

The Nature of Decision Making

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Extension personnel constantly work with decision makers, including executives of agri-business firms. We can be more effective teachers and specialists if we understand the nature and principles of decision making. The author discusses steps in decision making and distinguishes between programmed (or routine) vs. nonprogrammed (or strategic) decision making. Pointing out that executive decision making is primarily concerned with the evaluation of alternatives, the author suggests that Extension specialists can make a real contribution to their clientele by developing and teaching methods for quantifying and evaluating these alternatives.

EXTENSION PERSONNEL constantly come in contact with persons in decision-making situations. Those of us working as specialists in production and marketing are continually working with decision makers—the executives of agri-business firms. Consequently, we need to keep abreast of current thought in the decision-making theory. Understanding the principles of decision making—especially executive decision making—should enhance our effectiveness as Extension workers and specialists.

What is the nature of decision making? A few years ago my answer would have been simple. I would have said that decision making involves three steps: (1) define the problem and collect all relevant facts, (2) state all possible courses of action and possible results, (3) weigh this information and decide upon the proper course of action. This somewhat naive interpretation is not necessarily wrong, but many of the significant steps of decision making are left out.

Contrary to many popular images of the decision maker, decision making involves more than just choice. As Simon¹ puts it, such

¹Herbert A. Simon, *The New Science of Management Decision* (New York: Harper & Row, 1960), p. 1.

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images ignore the lengthy and complex process of alerting, exploring, and analyzing that precedes the final moment of choice. As a basis for studying decision making, he categorizes decisions into programmed and nonprogrammed.

Luce and Raiffa organize decision making according to "whether a decision is made by (1) an individual or (2) a group; and according to whether it is effected under conditions of (a) certainty, (b) risk, or (c) uncertainty."²

Some writers regard decision making as essentially a case of problem solving. Drucker³ argues that this approach centers on giving answers, and that decisions so centered are unimportant, routine, tactical. Such decisions are concerned only with finding the most economical adaption of known resources. "Indeed," he says, "the most common source of mistakes in management decisions is the emphasis on finding the right answer rather than the right question." Drucker says that the decisions that really matter are strategic and that whatever their magnitude, complexity, or importance, they should never be taken through problem solving.

What Drucker calls routine, Simon calls programmed; what Drucker refers to as strategic, Simon identifies as nonprogrammed. Concern in this paper is with individual decision making as viewed from the programmed (routine)/nonprogrammed (strategic) orientation.

DECISION MAKING AS AN ACTIVITY

Programmed and nonprogrammed decisions may be arrayed on opposite ends of a continuum, reflecting the idea that they are not mutually exclusive categories. In the Simon context,⁴ programmed decisions can be thought of as the repetitive and routine—those for which there is a definite procedure for handling (they do not have to be treated anew each time they occur). Nonprogrammed decisions are the novel, unstructured, and consequential.

Why distinguish between programmed and nonprogrammed decision making? Because different methods are used to handle these two aspects of the decision-making process.

In this frame of reference, Spencer and Siegelman⁵ classify the

² R. D. Luce and H. Raiffa, *Games and Decisions* (New York: Wiley & Sons, 1958), p. 13.

³ Peter F. Drucker, *The Practice of Management* (New York: Harper & Brothers, 1954), pp. 351-53.

⁴ Simon, *op. cit.*, p. 5.

⁵ N. H. Spencer and Louis Siegelman, *Managerial Economics: Decision-Making and Forward Planning* (Homewood, Illinois: Irwin & Co., 1959), p. 4.

functions of managers into two different levels of activity: coordination and supervision. They say that decision making is a coordinative function, the selection of one course of action from two or more possible courses. Supervision, they say, does not require much, if any, coordination of the nature of decision making, since it involves fulfillment of already established plans. They maintain that the only real decision making is of a creative, policy-making nature; but the day-to-day functions of an organization depend upon the effectiveness of routine operations and decisions that, therefore, cannot be ignored.

Simon lists three phases of managerial activity which account for most of what executives do: (1) finding occasions for making a decision, (2) finding possible courses of action, and (3) choosing among alternative courses of action.⁶ He then defines three phases of activity involved: (1) intelligence activity, (2) design activity, and (3) choice activity. Drucker uses different terminology to encompass the same phenomenon: (1) defining the problem, (2) analyzing the problem, (3) developing alternative solutions, (4) deciding upon the best solution, and (5) converting the decisions into effective action.⁷

PROGRAMMED DECISION MAKING

At least three techniques are used in programmed decision making: habit, standard operating procedure, and systems approach.

"Habit is the most general, the most pervasive, of all techniques for making programmed decisions."⁸ Decision making of the programmed variety can become almost automatic activity. Through constant exposure to a given type situation, the individual may automatically formulate certain rules for procedure. Decisions handled according to habit are those routine, everyday decisions that relate to the day-to-day operations of the organization.

A second technique of programmed decision making is called standard operating procedures (SOP). Simon states that the only difference between habit and SOP is that habits are internalized (recorded in the central nervous system) while SOP begins as a formal, written, recorded program.⁹ SOP provides a way of examining, modifying, and improving habitual patterns.

A more sophisticated method of programmed decision making is

⁶ Simon, *op. cit.*, p. 1.

⁷ Drucker, *loc. cit.*

⁸ Simon, *op. cit.*, p. 9.

