

## **Decision-making and Problem Solving**

### **Contents:**

Introduction

Decision-making Models

Cognitive Structure

Cognitive Biases

Improving Decision-making

Schools and Decision-Making

Attitudes to Decision-Making

Leadership and Decision-Making

## Introduction

Decision-making is the process of responding to a problem by searching for and selecting a solution or course of action that will create value for individuals or organizational stakeholders. In general two kinds of decisions are made: programmed and non-programmed.

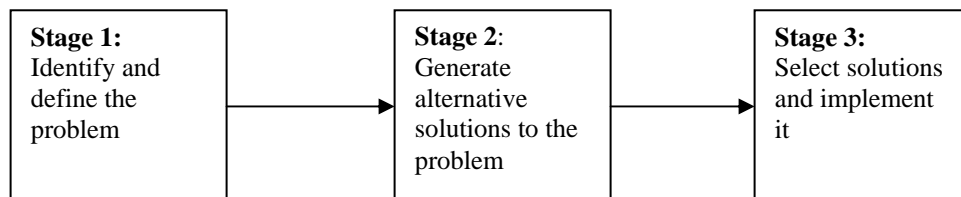
*Programmed decisions* are repetitive and routine. Rules, routines, and standard operating procedures can be developed in advance to handle them. *Non-programmed decisions* are novel and unstructured. No rules, routines, or standard operating procedures can be developed to handle them. Solutions must be worked out as problems arise. Non-programmed decision-making requires much more search activity and action to find a solution than does programmed decision-making. Non-routine search and development is based on non-programmed decision-making by researchers who continually experiment to find solutions to problems.

Non-programmed decision-making requires relying on judgment, intuition, and creativity to solve and standard operating procedures to provide non-programmed solutions.

## Decision-making Models

### The Rational Model

According to the rational model, decision-making is a straight-forward, three-stage process as follows:



In stage 1, the problems that need to be solved have to be identified. In stage 2, decision-makers individually or collectively seek to design and develop a list of alternative solutions and courses of action to the problems they have identified. In stage 3, they compare the likely consequences of each alternative and decide which course of action offers the best solution to the problem they identified in stage 1.

The rational model ignores the ambiguity, uncertainty, and chaos that typically plague decision-making. However, the following three assumptions underlying the rational model are criticized by researchers as unrealistic.

1. Decision-makers have all the information they need.
2. Decision-makers are smart.
3. Decision-makers agree about what needs to be done.

The assumption that the decision-makers are aware of all alternative courses of action and their sequences is unrealistic. Further, the assumption that it is possible to collect all the information needed to make the best decision is also unrealistic. Because the environment is inherently uncertain, every alternative course of action and its consequences cannot be known. Moreover, the rational model assumes that decision-makers possess the intellectual capacity not only to evaluate all the possible alternative choices but to select the best solution. In reality, the decision-makers have only a limited ability to process the information required to make decisions and most do not have time to act as the rational model demands. To sum up, the rational model of decision-making is unrealistic because it rests on assumptions that ignore the practical problems associated with decision-making.

### **The Carnegie Model**

The Carnegie Model, unlike the Rational Model, considers the practical problems in the decision-making process. When you compare the characteristics of the two models, you will realize the advantages of the Carnegie Model. The following table summarizes the differences between the Carnegie and Rational Models of decision-making:

<b>Rational Model</b>	<b>Carnegie Model</b>
Information is available	Limited information is available
Decision-making is costless	Decision-making is costly (e.g. Managerial costs, information costs)
Decision-making is “value free”	Decision-making is affected by the preferences and values of decision-makers
The full range of possible alternatives is generated	A limited range of alternatives is generated
Solution is chosen by unanimous agreement	Solution is chosen by compromise, bargaining, and accommodation between colleagues

The Carnegie Model suggests that decision-makers engage in satisfying minimum limited information requirements in their searches to identify problems and alternative solutions. Instead of searching for all possible solutions to a problem, as the Rational Model suggests, decision-makers resort to ‘satisficing’ –that is, they decide on certain minimum criteria that they will use to evaluate possible acceptable solutions. The criteria automatically limit the set of possible alternatives. The decision-makers then select one alternative from the range of alternatives that they have generated.

