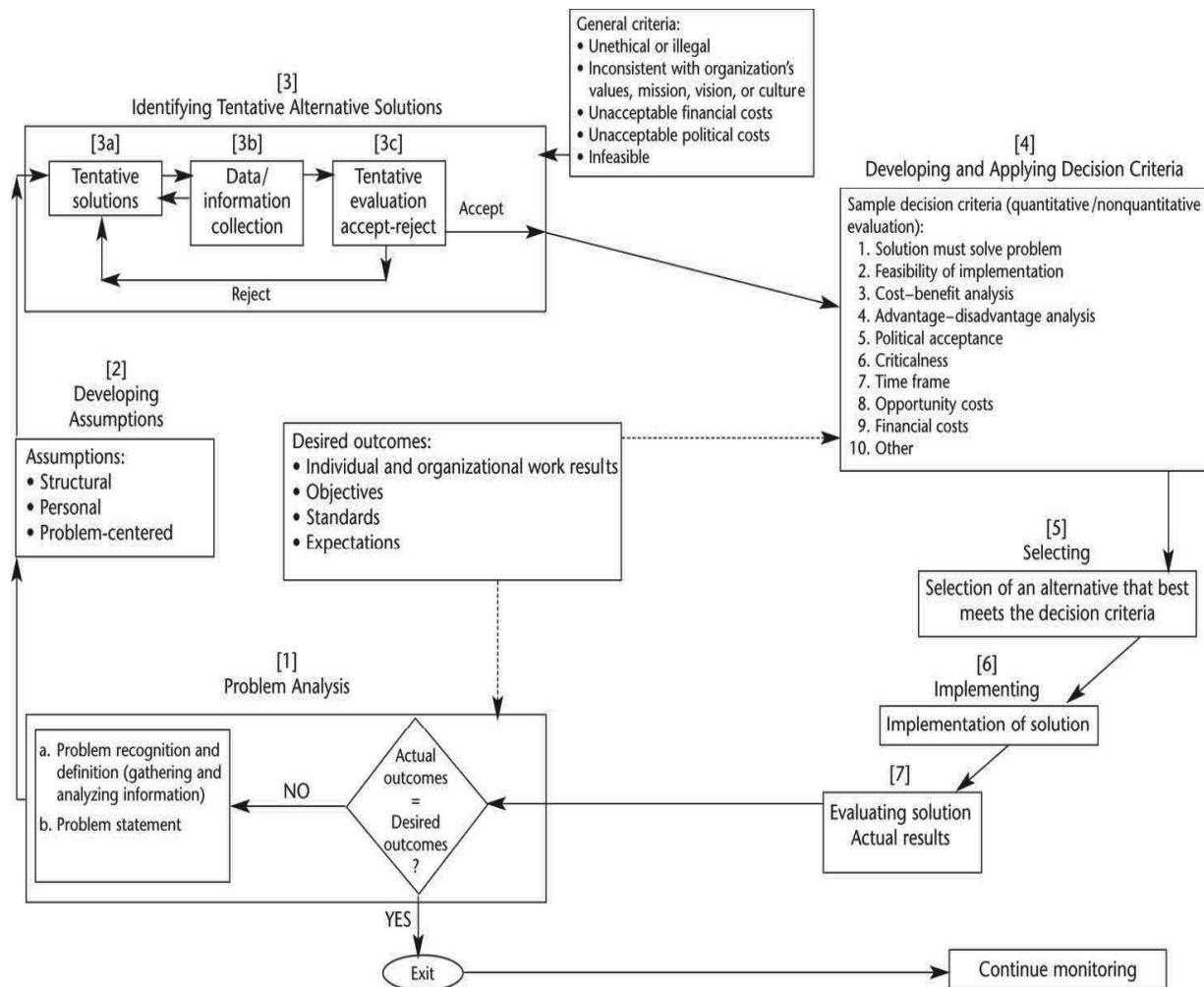


Figure 6.4. Problem-solving process model under the condition of deviation.

Problem-Solving Activities

Middle- and senior-level managers spend most of their time solving problems. The results of these efforts affect allocation and use of resources as well as work product. The circumstances surrounding problem solving are often complex, unstructured, and nonroutine, thus making the task difficult and time-consuming. Sometimes the situation is beyond the manager's direct control. Except for the condition of improvement, the process is essentially the same regardless of problem type, scope, time involved, intensity of analysis, or the conditions that initiate it. Basic problem solving includes the following:

1. Problem recognition and definition—recognizing the presence of a problem that requires solution (including gathering and analyzing information), and stating the problem
2. Developing assumptions
3. Identifying tentative alternative solutions and selecting those to be considered in depth
4. Developing and applying decision criteria
5. Selecting the alternative that best meets the criteria
6. Implementing the solution
7. Evaluating solution and actual results
8. These steps are shown in Figure 6.4, and the numbers in that figure correspond to those noted in the following discussion.

Problem Analysis [1]

Problem analysis is divided into problem recognition and definition, and developing a problem statement. The product of problem analysis is the problem statement. It is the problem statement about which assumptions are made in Step [2].

Problem Recognition and Definition

Problem solving under the condition of deviation begins when actual results are inconsistent with desired results and the manager determines that this constitutes a problem in need of a solution. Examples of desired results are 1) organizationwide objectives such as quality of patient care, better client services, and financial solvency; 2) departmental objectives such as increasing customer satisfaction, reducing staff turnover, decreasing surgical infection rates, eliminating mislabeled laboratory specimens and radiograph retakes, and minimizing budget variances; and 3) improving the work of an individual employee. Whether negative deviation indicates the presence of a problem depends on whether it is

“common cause” variation or “special cause” variation, a statistical process control concept discussed in Chapters 7 and 8. Similarly, positive special cause variation (deviation) should be studied so it can be incorporated into the process.

Applying the theory of problem recognition is not easy. Problem recognition

rarely occurs as a completely discrete event. In practice the process occurs through various time intervals (from seconds to years), amidst a variety of ongoing activities and in different ways depending on both situational and individual factors. At times, the process of problem recognition is automatic; at other times, it involves conscious effort. Often, it is a highly objective phenomenon resulting in problem descriptions that most anyone would agree on. At other times it is definitely a subjective process, where the nature of a problem description varies from individual to individual.¹⁵

Problem recognition occurs in three stages. The first is gestation/latency, in which some cue or triggering event indicates a potential problem. The second is categorization, in which managers become aware that something is wrong but cannot fully and clearly describe it. The third is diagnosis, which involves efforts to obtain the information that will provide greater certainty in problem definition.¹⁶

Often, symptoms clutter and confuse and make it difficult to recognize a problem and define its parameters. More experienced and expert managers tend to be better problem solvers because they have superior problem recognition and definition skills. Asking the right questions, recognizing limits, and being sensitive to identifying and interpreting cues are skills gained only with experience.

Problem recognition and definition includes gathering, systematically evaluating, and judging the importance of information from sources such as routine reports and data, interviews and observation, information from workgroups, and customer feedback.¹⁷ In this process, it is difficult to overestimate the importance of facts—information derived from consistently applied operational definitions.¹⁸ An essential and difficult job for the problem solver is to distinguish facts from other types of information—a learned and honed ability that permits better problem solving.

In unstructured or complex situations, circumstantial evidence and deductive reasoning are helpful. Exclusionary thinking may be used to “rule out” problems. Once conclusions are reached, the problem is classified by type, nature, and scope. This recognition definition stage is formative because subsequent actions, especially developing alternatives, are derived from it.¹⁹ Ending the problem definition stage too soon may result in a low-quality solution or in solving the wrong problem.²⁰

Problem Statement

The problem statement puts what is learned during the definition stage into a brief description of the problem to be solved and sets a direction. Almost always, one sentence is sufficient. Good problem statements have four parts: 1) an invitational stem, 2) an ownership component, 3) an action component, and 4) a goal component.²¹ A sample problem statement—In what ways can we improve system response time to reduce how long marketing analysts must wait for an answer to an inquiry?—contains the four parts:

- In what ways can (stem)
- we (ownership)
- improve response time (action)
- to reduce how long marketing analysts must wait for an answer to an inquiry? (goal)²²

The administrative position and responsibilities of the problem solver must be known if problem statements are to be understood. The same problem seen from the perspective of a chief nursing officer will be stated differently than if viewed from the perspective of a nursing unit supervisor, or that of a staff nurse. A problem-solving team must understand how views differ; care must be taken to resolve these differences before problem solving is undertaken. This reinforces the importance of the problem statement.

