

**MANAGEMENT**

**OBJECTIVE**

[Return to Table of Contents](#)

To ensure that problems are quickly identified and resolved at an appropriate level such that the solutions are consistent with the mission, goals and objectives of the entity.

**BACKGROUND**

Although the terms "problem-solving" and "decision-making" are sometimes used interchangeably, management literature makes a clear distinction between the two. Problem-solving is a larger process that starts with the identification of a problem and ends with an evaluation of the effectiveness of the chosen solution. Decision-making is a subset of the problem-solving process and refers only to the process of identifying alternative solutions and choosing from among them.

Problem-solving occurs at all levels in an entity. Board members usually operate at the policy level. Upper management implements the policies. Middle managers operate primarily at the procedural level.

While auditors are more likely to look at how a specific decision or group of decisions is made, close attention should be paid to the relationship between the process (problem-solving) and the product (decision).

**DEFINITIONS**

A **decision** occurs when a solution to a problem is selected for implementation. Decisions can be made either formally or informally:

- **Formal decisions** are relatively complex, non-routine, and generally non-repetitive. Policies, procedures, criteria, and methods for making such decisions may not always exist since the problem faced may lack precedent. Creativity may play a key role in such decisions.
- **Informal decisions** are more repetitive and routine in nature. Policies, procedures, criteria, and methods often exist to assist managers in making such decisions.

**Decision-making** is the process of identifying and selecting from among possible solutions to a problem according to the demands of the situation. For example, decision-making in the area of vendor contracting might address how to deliver a service, which bidder gets a contract, how to ensure that a contractor meets its obligations, or whether to pay the contractor in large or small bills.

A **problem** is the difference between the actual condition and the desired condition. For example: "We don't earn enough interest on our short-term investments" or "Kids don't feel hopeful about the future."

**Problem-solving** is a continuous, conscious process which seeks to reduce or correct the difference between the actual and desired conditions. Decision-making is one of the steps in the larger process of problem-solving.

Note: Various quantitative/analytic and qualitative/intuitive problem-solving and decision-making techniques are referenced in this module. These are further defined in an appendix which immediately follows this text.

**OVERVIEW OF THE PROCESS**

The basic phases of a problem-solving process are:

- **Recognize the problem and state it clearly.**
- **Determine the significance of the problem.**
- **Gather data and information relevant to the conditions associated with the problem; identify possible causes of the problem.**
- **Decision-making**
  - **Generate criteria for and develop alternative solutions.**
  - **Evaluate the alternative solutions, and choose from among them.**
- **Plan, implement, monitor, and evaluate the selected alternative(s); determine if the problem still exists, and decide on future action.**

Note: This process was derived from multiple sources and incorporates those steps most commonly found in models of problem-solving and decision-making. The fluid nature of problem-solving dictates that this model should not be too literally or universally prescribed as the one best model. Since problem-solving and decision-making are both artistic and scientific, they combine analysis and intuition, systems and judgment. Thus, in practice, the character of and emphasis on each process step will vary with the problem or decision faced by the entity.

**PROCEDURES**

Suggested procedures, organized according to the elements of a finding, are listed below. They should be expanded or tailored to fit the specific entity being reviewed.

**Review criteria:****General criteria**

General criteria applicable to the problem-solving process are listed below. The nature and scope of the problems faced and decisions made will vary widely among and within entities. Auditors must use their judgment to assess the materiality of omissions and variations from both individual process steps and specific procedures.

The entity should have an environmental monitoring process to recognize, screen, and define problems as early as possible. The earlier the problem is detected, the sooner it can be addressed, and the less impact it is likely to have. For example, the entity could compare planned and actual performance or assess how changes in the environment might affect future performance.

The entity's internal environment should support efficient and effective problem-solving and decision-making. Communications between participants in problem-solving and decision-making processes should be open, candid, and direct. Entity operations should facilitate pooling the information required to solve a problem or make a decision.