The Carnegie Model assumes that the decision-makers have a limited capacity to process information. Decision-makers can improve their decision-making by sharpening their analytical skills. They can also use computers to improve their decision-making capacity. This model recognizes that much of decision-making is subjective and relies on decision-makers’ prior experiences, beliefs, and intuitions.

To sum up, the Carnegie Model recognizes that decision-making takes place in an uncertain environment where information is often incomplete and ambiguous. It also recognizes that decisions are made by people who are limited by bounded rationality, who satisfice, and who form coalitions to pursue their own interests.

### **The Incrementalist Model**

According to the Incrementalist Model, decision-makers select alternative courses of action that are only slightly, or incrementally, different from those used in the past, thus lessening their chances of making a mistake. Often called the science of "muddling through," the Incrementalist Model implies that the decision-makers rarely make major decisions that are radically different from decisions they have made before. Instead, they correct or avoid mistakes through a succession of incremental changes, which eventually may lead to a completely new course of action.

### **The Unstructured Model**

Generally, the incremental approach works best in a relatively stable environment where decision-makers can accurately predict movements and trends. In an environment that changes suddenly, the incremental approach might prevent the decision-maker from changing quickly enough to meet new conditions.

In the Unstructured Model, whenever decision-makers encounter roadblocks, they rethink their alternatives and go back to the drawing board. Thus decision-making is not a linear, sequential process but a process that may evolve unpredictably in an unstructured way. For example, decision-making may be constantly interrupted because uncertainty in the environment alters decision-makers' interpretations of a problem and thus casts doubts on the alternatives they have generated or the solutions they have chosen.

### **The Garbage Can Model**

This model turns the decision-making process around and argues that decision-makers are as likely to start making decisions from the solution side as from the problem side. In other words decision-makers may propose solutions to problems that they can solve with solutions that are already available.

Garbage Can decision-making arises in the following way: Decision-makers have a set of solutions, or skills, with which they can solve certain problems. Possessing these skills, they seek ways to use them, so they create problems, or decision-making opportunities, for themselves. To further complicate the decision-making process, different coalitions of decision-makers may champion different alternatives and compete for resources to implement their own chosen solutions. Thus decision-

making becomes like a “garbage can” in which problems, solutions, and the preferences of different individuals and coalitions all mix together and contend with one another for decision-maker’s attention and action.

From the explanations of the decision-making models given above you can select a suitable model for your own decision-making. In addition to this, you have to get a clear picture about the influence of the cognitive structure of decision-maker on his decision-making process.

### **Cognitive Structure**

A cognitive structure is the system of interrelated beliefs, preferences, expectations, and values that a person uses to define problems and events. Cognitive structures shape the way a decision-maker make decisions and they predetermine what decision-makers perceive as opportunities and threats in the environment. Two decision-makers might perceive the same “objective” environment very differently because of differences in their cognitive structures. When a decision-maker confronts a problem, his or her cognitive structure shapes the interpretations of the information at hand; that is, the decision-maker’s view of a situation is shaped by prior experience and customary ways of thinking – by the decision-maker’s mindset.