The invitational stem, “In what ways can,” encourages a divergent response, unlike the more narrow “How.” *Divergent* means thinking in different directions or searching for a variety of answers to a question that may have many right answers.²³

The problem statement should have other attributes as well. Ideally, the problem definition phase has identified the root cause, which is reflected in the problem statement. If the problem statement reflects only a symptom, the problem will have to be “solved” again and again. A clinical simile is the symptomatic relief that aspirin gives flu sufferers; they feel better, but the cause is uncured. Sometimes the root cause of the problem cannot be determined, or even if the root cause is known, resources may be insufficient to solve it. Occasionally, it is politically infeasible to solve the root cause. There may be many reasons why addressing symptoms is the only realistic choice. Doing so, however, must be seen for what it is—a temporary, expedient solution.

The problem statement should be narrow enough so that solving it lies within the problem solver’s authority, resource limits, and the like, but not so narrow that only the symptoms are “treated.” For example, certain employees seem to be taking too many coffee breaks. A narrow problem statement focuses on the employees. A somewhat broader problem statement addresses coffee breaks or breaks in general. An even broader problem statement, but one that is not too broad, identifies the efficient use of time or the quantity and assignment of work as the focus for action. Focusing on employees addresses only a symptom, not the root cause.

The breadth of the problem statement also determines the clarity of direction that is given the problem solver. A narrow problem statement identifies clearly what problem needs solving but risks addressing only a symptom. Overly broad problem statements may leave the problem solver without clear direction—no understanding of the first step. Sometimes problems are amorphous or lack specificity, especially as to knowing where to start. Organizational malaise or morale problems are amorphous. Here, problem solvers must cast their nets widely and engage in several iterations of problem solving—from the very broad to the more narrow and specific—before the problem is identified and focus is achieved. Iterative problem solving is also known as heuristic problem solving.

The psychological stimulus provided by an action-oriented problem statement should not be underestimated. Problem statements include positive goals but may also include limitations. The problem statement regarding coffee breaks described earlier could be, In what ways can I (we) solve the problem of excessive coffee breaks by staff so as to maximize use of staff resources, but without damaging morale? Here, a limitation in selecting a solution is to avoid damaging morale.

There is more than one correct way to state a problem, but doing it well requires thought and the patience to prepare more than one iteration. The importance of developing a problem statement lies in the discipline of reducing thoughts to writing and the advantages of a written document in communicating to others who are working to solve the problem. As the American educator John Dewey stated, “A question well put is half answered.”²⁴ The admonition to “Stand there, don’t just do something” until a suitable problem statement has been developed has more application than first blush suggests.

Facts and Reasoning

A fact can be defined as an actuality, certainty, reality, or truth. Facts are highly prized and provide the firmest grounding for problem solving and decision making. Some facts are objectively verifiable. Many “facts” are subject to dispute, however, unless they result from an operational definition. Deming stressed the critical importance of operational definitions.²⁵ Objectively verifiable facts, or facts that are based on the same operational definition, take precedence over all other types of information.

Once facts have been identified, two other issues arise. One is the weight to be given to each. Obviously, some facts are more important than others, and people who share problem-solving responsibilities must understand how facts are weighted. A second issue is that facts are subject to judgment and interpretation. For example, a tape measure will gauge a room’s dimensions. Whether the room is large enough for a certain activity or job is a matter of opinion. The fact that the room has seating

does not answer the question of how comfortable the seating is. Decision makers must be able to separate fact from conclusion (judgment), interpretation, and opinion, which must not be allowed to merge.

Rarely are facts sufficient to solve a problem, however. Obtaining facts is necessarily constrained by time and resources. Problem solvers can partly overcome this deficit through inductive and deductive reasoning. Inductive reasoning moves from the single event or fact to a conclusion or generalization based on that event or fact. Inductive reasoning allows one to conclude that the fact of a painted wall means that there was a painter. Deductive reasoning uses the facts of related or similar events to reach a conclusion. Deductive reasoning is employed in a criminal prosecution when circumstantial evidence is used to prove guilt, despite lack of direct evidence such as fingerprints or the testimony of a witness. Circumstantial evidence is based on inferences (deductions [deductive reasoning]) drawn from facts. A deduction from finding room after room with half-painted walls is that the work of the painter(s) is unfinished. Inductive and deductive reasoning are the logical processes used by problem solvers to make assumption(s) about a circumstance or situation. Because inductive reasoning is based on only one fact, it is less reliable than deductive reasoning and should carry less weight.

Often, problem solvers and decision makers must consider the weight, if any, to give to information that is hearsay, rumor, or assertion. Hearsay is words (or writings) attributed to a third party. With some exceptions, hearsay is not admissible in court proceedings. Similarly, decision makers should learn to identify hearsay and give it little or no weight. As in all organizations, rumors abound in HSOs; many will come to the notice of decision makers. Rumors, too, should be given little weight. Assertions may be based on fact, hearsay, or rumor. Assertions may be stated forcefully and with a degree of authority that makes them seem credible. Only assertions based on facts are credible.

Hearsay and rumor may have an element of truth and, thus, are important to the extent that they suggest potential problems that warrant further investigation. In themselves, hearsay and rumor should never be a basis for decision making. Persons who make assertions should be asked to show how they are supported by facts. Absent facts, assertions should be given little or no weight by decision makers.

Developing Assumptions [2]

The problem statement developed in problem analysis [1] is the focus of the next step, developing assumptions [2]. Assumptions do not take the place of facts. When facts are insufficient, however, problem solvers use the logic of inductive and deductive reasoning to make assumptions. Only in the most unusual circumstances should problem solvers make assumptions unsupported by logic, because doing so means that the assumptions were selected capriciously—certainly not a basis for good management. Assumptions are based on extending what is known. For example, if every time a nurse is disciplined, flyers are distributed that urge nurses to unionize, deductive reasoning tells us that the same thing is likely to happen next time. This, then, is a logically supportable assumption.

Assumptions have a significant effect on the choice and quality of the solution and, as a result, on the quality of problem solving. There are three types of assumptions: structural, personal, and problem centered.²⁶ Table 6.1 summarizes their attributes.

Structural assumptions relate to the context of the problem—they are boundary assumptions: the problem lies within (or outside) a manager's authority; additional resources are (or are not) available to solve the problem; other departments cause the problem; or the problem is caused by an uncontrollable external factor, such as that high unemployment in the service area means fewer people have employer-based health insurance to pay for elective procedures.

Table 6.1. Attributes of the three types of assumptions

Assumptions	Attributes
Structural	Relate to context of problem—boundary assumptions Within (outside) manager's authority Additional resources are (are not) available Other departments cause problem Problem caused by uncontrollable external factor(s)
Personal	Conclusions and biases decision makers bring to problem Risk taker; risk averse Likely reactions of superiors, subordinates, stakeholders Anchoring—adjustments from past starting point Escalating commitment—unwilling to admit past mistakes Confirmation bias—notice more, give greater weight, or seek evidence that confirms a claim/position
Problem Centered	Perceived relative importance of problem Degree of risk from problem How urgently solution is needed Economic cost and benefit Political cost and benefit Degree to which subordinates or superiors will accept solution Likelihood of success if solution implemented

Personal assumptions are conclusions and biases that decision makers bring to the problem. Often, they are based on experience. Managers may have a high or low tolerance for the risk and uncertainty inherent in changes that invariably result from problem solving. A manager's previous experience of being blamed for the problems caused by changes after problem solving may cause an aversion to risk, and this may lead to making assumptions about the problem or alternatives that cause selection of low-risk solutions. Assumptions may be made about the likely reactions of superiors, subordinates, or stakeholders to potential solutions. In addition to risk taking and other types of experiences that cause bias in the decision maker, the personal assumptions referred to as "anchoring" and "escalating commitment" can affect problem solving. Anchoring occurs when the individual "chooses a starting point (an 'anchor'), perhaps from past data, and then adjusts from the anchor based on new information."²⁷ Using the budget from last year as a starting point for this year's budget is an example of anchoring—it assumes that expenditures last year were appropriate and the budget for this year simply adds to them. Contrast this with zero-base budgeting, which assumes starting at zero and justifying all elements of the new budget. An inaccurate anchor causes flawed analysis.