Participants should be encouraged to inquire about, define, and research problems, take initiative in devising appropriate alternatives, assume leadership in implementing chosen solutions, advocate their positions, and critique the entity's problem-solving and decision-making processes.

The entity should evaluate the appropriateness of its assumptions, criteria, methods, processes, and techniques as it moves between the steps in the problem-solving process. Such critique can help avoid solving the wrong problem or solving the right problem in the wrong way.

The entity should distinguish between formal and informal decisions and make reasonable efforts to match formality of decision-making with the materiality of the issue at hand. The resources devoted to problem-solving should also be appropriate to the materiality of the issue involved.

When a problem is material with respect to risk or cost, a formal process for problem-solving should exist. This process should be documented, and the documentation should include the decision criteria, the alternatives considered, the methods, facts, data, and logic used to identify solutions, the solutions adopted, the plans for implementation, and the expected results. Under the Open Meetings Act, when the board of an entity is making a decision, this process must be open to the public.

Problems should be addressed by the right people in an entity. Decisions should be made by well-informed parties with authority to effect change. Other things being equal, problem-solving should be done at the lowest possible level in the entity and by the fewest possible number of people.

Management should consciously determine who should help make a given

decision based upon an assessment of the participant's knowledge, skills, abilities, and interest in the problem, the impact of the problem on the participant, and the participant's management development needs.

Controls should exist to ensure that decisions are clearly communicated, implemented, monitored, and evaluated.

**Specific criteria**

The criteria related to the basic phases of the problem-solving process are as follows:

**Recognize the problem and state it clearly**

Managers must be able to define problems according to the "gaps" between planned objectives and reality, between what should be and what is. Control reports are tools used by managers to monitor these "gaps." The earlier the "gap" is discovered, the sooner it can be addressed ("Problem-Solving, Decision-Making, and Innovation," p. 211 and "Problem-Solving Process," pp. 6-7).

Managers must look ahead to future conditions and identify "gaps." In this scenario, the "gap," is between what should happen in the future and what the actual condition is forecast to be ("Problem-Solving, Decision-Making, and Innovation," p. 211).

Problems should be well-defined and, where appropriate, limited. The definition of the problem should include criteria to indicate when a problem is solved. For example, instead of defining a problem as "unequal statewide distribution of services," it is more useful to define it as "waiting lists for services vary from no wait at all to a six-month wait," or "some people have to travel over 100 miles for services."

Useful methods for defining a problem include: attribute listing, blast/refine, brainstorming, brainwriting, forced relationship, free association, idea checklist, interview, list reduction, nominal group technique, observation, paired comparison, stratification, and survey.

**Determine the significance of the problem**

Managers should focus their attention on significant problems rather than trivial ones. Pareto's Law states that 20 percent of the problems affect 80 percent of the results and visa versa. Screening problems allows managers to devote their efforts more effectively and efficiently ("Problem-Solving, Decision-Making, and Innovation," p. 213 and "Problem-Solving Process," pp. 6-10 and pp. 6-12).

The entity should consider the following factors when determining the significance of a problem ("Problem-Solving Process," pp. 6-9):

- Control: How much control does the group have over the problem and its solution?
- Importance: How serious or urgent is the problem?
- Difficulty: How difficult will it be to work through the problem to the solution?
- Time: How long will it take to solve the problem?
- Payoff: What is the expected return from solving the problem?
- Resources: How accessible are the resources required to solve the problem?

In assessing the significance of a problem, the entity should ask itself, "Does knowledge of this problem compel us to change past decisions, current operations, or future plans?" An affirmative answer suggests significance.

**Gather data and information relevant to the conditions associated with the problem; identify possible causes of the problem**

To the extent possible, the entity should gather data and information through such primary research techniques as interview, observation, and survey. Note that gathering relevant information may lead to restating the problem.

Other methods useful in developing possible causes are: brainstorming, brainwriting, blast/refine, cause-effect analysis, flowchart, forced relationship, force-field analysis, free association, histogram, nominal group technique, Pareto analysis, pie chart, stratification, and time-chart.