### **Cognitive Biases**

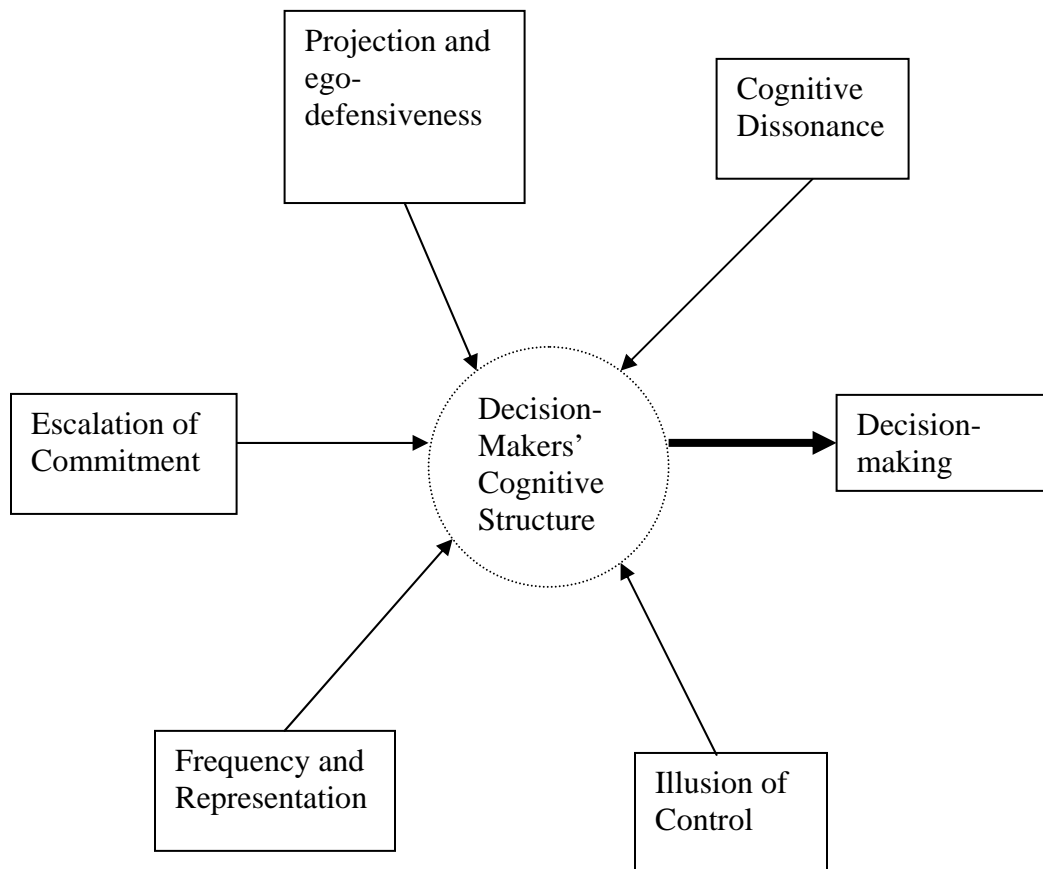
Researchers have identified several factors that lead decision-makers to develop a cognitive structure that causes them to misperceive and misinterpret information. These factors are called Cognitive Biases because they systematically bias cognitive structures and affect the decision-making. As the following figure shows, cognitive bias affect the way decision-makers process information. In order to understand the figure we need to know the description of the terms that have been used in the figure.

### **Cognitive Dissonance**

The state of discomfort or anxiety that a person feels when there is an inconsistency between his or her beliefs and actions.

## Illusion of Control

A cognitive bias that causes managers to overestimate the extent to which the outcomes of an action are under their personal control.



The Distortion of Decision-making by Cognitive Bias

## Frequency

Frequency is a cognitive bias that deceives people into assuming that extreme instances of a phenomenon are more prevalent than they really are.

## Representativeness

Representativeness is a cognitive bias that leads decision-makers to form judgments based on small and unrepresentative sample.

## **Projection**

Projection is a cognitive bias that allows managers to justify and reinforce their own preferences and values by attributing them to others.

## **Ego-defensiveness**

Ego-defensiveness is a cognitive bias that leads decision-makers to interpret events in such a way that their actions appear in the most favourable light.

## **Escalation of Commitment**

Escalation of Commitment is a cognitive bias that leads decision-makers to remain committed to a losing course of action and refuse to admit that they have made a mistake.