Despite this, “decision makers display a strong bias toward alternatives that perpetuate the status quo.”²⁸

Escalating commitment occurs when a manager is unwilling to admit earlier mistakes. A manager whose decisions have become a problem will “tend to be locked into a previously chosen course of action.”²⁹ The tendency of decision makers to make decisions in a way that justifies past choices has also been described as the “sunk-cost trap,” meaning that old investments of time and resources cannot be recovered, but further commitments are made because it is so difficult for managers to admit past mistakes.³⁰ Decision makers must also be aware of the risk of confirmation bias—the inclination to “notice more, assign more weight to, and actively seek out evidence that confirms their claims.”³¹ Confirmation bias tends to ignore and not seek evidence that might dispute the decision maker’s position. Confirmation bias affects scientists, as well. Physicians are not immune from its effects.³²

Problem-centered assumptions cover a wide range, including perceived relative importance of the problem, degree of risk posed by the problem, and how urgently a solution is needed. Other problem-centered assumptions include economic and political costs and benefits, the degree to which subordinates or superiors will accept solutions, and the likelihood of success if a solution is implemented.

It is important to emphasize that the three types of assumptions affect the decision maker and the problem-solving process differently. Assumptions differ in at least two ways: qualitatively and in the amount of control that decision makers have over them. For example, a structural assumption that no funds are available to solve a problem will profoundly affect the solutions that can be considered, and there may be little or nothing the decision maker can do to remedy the lack of funds. A personal assumption in which the decision maker recognizes an aversion to risk can be overcome to some extent, even though the decision maker may remain less willing to accept certain solutions or may continue to be reluctant to experience higher levels of discomfort. Problem-centered assumptions are likely to involve more judgment, which is often based on the decision maker’s experience, hunch, or intuition, than are structural assumptions.

In summary, making assumptions is necessary to almost all problem solving. Decision makers must use caution in formulating and accepting assumptions. If assumptions are formulated poorly, they can limit the scope of problem solving or even preclude identifying the best solution.³³

Identifying Tentative Alternative Solutions [3]

After the manager has recognized, defined, and analyzed the problem; established its cause(s) and parameters; prepared a problem statement [1]; and made assumptions [2]; tentative alternative solutions are developed [3]. In Figure 6.4, this step includes identifying tentative alternative solutions [3a], collecting data/information, if necessary [3b], and evaluating the merits of each tentative alternative [3c] for an initial accept–reject decision. The initial accept–reject decision uses general criteria such as whether the tentative solution is unethical or illegal; is inconsistent with organizational values, mission, vision, and culture; has unacceptable financial or political costs; or is infeasible. If a tentative alternative meets any of these general negative criteria, the alternative must be discarded. Unique, nontraditional, and creative tentative solutions are identified more readily if structural, personal, and problem-centered assumptions are not overly restrictive.

Identifying tentative solutions is very important. It consumes more resources than any other problem-solving activity, and if creativity is to occur, it must occur here.³⁴ In the tentative alternative loop, creativity is important.³⁵ Although the terms are often used synonymously, *creativity*—defined as imagination and ingenuity—should be distinguished from the narrower concept of *innovation*—defined as changing or altering so as to create something new.³⁶ Figure 6.5 shows this distinction.

Several categories or tactics that can be used to identify ideas for solutions have been described.³⁷ Regrettably, most do not suggest creativity as a source. “Ready-made” tactics assume that organizations have a store of fully developed solutions—a situation in which solutions wait for problems. “Search” tactics identify solutions from available ideas.

Proposals are elicited and compared in order to identify solutions that seem viable. A “design” tactic seeks a custom-made solution—an opportunity for creativity.

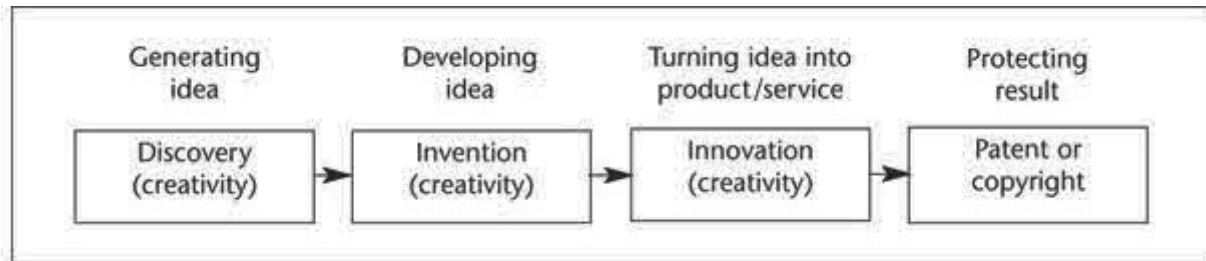


Figure 6.5. Differentiation of discovery/invention/innovation. (Adapted from Cougar, Daniel J. *Creative Problem Solving and Opportunity Finding*, 18. Danvers, MA: Boyd & Fraser, 1995; reprinted by permission.)

Several factors influence the time and resources that are devoted to the tentative alternative solution loop. Most important are the quality and precision of the initial problem definition and the restrictiveness of assumptions. Others include sophistication of the HSO’s/HS’s information systems, availability of data, and the degree to which the problem is structured. Unstructured problems are more complex, involve many variables, and take longer to solve than problems that are straightforward, relatively obvious, or narrowly defined. Typically, unstructured problems require several iterations of problem solving.

The tentative alternative solution loop has two hazards. Some managers spend excessive time and resources seeking optimal solutions when other solutions are acceptable. In addition, extensive attention to activities in the loop and reiteration may be excuses for not taking action. “I need more information” may be an excuse to procrastinate and make no decision.³⁸

Developing and Applying Decision Criteria [4]

The alternatives that met the general criteria applied in the tentative alternative solution loop [3] are now ready for formal assessment. To

select the best of several alternatives, managers must develop decision criteria that allow alternative solutions to be evaluated and compared [4]. The decision criteria include those in the Desired Outcomes cell in the center of Figure 6.4: individual and organizational work results, objectives, standards, and expectations. At least three other decision criteria are usually applied: effectiveness of the alternative in solving the problem, feasibility of implementation, and acceptability of the alternative based on objective and subjective analyses.³⁹

Alternatives that are not effective in solving the problem should be rejected. Examples are alternatives that solve only part of a problem, address only symptoms, or are not permanent. Exceptions may be necessary, however. For example, if the need for action is critical, it may be appropriate to select and implement a less-than-optimal solution because the consequences of doing nothing or waiting for a better solution are worse.

The feasibility of implementing an alternative is the second common decision criterion. Alternatives that are infeasible should have been rejected in the tentative alternative solution loop. Those that survive may be implemented to varying degrees in terms of effort; structural boundaries and constraints; dependence on other people, departments, or both; and costs. Managers are less likely to select an alternative that depends on people and departments beyond their control. This is especially true if high political costs are associated with forcing implementation.