⁹ *Ibid.*, p. 10.

the systems approach—one of the elements of a relatively new discipline called operations research. Systems analysis involves looking at the total problem rather than at one phase. In this analysis, the design of the components of a system and the individual decisions within the system, with the implications of these decisions to the entire system, are of paramount importance. Operations research is primarily mathematical in nature, using dynamic mathematical techniques for the analysis of complex systems, with a major element being economic optimization criteria. A computer is essential to this type of programmed decision making. The major task of the computer is to automate a host of routine, repetitive data-processing activities that have been highly programmed previously but have not been automated.

NONPROGRAMMED DECISION MAKING

When executives are asked how they make decisions, they generally cite such factors as experience, judgment, insight, intuition, even creativity. Such factors are rather vague and place a great deal of weight on the personal attributes of the decision maker. However, "instead of reliance upon a 'hunch' or intuitive approach to decision-making, good executives acquire a knowledge, in depth, of the forces that influence decisions and of the processes through which decisions are reached."¹⁰ To derive the full benefits of fact finding and analysis, we must have qualified people charged with responsibility for sensing and understanding the significance of the facts. These persons should be selected for their training, experience, and knowledge of organizational goals.

The conventional method of handling nonprogrammed decision making is to select individuals who possess these skills. Selection is based on testing, past performance, professional training, and experience. Unfortunately, such techniques are uncertain and oftentimes are expensive. Is there a better way? Three possibilities are advanced:

(1) Discover how to increase the problem-solving capacities of individuals in nonprogrammed situations; (2) discover how to use computers to aid human problem solving without first reducing the problems to mathematical processes; and (3) through continued research, develop methodologies to reduce nonprogrammed situations to programmed situations.

¹⁰ J. D. Cooper, *The Art of Decision-Making* (Garden City, New York: Doubleday & Co., Inc., 1961), pp. 4, 8-9.

RATIONALITY IN DECISION MAKING

Decisions involve two elements, according to Simon:¹¹ factual elements and value elements. The factual elements are statements about the real world that must be either true or false, and statements which are syntactically (by definition) true or false. Decisions in the real world, however, involve more than factual statements; they contain value judgments. Most decisions involve words such as "good," "bad," or "preferable." These words have an ethical quality. If we wish to evaluate a decision, we may make a value judgment as to whether the decision is "good" or "bad," but the only real way to evaluate a decision is to determine whether it will achieve its stated objective. If it does, it is a correct decision. If it does not, it is incorrect. However, it is obvious that many decisions may achieve an objective and not be equally desirable. It is with this relative desirability that the value judgment of selecting the proper decision is concerned. If objectives change, a re-evaluation of the decision is necessary.

What is the role of judgment in the decision? Simon feels that ". . . it is continually necessary to choose factual premises whose truth or falsehood is not definitely known and cannot be determined with certainty with the information and time available for reaching the decision."¹² The decision maker must make judgments about truth and falsity. Decisions in private management must take as their ethical premise the objectives that have been set for the organization. The correctness of an administrative decision is relative—it is correct if it selects appropriate means to reach designated ends. It is organizationally rational if it is oriented to the individual's goals. One of the functions of the organization is to place the individual in a psychological environment that will adapt his decisions to the organization's objectives. The organization also provides him with the information that is necessary in order to make these decisions directly.

SUMMARY AND IMPLICATIONS

Decision consists of the following components: (1) finding occasions for making decision, (2) searching out alternative solutions, (3) evaluating the various alternatives according to some choice criterion, (4) making the choice from the alternatives, and (5) following the choice through to completion.

¹¹ Herbert A. Simon, *Administrative Behavior* (New York: The Macmillan Co., 1957), p. 46.

¹² *Ibid.*, p. 49.

The individual's reaction to a stimulus (problem) may be habitual or it may not. The decision maker is selective in the alternatives he perceives, and he arrays in a hierarchy the decisions he must make. Both facts and values enter into decision making and are influenced to some extent by the goals of the organization.

Executive decision making is primarily concerned with the evaluation of alternatives. These alternatives are usually different operational systems. The routine or programmed decision is readily adaptable to the problem-solving approach. However, the nonroutine, strategic decisions may require a somewhat different approach.

The executive should be concerned with developing a system that is self-correcting: a system that has a problem-solving procedure as an integral part. Modern inventory control, aided by the computer, is a good example of such a system. Once such a system is in operation, decisions are routine, or programmed, and are solved internally.

The strategic, nonroutine decision is essentially a planning activity concerned with the long-run position of the business. These decisions require both subjective and quantitative analyses. In most cases, evaluation of alternatives by quantitative means is limited by scarcity of data concerning outcomes. Subjective evaluation, the "art" of management, is the responsibility of the final decision maker.

The Extension specialist working with business firms often finds himself problem solving "brush fires." Thus he must concentrate on individual states of problem solving and fails to focus on the real problem—development of a self-correcting operational system.

The Extension management specialist can make a real contribution to executive decision making by developing and teaching methods for quantifying and evaluating alternatives. Many such methods can be incorporated into operations and become a part of the self-correcting system. Other new methods may aid in the subjective aspects of decision making. This kind of educational program may prove to be the most significant long-range contribution the Extension specialist can make to his clientele.

RIGHTNESS expresses of actions, what straightness does of lines; and there can no more be two kinds of right actions than there can be two kinds of straight lines. —HERBERT SPENCER