**Generate criteria for and develop alternative solutions**

Potential solutions for addressing the underlying causes can be generated using logic, intuition, or both. They can be generated individually or in a group. Depending on the decision to be made, other kinds of resources may be useful. For example, if the problem involves how to provide a contracted service, the best way of generating solutions may be sending out a Request for Proposals.

The entity should identify as many solutions to address the causes of the problem as possible. The solutions should either eliminate the causes, minimize obstacles to overcoming the problem, or maximize factors which compensate for the ill effects of the problem's continued existence ("Problem-Solving Process," pp. 6-42 and "Problem-Solving, Decision-Making, and Innovation," p. 215).

In generating criteria for alternative solutions, the entity should consider which criteria must be met ("must have") and which criteria are desirable but not essential ("would like").

Some data analysis techniques useful in generating alternative solutions are: attribute listing, brainstorming, brainwriting, cause-effect analysis, forced relationship, free association, idea checklist, list reduction, morphological matrix analysis, nominal group technique, and rational analysis.

**Evaluate the alternative solutions, and choose from among them**

Potential solutions should be evaluated within the constraints imposed by the entity, including the entity's attitude toward risk. Sometimes risk is unavoidable because the data that an entity needs for a good decision are not available. In this case, the entity should document the effect that the uncertainty has on the decision, so that this can play a role in evaluating the solution.

The risk that a decision will not result in the expected outcome and the effects of a wrong decision should also be considered. The entity should consider

whether two alternatives are equally risky, if the benefits are worth the risk, and whether there are contingency plans in case the expected outcome does not occur ("Problem-Solving, Decision-Making, and Innovation," p. 219).

Possible solutions should be evaluated against the criteria developed in the previous step. These criteria should describe what the acceptable solution(s) will provide. These criteria should function as imposed constraints which help eliminate other possible solutions. ("Problem-Solving, Decision-Making, and Innovation," p. 217).

Alternatives should be tested against "must have" criteria first. If all alternatives remain after this test, the entity should tighten its "must have" criteria. If no alternatives remain, criteria should be loosened. The entity should evaluate alternative solutions against the "would like" criteria only after meeting all remaining "must have" criteria.

Systematic methods to support decision-making include: attribute listing, balance sheet analysis, cause-effect analysis, cost-benefit analysis, decision matrix, decision tree, Delphi technique, failure mode and effect analysis, fault tree analysis, force field analysis, limiting factor analysis, linear programming, list reduction, Monte Carlo, morphological matrix analysis, multiattribute utility, nominal group technique, operations research, payoff table, risk ranking, satisficing, simulation and game theory, and weighted voting. Recall that both judgment and intuition play a role in evaluating alternatives.

**Plan, implement, monitor, and evaluate the selected alternative(s); determine if the problem still exists, and decide on future action**

The opinions and attitudes of the people involved should be considered if a decision is to succeed. A decision is useful only if it can be implemented, and this is more likely if it can be "sold" to those responsible for implementation. Decisions should not be made in a vacuum (*CIA Examination Review*, Chap. 7, Part III, p. 385).

The plan to implement the decision should anticipate obstacles, account for details, know which actions are critical and necessary, develop contingency plans, and minimize risk ("Problem-Solving Process," pp. 6-50).

Any implementation plan should assign both responsibilities and time lines for all tasks.

Decisions are not fully implemented until they are effectively communicated. The decision must be implemented with the proper delegation of authority to the individual(s) responsible (*CIA Examination Review*, Chap. 7, Part III, p. 385).



Performance must be measured so that the entity will know if the decision objective is confirmed and realized and whether the solution chosen should be maintained, altered, or replaced. The entity should assess whether the solution creates a different problem or unintended effects.

Among the data analysis techniques useful in planning, implementing, monitoring, and evaluating outcomes are: cause-effect analysis, contingency planning, cost-benefit analysis, decision tree, Delphi technique, failure mode and effect analysis, fault tree analysis, flowchart, force field analysis, Gantt chart, histogram, list reduction, paired comparison, Pareto analysis, PERT/Cost, PERT/CPM, stratification, time chart, and weighted voting.