The third common criterion judges the effective use of resources through quantitative (objective) cost–benefit analysis and assessment of nonquantitative (subjective) advantages and disadvantages. Lowest cost should not be a sole criterion—costs and benefits of alternatives must be considered, as should the opportunity costs of doing nothing. *Objective evaluation* means quantifying costs and benefits and should be attempted, despite the difficulty of estimating some data. *Subjective evaluation* means understanding advantages and disadvantages that may be impossible to quantify but cannot be ignored. Both types should be considered when evaluating and comparing alternatives. If an alternative is costly, but the problem solver concludes that subjective considerations

are more important, a rational decision has been made. Here, it might be useful to list nonquantitative advantages and disadvantages, which will add the useful dimension of subjective judgment to the decision-making process.

Some decision criteria are likely to be more important than others in a given situation; several methods may be used to differentiate them. One method ranks decision criteria using decision-maker judgments. Another method divides criteria into “mandatory” (must be met) and “wanted.” A solution that does not meet a mandatory criterion is discarded. Wanted criteria are weighted by degree of desirability. The resulting weighted scores determine which solution is selected.⁴⁰ A third method assumes that all decision criteria are equally important (which is unlikely) and judges how closely or well each alternative meets them and assigns a numerical value. The highest total determines which alternative is chosen. A decision matrix is an excellent tool for arraying and comparing decision criteria and solutions. Table 6.2 presents a sample decision matrix.

Table 6.2. Decision matrix from evaluating alternative solution^a

Decision criteria	Alternative solution 1	Alternative solution 2	Alternative solution 3
Must meet these requirements			
1. Solution effectively solves the problem	3	5	5
2. Feasibility of implementation	5	3	5
3. Cost–benefit analysis	5	5	3
4. Advantage–disadvantage analysis	3	3	5
Want to meet these requirements			
5. Political acceptability	1	3	3
6. Criticalness	1	3	5
7. Time frame	1	3	5
8. Opportunity costs	5	1	3
9. Monetary costs	3	5	5
Total score	27	31	39

Conclusion: Alternative solution 3 accepted.

Adapted from Arnold, John D. *The Complete Problem Solver: A Total System for Competitive Decision Making*, 62. New York: John Wiley & Sons, 1992.

^a Key:

5 = Solution *fully* meets decision criterion.

3 = Solution *partially* meets decision criterion.

1 = Solution *fails* to meet decision criterion.

The virtues of numerically weighting decision criteria include forcing decision makers to compare and evaluate the criteria and providing a basis for discussion in group decision making. It is important that the numbers are understood to be the results of judgments by decision makers, judgments that could be challenged by reasonable people. This subjectivity means that the numbers are, at best, approximations. This must be borne in mind during analysis.

As noted earlier, this step is sometimes called decision analysis. Most often, decision makers have several alternative solutions that can be used; it is a matter of determining which one best (fully or partially) meets the decision criteria. There are, however, other variations of decision analysis. Sometimes, there is only one solution and a yes–no, accept–reject decision must be made. Here, the analysis compares the proposed solution to a reasonable (perhaps idealized) model of what could or should be done, to determine whether the solution is acceptable. At other times, there are no alternatives, and the decision maker must decide how to accomplish a desired result. Here, the first step is to clearly define the objectives and then select a set of components that will most feasibly and effectively meet those objectives.⁴¹

Selecting, Implementing, and Evaluating the Alternative Solution [5, 6, and 7]

Almost always, a manager selects an alternative (makes a decision) [5]. This does not end the problem-solving process, however. Implementation [6] and evaluation [7] must be planned. Implementation [6] usually requires that resources are made available. The effects of intervention (change) that has been implemented must be evaluated (monitored) [7] to determine that they are consistent with desired results [1]—the problem has been solved. Effective implementation and evaluation require that who will do what, how, and in what time frame are determined prospectively. It is desirable for evaluation to be integral to (built into) implementation. Data collection must be specific, especially as to where in the organization intervention will occur and with whom responsibility lies.

Evaluation is the most often neglected part of problem solving—busy managers assume that the solution selected and implemented will be effective, and they turn to solving other problems. The solution, however, may solve the problem completely, partially, or not at all. Effectiveness of the solution can only be known if data are collected.

If the problem is not solved, the problem-solving process begins again, perhaps with fine-tuning of the alternative implemented, reconsidering alternatives previously rejected, or developing new alternatives. Furthermore, solving one problem often causes others. For example, decreasing the average length of a hospital stay may reduce revenue, necessitate higher staffing ratios using more skilled providers, and put higher demands on postacute care services, such as home health. This ripple effect necessarily leads to new rounds of problem solving.

Implications for the Health Services Manager

Problem solving is a major responsibility of health services managers. When problem solving is done effectively, resource allocation and efficient consumption are superior, and results are more consistent with those desired. Managers' skills in problem solving, including decision making, are directly reflected in the quality of solutions and interventions.

Influencing Problem Solving and Decision Making

Problem solving and decision making do not occur in a vacuum; many factors shape how they are performed, the style that is used, and the outcome. Figure 6.6 shows three groups of factors: 1) attributes of the problem solver, 2) nature of the situation, and 3) characteristics of the environment.⁴² These affect all steps of problem solving and decision making.

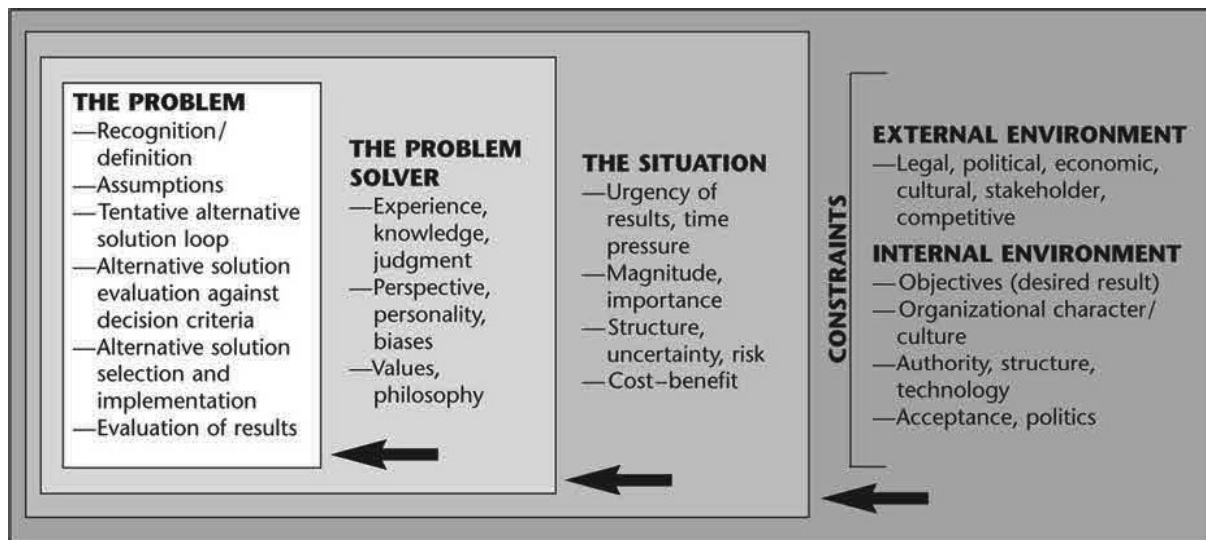


Figure 6.6. Factors influencing problem solving and decision making.

Problem-Solver Attributes

Experience, Knowledge, and Judgment

Among the most important attributes affecting problem solving are the decision maker's knowledge, experience, and judgment. A trained and experienced clinical staff such as physicians, nurses, and pharmacists is essential to high-quality patient care, and these attributes are recognized by licensing and certification. Health services managers are formally educated in graduate programs and informally educated through continuing education and in-service training. Their education is tempered and tested in administrative residencies and by the experience gained in the first several years of work. Knowledge and experience are not sufficient, however. Sound judgment must be added to the mix to achieve effective problem solving. Sometimes, intuition and hunch are important.⁴³

Perspective, Personality, and Biases

The problem solver's perspective and personality influence problem solving and decision making. Decision-maker biases were discussed in the previous section on assumptions, but they warrant further attention.

Perspective determines how the problem solver views a problem or situation. Problem solvers with narrow perspectives (tunnel vision) and those who think vertically rather than horizontally approach problems differently and are likely to make lower-quality decisions.⁴⁴ Vertical thinking is logical and seeks solutions using existing knowledge or ideas. It is unlikely to involve much risk. Horizontal thinking is creative and generates ideas in new directions. It has been argued that the best result combines both vertical and horizontal thinking.⁴⁵ The conclusions and biases that were discussed in the section on personal assumptions are extensions of perspective. Perspective is managers' general outlook or worldview—their *Weltanschauung*. Similarly, biases affect problem solving, and making assumptions allows decision makers to understand their effects on specific situations.

Individual qualities such as humor, aggressiveness, self-centeredness, self-assurance, and self-confidence, as well as someone's demeanor (introvert or extrovert) and tolerance for risk, change, uncertainty, or instability all influence how managers solve problems and the quality of their decisions. Nonassertive, procrastinating people who are averse to risk and fearful of change are likely to make assumptions or select solutions that limit the range of problem solving.

Such managers are less creative in the tentative alternative solution loop, stay in it longer as they search for the best solution (or implicitly hope the problem will dissipate), and make compromises or less bold decisions. Often, such people are reactive and must be forced to act. Conversely, proactive people take the initiative, anticipate problems, manage events rather than being managed by them, and get the job done. This type of manager is more inclined to make difficult, bold, progressive, or nontraditional decisions that include higher levels of risk.

Values and Philosophy

One's value system and personal ethic influence problem solving by affecting problem definition, formulation of assumptions, and selection of acceptable alternatives. For example, solutions inconsistent with the problem solver's value system are likely to be excluded. Managers whose

value system is ego centered are likely to select solutions that are short-term and self-serving, but that may be inconsistent with, or even detrimental to, the long-term good of the HSO/HS. A manager's value system includes views on politics and policy issues, as well as on leadership and motivation. Effective problem solvers have a clear understanding of their personal ethic and the values from which that ethic is derived.

The Situation

The circumstances and facts of a problem influence the problem-solving process and outcome. Those identified in Figure 6.6 are the urgency of results and time pressure; magnitude and importance of the problem; degree of structure, uncertainty, and risk; and costs versus benefits.

Urgency of Results and Time Pressure

Sometimes immediate decisions are required because delay is costly. Trauma or medical crises are examples. An impending work stoppage, a major initiative by a competitor, or inadequate cash flow to meet payroll require action quickly because such problems have significant negative consequences. They necessitate rapid use of the tentative alternative solution loop and an evaluation process that is likely to be less thorough. In situations with little time pressure such as problem solving under conditions of opportunity, noncrisis deviation, or improvement, problem solvers use a decision style that involves consultation, collecting more information, and thoroughly evaluating alternatives.

Magnitude and Importance

The problem's magnitude and importance directly affect the time, energy, and resources spent in assessing it and making a decision. For example, administrative decisions warrant greater attention and more intense evaluation than do operational decisions. The cost implications of resource commitment and opportunity costs of delay are other measures of importance.

Problems with high cost or resource commitment (e.g., those being addressed under conditions of opportunity or improvement) justify spending more time and collecting more information in the tentative alternative solution loop than do low-cost problems. The same is true for unstructured problems. A potential hazard for managers is that resources such as time consumed to find the best solution may approach or exceed the cost consequences of the problem. It is senseless to spend \$15,000 on staff time for feasibility studies and collection of nonroutine data to solve a medical records storage problem when old records can be stored off-site. Obviously, the cost of developing alternatives must not exceed the benefits of the one selected. Conversely, a freestanding HSO in financial distress would appropriately spend more time and resources evaluating an acquisition offer by an HS.

Structure, Uncertainty, and Risk

From a problem-solving perspective, structure is the clarity of the situation—the degree to which the scope and nature of problem and alternatives are precise.⁴⁶ Ends-means, administrative, and nonprogrammable decision situations are less structured than are operational or programmable situations. Problems regarding equipment and supplies, job design, and process flow are more structured than are those with behavioral dynamics or with external stakeholders and competitors. Risk is a function of certainty. A problem that is certain is one for which the manager has complete information and can predict the outcomes of alternative solutions. Less information means greater risk because even carefully derived estimates have a degree of uncertainty. For example, the certainty of negative results approaches 100% if mismatched blood is transfused. Certainty is much less than 100% if the problem-solving process determines that establishing a freestanding family practice center will provide inpatient referrals to a hospital. The more unstructured and uncertain the situation, the greater the time spent and resources allocated and the more participative the problem-solving and decision-making processes are likely to be.

Cost–Benefit

Ultimately, problem solving means selecting an alternative that will be based partly on quantitative cost–benefit or nonquantitative advantage–disadvantage criteria, or both. Many problems are suited to cost–benefit analysis: What equipment most improves productivity and decreases patient waiting time? Which new service will increase revenues most? Will more nursing staff (cost) decrease length of stay (benefit)? Sometimes costs and benefits cannot be measured, or nonquantitative criteria may be more important. In fact, an alternative should be chosen only when both quantitative and nonquantitative decision criteria are used. Excluding either diminishes the quality of the decision.

The Environment

The HSO/HS environment influences managerial problem solving by imposing variables that management may be unable to control, affecting the feasibility of alternatives and constraining implementation of the solution selected.

External

Policy, political, economic, cultural, stakeholder, competitive, and similar external forces are always present. A requirement to obtain a certificate-of-need for facility expansion or a new service constrains alternatives. High local unemployment with loss of employer-paid health insurance adversely affects revenues and increases bad debt. Unfunded federal mandates and regulations constrain health systems with a managed care component or a hospital with an emergency department. Changes in Medicare and Medicaid payments may limit the organization's ability to add technology and equipment.

Internal

Environmental factors within the HSO/HS affect problem solving more directly. Organizational objectives restrict which alternatives can be considered. Influential but less precise is organizational character/culture—the embedded and permeating values and beliefs. Each organization's

culture is unique. It may be creative or traditional, assertive or restrained, proactive or reactive, friendly or distant. Such characteristics influence problem solving. Managers in a reactive, tradition-bound culture are unlikely to select bold solutions. Similarly, managers in an action-oriented culture tend to act more quickly, with less preparation. Finally, any alternative that is considered must be consistent with the organization's character/culture.

As managers apply decision criteria to the alternatives, they must consider implementation, which is affected by an array of factors ranging from resource availability to organizational commitment. Noteworthy factors are authority, structure, and technology. An alternative whose implementation is beyond the scope of the manager's authority may not be feasible. The president of the professional staff organization has no authority to change the HSO/HS information system; the CEO has no authority to discharge a patient.

Organizational configuration (structure) may make implementing one alternative infeasible; absence of a technology may eliminate another. For example, physical plant layout may preclude changing patient flow and the logistics of managing the supply chain, union contracts may constrain job definition and design, or the computer system may not allow online connection to nursing units.

Another influence essential to successfully implementing an alternative is acceptance by superiors, peers, and subordinates. A decision to decrease inpatient length of stay by reducing turnaround time for diagnostic testing will be difficult to implement if those who read and interpret tests are resistant. Involving others in problem solving is influenced by how important their acceptance is to implementation. Moreover, organizational politics influence problem solving and its results. The degree of informal influence, conflict, and competition among factions may cause a manager to negotiate, collaborate, compromise, or "satisfice" (find a workable, if imperfect, solution) when solving problems.

Implications for the Health Services Manager

Problem-solver attributes, the nature of the situation, and the environment influence problem solving—how it is done, the time and resources consumed, and the quality of the decision. These influences are not mutually exclusive; one may supersede or preempt others. An urgent situation can force the manager who usually seeks input, develops a range of alternatives, and does extensive evaluation to act quickly and unilaterally.