**Assess Condition:**  
**Determine the actual process used**

Conduct interviews, observe operations, and identify and collect available documentation in order to gain an understanding of the entity's actual problem-solving process and controls. Included in the actual process are both official/unofficial and formal/informal processes and controls. An official process may exist even if it is not documented. Possible procedures include, but are not limited to:

- Determine where problem-solving and decision-making processes reside in the entity, who participates in such processes, and how participants are selected.
- Obtain and review any manuals, policies, and forms that could document any phase of the problem-solving process, including documentation of entity goals, objectives, strategies, and plans.
- Trace a recent material decision through all the steps in the problem-solving process. Observe such a process, if possible.
- Determine if and how management consciously selects the assumptions, criteria, methods, processes, and techniques used in problem-solving and decision-making.
- Determine what parts of the process the people involved with a decision see as having been successful or unsuccessful. Determine who the people involved think controlled the decision and what the actual evaluation criteria were.
- Review management's philosophy and operating style. The SAO contact manager can be a good resource for this. Characteristics include:
  - management's approach to taking and monitoring business risks
  - management's attitude and actions toward reporting
  - management's emphasis on meeting budget, profit, and other financial and operating goals
  - the board's involvement in the approval process of policies and procedures

In addition to gaining an understanding of the actual process, also try to find out:

- how the participants view their own process
- what they think is important about the process, and why.

This information may help identify causes and barriers.

**Determine the strengths and weaknesses of the actual process**

Using the tailored criteria, the understanding of the entity's process gained above, and the procedures in this section, analyze the actual process to determine if it:

- is designed to accomplish the management objective (this module, page 1)
- has controls that provide reasonable assurance that the process will work as intended
- is implemented and functioning as designed
- is actually achieving the desired management objective(s)

In executing these procedures, remember to identify and analyze both strengths and weaknesses.

Identify and review the steps in the actual process. Possible procedures include, but are not limited to:

- Determine if all major steps in the criteria are included in the actual process. If steps are missing, determine if their absence is likely to have a materially negative impact on problem-solving or decision-making.
- Determine if all the steps in the process appear to add value. If there are steps that do not appear to add value, try to get additional information on why they are included in the process.
- Review the order of the steps in the process to determine if it promotes productivity.
- Review the level of technology used in the process to determine if it is up-to-date and appropriate to the task. Besides computer, electronic, communications and other technology, this should include problem-solving and decision-making technology such as that listed in the appendix to this module.
- Review the information about existing problem-solving processes to determine if they are appropriate to the task. Compare the materiality of the issue to the thoroughness of the process, degree of documentation, and time spent.

Identify the controls over the process and determine if the controls are appropriate, placed at the right point(s) in the process, timely, and cost effective. Possible procedures include, but are not limited to:

- Draw a picture of the process, the controls, and the control objectives (see the graphic of the procurement process in the [Introduction](#) for an example). Determine if the control objectives are in alignment with the overall management objectives. Flowcharts of the problem-solving and decision-making processes can help identify inputs, processes, outputs, and critical points.
- Examine the nature, scope, and effectiveness of the controls used to ensure that problem-solving and decision-making are ongoing, thorough, and timely. (If controls are at the end of the process, they may not be as effective in ensuring ongoing, thorough, and timely problem-solving and decision-making). For example, if the monitoring system identifies a problem, do controls exist that require someone to

- investigate and report on the problem (such as required authorization and review) in a timely fashion?
- Review the procedures for decision-making. Determine what controls are in place to ensure that all reasonable solutions have been considered.
- Review the policies and procedures used by the entity to determine whether matters should be decided publicly. Determine if these procedures are consistent with the Open Meetings and Open Records Acts.
- Determine what processes are in place for monitoring and evaluating the effectiveness of problem-solving processes and the solutions they generate. For example, determine the process for making changes to a decision to make it more effective or to take advantage of new information.
- Determine how management changes the problem-solving and decision-making process if the process does not support the entity's goals and objectives.
- Identify, describe, and assess the process used to gather input from employees who might reasonably discover flaws in the problem-solving and decision-making process.