Health services managers should recognize and be sensitive to the factors that affect problem solving, change their methods as appropriate, modify and mitigate detrimental influences when possible, and learn to cope with those factors that cannot be changed. Doing so will improve the quality of problem solving.

Unilateral and Group Problem Solving

In meeting their accountability for resource allocation and utilization, managers may solve problems and make decisions unilaterally, or they may involve superiors, peers, or subordinates on a continuum from minimal or consultative to group participation. Both methods have advantages and disadvantages. Consultative problem solving is intraorganizational in a freestanding HSO and interorganizational in an HS. Chapter 4 discusses the ethical aspects of problem solving and decision making.

Unilateral problem solving is efficient; group problem solving raises overhead costs considerably.⁴⁷ Unilateral action avoids “groupthink” and “risky shift,” which are negative aspects of group problem solving. Anchoring, escalating commitment, and confirmation bias are more likely in unilateral than group decision making.

Groups exert social pressure to conform and concur with decisions; this can result in extreme group conformity. Groupthink occurs when team members discount warnings about what others (competitors) may do, fail to examine critical and underlying assumptions, stereotype others, put heavy pressure on dissenters, self-censor, share an illusion of unanimity,

and stop the flow of information contrary to the group's position through self-appointed "mindguards."⁴⁸ Others have observed that "groupthink has been a primary cause of major corporate- and public-policy debacles. And although it may seem counterintuitive ... the teams that engaged in healthy conflict over issues not only made better decisions but moved more quickly, as well."⁴⁹ The Watergate political scandal of the 1970s is the classic example of political groupthink.⁵⁰

The phenomenon of risky shift is a hazard of group problem solving. It occurs because the diffused responsibility of a group encourages acceptance of riskier decisions than would be acceptable to one person who is responsible for a decision.⁵¹

As a general rule, group problem solving produces better-quality solutions. The reasons are numerous. Multiple perspectives and more information and experience are brought to bear. Knowledgeable staff, especially subordinates, can help define a problem and identify tentative alternative solutions. Involving staff with process knowledge is essential to successful quality improvement. Group problem solving results in consideration of more alternatives because overly restrictive assumptions are likely to be challenged. Furthermore, involving others enhances acceptance and facilitates implementation because those involved take ownership and are usually more committed to implementation. Finally, group problem solving heightens communication and coordination because those involved in implementation have greater knowledge about the solution and the process that produced it.

The benefits of employee participation in problem solving and decision making are well documented in behavioral science literature. Involved employees identify with the HSO/HS and its actions. Kaluzny's model of involvement and commitment has two foci that are especially useful in quality improvement.⁵² First, senior-level managers must rethink problem-solving activities to increase the roles, responsibilities, and authority of middle-level managers. Second, middle-level managers must rethink superior-subordinate relationships so that greater involvement of subordinates in problem solving will increase their commitment to HSO/HS objectives. Staff participation in complex

decisions adds expertise, which facilitates work unit performance and enhances commitment to the organization.⁵³

Group Problem-Solving and Quality Improvement Techniques

Certain conditions must exist for group problem solving to be effective. First, a climate of openness must permit the free expression of ideas; the focus must be on reaching solutions rather than finding fault.⁵⁴ Second, participation must be legitimate—subordinates involved in problem solving must believe that managers are truly interested in the group's reasonable recommendations. This is called empowering, because subordinates actually influence decisions.⁵⁵ Problem solving based on staff expertise about their work will result in better solutions; greater employee involvement and commitment to the HSO/HS will lead to higher motivation, morale, and job satisfaction.⁵⁶ Given the opportunity, employees can and do contribute significantly to solving problems.

Quality Circles

A failed group problem-solving method that held significant promise for improving productivity and quality in health services delivery was quality circles, which were especially common in hospital nursing services.

The quality circle is a parallel-structure approach to involving employees in problem solving. A parallel structure is one that is separate and distinct from the regular, ongoing activities of an organization and, as such, operates in a special way. In quality circle programs, groups are composed of volunteers from a work area who meet with a special type of leader and/or facilitator for the purpose of examining productivity and quality problems.⁵⁷

Effective quality circles required senior-level management to be committed to both the process and its outcomes. Staff time and employee training in problem solving were some of the substantial resources

required. Management had to be willing to act on appropriate recommendations. It is believed that quality circles failed because management made no commitment to them. This suggested that the staff's efforts were unimportant and a waste of time.

Other Group Formats

Quality circles were one type of group problem solving. Ad hoc task forces may be formed to solve significant organizationwide problems or to address unstructured, major problems under conditions of opportunity or threat. Focus group teams⁵⁸ or quality improvement teams can be used. These teams may be departmental or cross-functional. As their name suggests, departmental teams are active in processes exclusive to a department, much as were quality circles. Cross-functional teams improve processes or undertake other quality improvement initiatives that may span the organization and hierarchical levels. Chapter 8 provides detail on quality improvement teams. Finally, managers should encourage ad hoc problem solving by subordinates and assist them, as necessary. This may involve one or several subordinates in a group; it need not be formalized or institutionalized, as are quality circles and quality improvement teams.

Problem-Solving and Decision-Making Styles

The manager's problem-solving and decision-making styles may involve individuals or groups. Style is influenced by the problem's nature and importance, how clearly it can be defined, and whether acceptance by organization members is key to implementation.

Involving Others—A Conceptual Model

A conceptual model of problem-solving/decision-making styles developed by Vroom is useful in determining the degree and conditions of involvement by others.⁵⁹ The five problem-solving and decision-making styles shown in Table 6.3 specify subordinate involvement, but they have application to peers and superiors, as well. Each style describes a different degree of subordinate involvement.⁶⁰ Style AI is unilateral (autocratic)—subordinates are not involved in predecision assessment or choosing the solution. AII is a variant of AI—subordinates only provide information. Managers using consultative styles CI or CII elicit and consider subordinates' opinions. GII is a group style that involves subordinates fully, and the manager accepts the group's decision. There are situations in which the quality of a decision and its acceptance by subordinates are enhanced by group problem solving.

Situational Variables (Problem Attributes)

The situational variables influencing style are characterized by the seven different problem attributes (a–g) at the top of Figure 6.7. The problem-solving style outcomes in Figure 6.7 have capital letter notations AI, AII, CI, CII, and GII. The first four problem attributes, a–d, denote the importance of decision quality and acceptance by others. The last three problem attributes, e–g, moderate the effects of subordinate participation on quality and acceptance (a–d). The seven problem attributes in Figure 6.7 are repeated in Table 6.4, along with diagnostic questions requiring yes-or-no answers.

Table 6.3. Management problem-solving and decision-making styles

AI	The manager solves the problem or makes the decision unilaterally, using information available at that time.
AII	The manager obtains necessary information from subordinate(s), then develops and selects the solution unilaterally. Subordinates may or may not be told what the problem is when the manager gets information from them. Subordinates provide necessary information rather than generating or evaluating alternative solutions.
CI	The manager shares the problem with relevant subordinates individually, getting their ideas and suggestions without bringing them together. The manager's decision may or may not

reflect the subordinates' contribution.

CII The manager shares the problem with subordinates as a group, obtains their ideas and suggestions, and then makes the decision that may or may not reflect the subordinates' contribution.

GII The manager shares the problem with subordinates as a group. Together they generate and evaluate alternatives and attempt to reach agreement (consensus) on a solution. The manager's role is much like that of chairperson—not trying to influence the group to adopt a particular solution. The manager is willing to accept and implement any solution supported by the group.

Adapted from Vroom, Victor H. "A New Look at Managerial Decision Making." *Organizational Dynamics* 1 (Spring 1973): 66–80; reprinted by permission from Elsevier. © 1973. American Management Association, New York. All rights reserved.

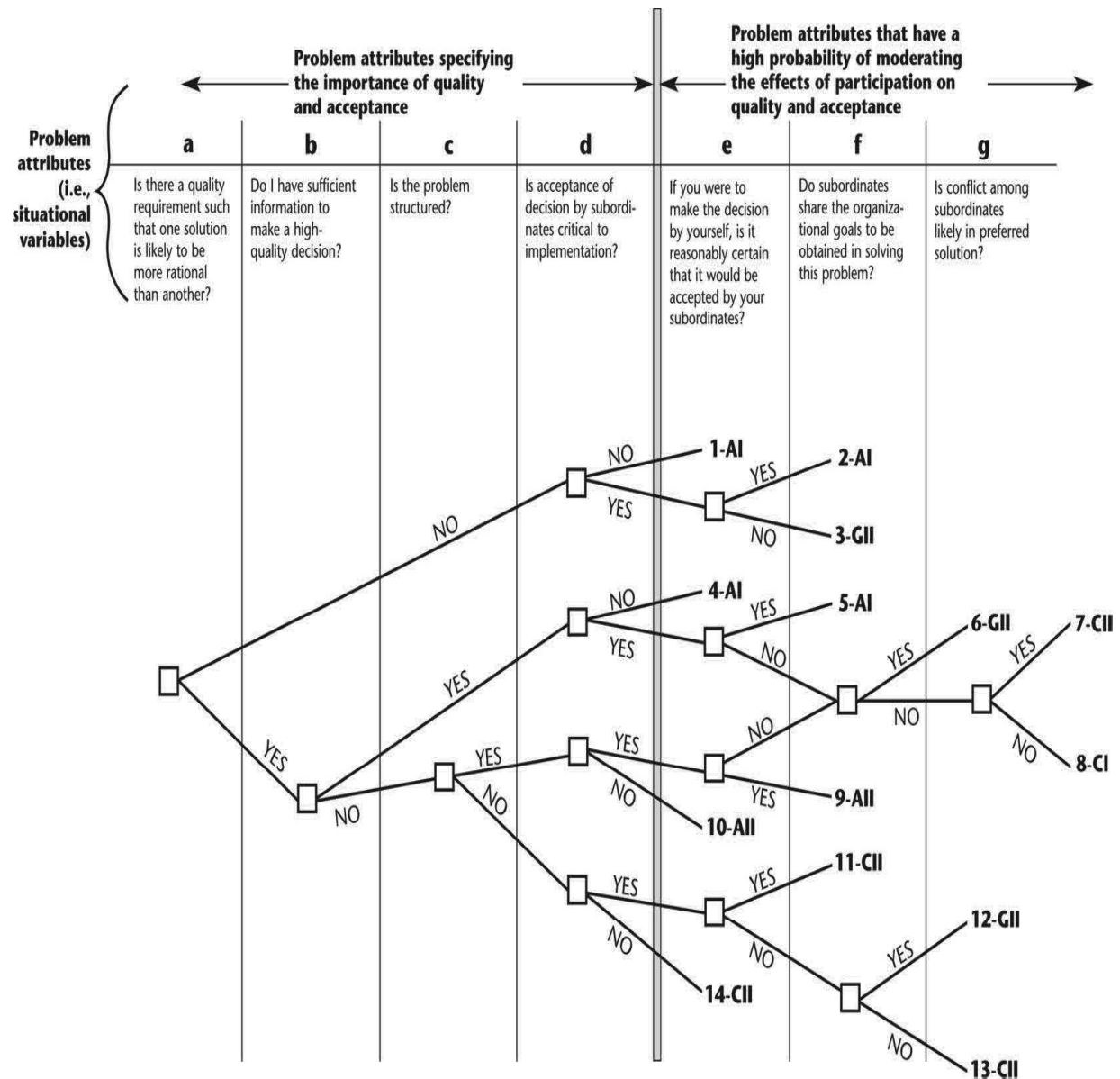


Figure 6.7. Problem-solving and decision-making style model. (Adapted from Vroom, Victor H. "A New Look at Managerial Decision Making." *Organizational Dynamics* 1 [Spring 1973]: 66–80; reprinted by permission from Elsevier. © 1973. American Management Association, New York. All rights reserved.)

Table 6.4. Problem attributes used in the problem-solving and decision-making style model (Figure 6.7)

Problem attributes	Diagnostic questions
a. Importance of the quality of the decision	Is quality requirement such that one solution is likely to be more rational (better) than another? (Another way of discerning the quality is: If the alternatives are <i>not</i> equally meritorious—some are or can be much better than others—there is a quality requirement.)
b. Extent to which the decision maker possesses sufficient information/expertise to make a high-quality decision unilaterally	Do I have sufficient information to make a high-quality decision?
c. Extent to which problem is structured	Is problem structured? (Does decision maker know what information is needed and where to find it?)
d. Extent to which acceptance or commitment of subordinates is critical to effective implementation	Is acceptance of decision by subordinates critical to effective implementation?
e. Prior probability that a unilateral decision will receive acceptance by subordinates	If decision is made unilaterally, will it probably be accepted by subordinates?
f. Extent to which subordinates are motivated to attain organizational goals as represented in objectives explicit in statement of problem	Do subordinates share organizational goals to be obtained in solving problems?
g. Extent to which subordinates are likely to be in conflict over preferred solutions	Is conflict among subordinates likely to occur in preferred solutions?

Adapted from Vroom, Victor H. “A New Look at Managerial Decision Making.” *Organizational Dynamics* 1 (Spring 1973): 66–80; reprinted by permission from Elsevier. © 1973. American Management Association, New York. All rights reserved.

Situations and Styles

Answers to the diagnostic questions for the seven problem attributes in Table 6.4 produce 14 possible situations, which are identified as 1–14 in Figure 6.7. Each is linked with the appropriate problem-solving/decision-making style AI–GII. Vroom assumes that managers wish to minimize the time that is required to solve a problem; thus each style is the most restrictive for that set of problem attributes. For example, a manager with Situation 1 could use Styles AII, CI, CII, or GII, but they require more time. Therefore, the problem attributes suggest that AI is appropriate and saves time compared with less restrictive styles.

Using the Model

The manager assesses the situation by examining problem attributes a–g and answering yes or no to the questions. The model indicates which decision style (AI–GII) is most appropriate. The following discussion analyzes the branching for Situations 1, 2, 3, 11, 12, 13, and 14 to show how managers could use the model.

Situations 1, 2, and 3

Situations 1, 2, and 3 assume that there is no decision quality requirement [a]. The presence of several obvious, relatively meritorious alternatives implies that the decision maker has sufficient information [b] to solve the problem unilaterally. Thus, the problem must be relatively structured [c]. If subordinate acceptance of the decision is not critical to implementation [d], the manager is correct in using unilateral Style AI for Situation 1 (1-AI in Figure 6.7). If subordinate acceptance is critical to implementation, Attribute e is evaluated. If subordinates are likely to accept the unilateral decision, the manager can use Style AI for Situation 2 (2-AI in Figure 6.7).

If subordinates are unlikely to accept the manager's decision, as in Situation 3, the Style GII is appropriate (3-GII in Figure 6.7) because participation increases acceptance. Also, the manager is indifferent as to which alternative solution is chosen, because there is no quality requirement and all are relatively meritorious [a].

Situations 11, 12, 13, and 14

Situations 11, 12, 13, and 14 assume that there is a quality requirement [a], meaning that alternatives are not equally acceptable because one is more rational. Situations 11, 12, 13, and 14 also assume that the manager has insufficient information to make high-quality decisions [b] and that the problem is not structured [c].

If the attribute of subordinate acceptance [d] is critical to implementation, the manager determines whether subordinates would be likely to accept a unilateral decision [e]. If subordinates would accept a unilateral decision, then Style CII is appropriate for Situation 11 (11-CII

in Figure 6.7). If subordinates are unlikely to accept a unilateral decision (i.e., the answer to Attribute e is no), the manager assesses whether subordinates share the organizational goals met by solving the problem—Attribute f. If the answer is yes, Style GII is appropriate (12-GII in Figure 6.7). Group involvement is appropriate because the acceptance that is critical to implementing the alternative is enhanced. Because all participants have the same goals, the group cannot make a decision that is different from the decision the manager would have made. However, if the answer to Attribute f is no (i.e., subordinates do not share the organizational goals met by solving the problem), Style CII is appropriate for Situation 13 (13-CII in Figure 6.7).