Review observations, interviews, documentation, and other evidence and design specific audit procedures as needed to determine if the process and/or the controls are functioning as designed. Depending upon the objectives of the project, these procedures may include both tests of controls and substantive tests. Possible procedures include, but are not limited to:

- Establish how information on problem-solving and decision-making and the implementation and evaluation of solutions is communicated to employees, particularly those who might reasonably discover flaws in the process.
- Determine whether and how management appraises the entity's problem-solving and decision-making processes.
- Review documentation of material decisions that have been made to determine if the stated criteria have actually been used as intended. If you look only at the stated criteria, do you come to the same conclusions, or are there other, unstated, criteria at work? Are the unstated criteria in alignment with the agency's mission, goals and objectives? For example, do successful bidders all tend to belong to the same country club?
- Review documentation of decisions to determine if evidence of inappropriate management override exists.

Analyze process reports over time for trends. Determine whether the information gained from the monitoring process is fed back AND is used to modify the system. Possible procedures include, but are not limited to:

---

- Review the results of evaluations of the problem-solving process. Determine if and how such information is used to refine the process.
- Determine if feedback information related to recurring problems and decisions is routinely made a part of the current problem-solving process. Recurring decisions might involve with whom to contract for a service or a product, whether to renew an agreement, and so on.
- Review any reports available which evaluate the effectiveness of the problem-solving process. Determine and assess any trends.

**Determine causes**

Determine what circumstances, if any, caused the identified weaknesses in the problem-solving process. Possible procedures include, but are not limited to:

- Determine if the participants in the problem-solving process understand its relationship to the entity's mission, goals, and values.
- Determine if the participants understand their role in the problem-solving process.
- If the process occurs at multiple locations, determine the nature and scope of communication and coordination between them.
- Determine if the relationship between the problem-solving process and other entity processes is clear.
- Determine if the problem-solving process has adequate human, dollar, time, and asset resources.
- If there are negative trends in the monitoring reports, determine if the reports are communicated to and used by the appropriate parties.

Determine what internal or external constraints or barriers, if any, must be removed in order to successfully overcome these weaknesses. Possible procedures include, but are not limited to:

- Determine if any key employees are unwilling to change the process and why they are unwilling. An example might be a Board of Directors wanting to retain control over a decision that is properly within the purview of management.
- Review the applicable entity, state, or federal laws or regulations to determine if any of them prevent the necessary changes from being made in the process.
- Determine if discussion and resolution of potentially material problems are inappropriately constrained by factors external to the entity.

**Determine effect**

Determine the effect of each of the identified weaknesses in terms of dollars, impact on services (either quantity or quality), impact on citizens, impact on the economy, etc. Possible procedures include, but are not limited to:

- Identify benchmarks for the process in question and compare to actual performance. Quantify the difference, if possible.
- Estimate the cost before and after the proposed change and compare.
- Estimate the quantity and/or quality of services before and after the proposed change and compare.
- Identify the risks associated with not making the proposed change and quantify.

Note: Evaluating the quality of decisions is not the same as assessing problem-solving processes. Auditors can determine that a particular decision was ill-conceived without exploring the process. Further, while the effects of bad decisions are often the same as the effects of faulty problem-solving processes, the problem may well be in the process rather than in the product.

**Develop recommendations**

Use the tailored criteria, references in the resource section, the identified weaknesses, and the identified causes and barriers to develop specific recommendations to address the cause and correct the weaknesses. Possible procedures include, but are not limited to:

- Identify alternative solutions used by other entities.
- Identify solutions for removing barriers.
- Provide general guidelines as to the objectives each solution should meet. Then the entity can tailor the solution to its specific situation.
- Provide specific information, if available, on how each recommendation can be implemented.