If the attribute of subordinate acceptance [d] is not critical to implementation, the consultative Style CII is appropriate for Situation 14 (14-CII in Figure 6.7). Here, sharing the problem with subordinates and obtaining their ideas and suggestions provide information that the manager needs, yet the decision made need not reflect subordinates' influence.

Implications for the Health Services Manager

The problem-solving and decision-making style model in Figure 6.7 is an algorithm to assist in selecting the decision style appropriate for different conditions. Although linked here to the degree of subordinate involvement in problem solving, the same model could be used in analyses of peer or superior involvement. In addition, it is important to remember that individual, situational, and environmental variables influence decision style. Vroom's model provides a systematic way to determine the involvement of others in decision making and how that involvement affects the quality of the solution and the success of implementation.

Discussion Questions

1. Explain why decision making is integral to the management functions. Identify the three managerial decision classifications, and give examples of each.
2. What conditions initiate problem solving? Discuss how problem solving under the condition of improvement is related to problem solving under the condition of opportunity.
3. How are problem solving and decision making related? What pre-decision and postdecision activities are inherent in problem solving? What are the steps of problem solving?
4. Using the problem-solving process model in Figure 6.4, discuss and give examples of the following: How do assumptions affect problem solving? What are some positive and negative results that can occur in the tentative alternative solution loop? Why are both quantitative and nonquantitative criteria important when evaluating and choosing an alternative?
5. Distinguish facts and assumptions. Give examples of the role of inductive and deductive reasoning in making assumptions.
6. Identify the factors that influence problem solving. Describe three situations, and indicate which factors were influential in shaping the outcomes.
7. What are the advantages of group problem solving? List reasons why it is critical to the success of organizationwide quality improvement. Describe a situation from your experience in which the phenomenon of groupthink occurred.
8. Identify the types of problem-solving and decision-making styles. Use Figure 6.7 and Table 6.4 to describe situations that show the following styles: AI, CI, and GII.

Case Study 1

The Nursing Assistant

You are the supervisor on the day shift at a 100-bed nursing facility. In one 20-bed unit, the workload relative to other units has been very heavy for the past month. In that unit, you observed family members of a bed-bound resident turning the resident. When you asked why they were doing that, one of the family members said, “Nursing assistant Johnson told us that the staff is too busy. If we want our father turned, we have to do it ourselves or wait 3 or 4 hours before the staff can help.” On several occasions in the past week, you saw nursing assistant Johnson sitting in the utility room for what seemed to be long periods of time.

Questions

1. Identify the facts in this case.
2. State the problem.
3. Make assumptions of the three types described in the chapter. List them in order of declining certainty.
4. Develop five solutions that should be considered. Which one should be chosen? Why?

Case Study 2

The New Charge Nurse

You are a third-shift (11:00 p.m. to 7:00 a.m.) nurse supervisor to whom several charge nurses report. Each charge nurse is responsible for a nursing unit. Six months ago, you promoted Sally Besnick to be one of the charge nurses. Six months before she was promoted, Besnick had earned a bachelor of science in nursing (B.S.N.) from an out-of-state university. She

is the same age as the five registered nurses (RNs) she supervises, all of whom graduated from a two-year associate of arts (A.A.) nursing degree program at a local technical college. B.S.N. programs are generally considered the “gold standard” of nursing preparation. Sally is the only charge nurse with a B.S.N. who reports to you.

Besnick received the same in-service training in supervision as the other charge nurses, but there are major problems on her unit. Morale among her nursing staff is low, absenteeism is high, and not all of the administrative work on her unit is getting done. There are no indications that the quality of care on her unit is below acceptable levels, however. You think Besnick’s main difficulty is that she cannot control, lead, discipline, or correct her subordinates. She seems easygoing; her subordinates call her Soft Sally behind her back. Given their hands-on training and greater experience, they feel that they can deliver technically better patient care than she can.

Besnick is personable and well liked by you and by the other charge nurses. She socializes with them after hours and, like them, Besnick participates in American Nurses Association professional activities. Besnick and her husband recently bought a new house in town after renting for the year that she has worked at the hospital. They adopted a baby 2 months ago.

You are concerned that if you demote Besnick, her pride will be hurt and she will quit. You do not want to lose a good RN, especially one with a bachelor’s degree.

Questions

1. Describe the education and training received by nursing assistants, licensed practical (licensed vocational) nurses, and the RNs of the various types. Referring to the discussion of nursing in Chapter 1 may be helpful.
2. Develop a problem statement. Identify several tentative alternative solutions.
3. Which solution is best? Why?

4. Describe how you would implement the solution chosen.
How would you evaluate the results?

Case Study 3

Listening

Billy and Bobbie are retired, and they regularly go to the nearby hospital cafeteria for their noon meal. The cafeteria is open to the public, has a variety of healthy food choices, and is reasonably priced. At the end of the cafeteria line is a table that has condiments, paper napkins, and plastic silverware for carryout. In addition, there is a toaster on the table. Bobbie likes her bread toasted and has expressed dissatisfaction with the toaster for several months. The toaster heats the bread, but it isn't hot enough, so the bread dries out instead of being toasted. Billy mentioned the toaster problem to the cafeteria cashier and other cafeteria staff on several occasions. The staff was always polite and promised to tell management about the toaster. Nothing changed, however. Finally, Billy's patience reached its limit, and he asked to see the cafeteria manager. The manager met Billy and Bobbie in the cafeteria. She seemed surprised to learn about the toaster problem but thanked Billy and promised action. In less than a week, a new commercial-grade toaster appeared on the condiment table. The next time Billy and Bobbie came to the cafeteria, several of the staff came to their table and told them how pleased they were that management had replaced the old toaster. They said that other patrons had complained about the toaster, too. The staff members said that despite their telling the manager about the problem numerous times, no action had been taken. They were frustrated that it had taken so long to correct the problem with the toaster.

Questions

1. Develop a problem statement.
2. Characterize the manager's management style and the cafeteria staff's view of their role in serving the cafeteria's patrons.
3. How is customer satisfaction factored into efforts to improve performance?
4. Develop three solutions to solve the kind of problem that Billy and Bobbie had.

Case Study 4

Ping-Ponging

You are the CEO of a hospital. The vice president for medical affairs (VPMA) has just left your office. In broad detail, she described some referral patterns that she characterized as very unusual, even strange. Several “cliques” of physicians appear to have developed a system of referring to one another in ways that result in overtesting and excessive consultations, to the point that their patients, most of whom are older, have longer lengths of stay. The hospital has experienced above-average denials for Medicare reimbursement for the care of these types of patients. The various cliques of physicians seem to be connected by culture, ethnicity, and social relationships. The VPMA called the referrals among those in the cliques “ping-ponging” and said that she would collect some more data.

Questions

1. What are the clinical implications of patients receiving unneeded tests and having overlong lengths of stay?

2. Develop a statement of the problem from the perspective of the VPMA.
3. What weight should be given to the ethical and legal implications, compared with the economic implications?
4. What, if anything, should you as CEO do about the problem described by the VPMA, as stated in the answer to Question 2 above?

Notes

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24. Dewey, John. *How We Think: A Restatement of the Relation of Reflective Thinking to the Educative Process*, 108. Boston: D.C. Heath, 1933.
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telephone or drinking coffee? Do we count the people that work for the hotel? Do we count the people on the stage? The people managing the audio-visual equipment? If you change the rule for counting people, you come up with a new number... . There is no such thing as a fact concerning an empirical observation. Any two people may have different ideas about what is important to know about any event. Get the facts! Is there any meaning to this exhortation?" (Deming, W. Edwards. *The New Economics for Industry, Government, Education*, 2nd ed., 104–105. Cambridge, MA: MIT-CAES, 2000.)

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