## **Improving Decision-making**

The cognitive biases make it difficult to maintain the quality of decision-making over time. How can decision-makers avoid using appropriate routines, beliefs, and values to interpret and solve problems? There are several ways in which the decision-maker can overcome the effects of cognitive biases.

Decision-makers have to continuously unlearn old ideas and constantly test their decision-making skills by confronting errors in their beliefs and perceptions. Three ways in which they can stimulate the unlearning of old ideas (and learning of new ones) are by listening to dissenters, by converting events into learning opportunities, and by experimenting.

### **Listening to Dissenters**

To improve the quality of decision-making, top managers or decision-makers can make it their policy to surround themselves with people who hold different and often opposing points of view. They can collect new information to evaluate the new interpretations and alternative generated by dissenters.

Unfortunately, research has shown that top managers do not listen carefully to their subordinates and tend to surround themselves with 'yes-men' who distort the information they provide, enhancing good news and suppressing bad news.



Moreover, because of bounded rationality, managers may be reluctant to encourage dissent because dissent will increase the amount of information they have to process.

### **Converting Event into Learning Opportunities**

An organization needs to design and manage its structure and culture so that managers are motivated to find new or improved responses to a situation. Total quality management, for example, is based on the idea of making people responsible for continuously re-examining their jobs to see whether improvements that result in increased quality and productivity can be made.

### **Experimenting**

To encourage explorative learning, organizations must encourage experimenting, the process of generating new alternatives and testing the validity of old ones. Experimenting can be used to improve both incremental and garbage can decision-making process. Decision-makers who are willing to experiment avoid over commitment to previously worked-out solutions, reduce the likelihood of misinterpreting situation, and can learn from their failures.

### **Schools and Decision-Making**

Hull and Adams (1981) point out those members of a department may have expectations as to how a head of department should approach decision-making. These expectations may be affected by two factors: experience to date and psychological needs. Now we can think of a school situation. There is more evidence that, although favouring a more collaborative role, teachers do not want absolute control. Belasco and Alutto (1972) found that desire for increased participation and levels of satisfaction regarding this were not equally distributed in the teaching population. Primary school teachers in Nias' (1980) study condemned heads who totally develop responsibility for making decisions which affect the whole school. Nias pointed out that the decentralization of decision-making does not necessarily increase the job satisfaction of all teachers. She found that: Maximum job satisfaction went hand-in-hand with humane but positive leadership, leadership to which teachers felt they were encouraged to contribute but which gave them in

return the enhance to perform effectively the main role for which they thought they were employed.

An investigation by Bloomer (1980) identified the desired profile of the head of department as a democrat rather than an autocrat, and evidence from survey conducted by Howson and Woolnough (1982) suggested similar findings.

### **The Promotion of Participative Decision-Making within Schools**

Hoyle (1986) identified four reasons for the increase of pressure for participative decision-making: the change in the socio-political climate of the 1960s; the growing need for greater teacher collaboration for curriculum change; the increasing complexity of schools which undermines the single person kind of leadership; and the growth in management courses which emphasize particular approaches.

The involvement of staff in decision-making with its perceived benefits in terms of staff development; commitment, willingness to change etc. – cannot just happen. Most of the effective practitioners had worked at it, even if indirectly, largely by generating a climate in which it could flourish. In those departments or sections where staff had been accustomed to an autocratic leadership style, they had to learn how to participate when there was a change of leader.

Suppose that the new head is trying to consult staff now. It's difficult making staff feel some responsibility when they have not been accustomed to it – the previous head was a complete autocrat and never asked anyone about anything. Another newly appointed head had remarked that his staff were longing to get involved in department/section matters but "did not know how to as yet" as the previous head of the department/section had done and decided everything.

It was the "open" departments that practised participative decision-making – not merely because they had a philosophy that placed value on democratic process, but because the staffs were privy to everything that was going on and were kept fully informed. The teachers had both the necessary information and background knowledge on which to form opinions and make decisions, and the benefit of sharing other's views and experiences, thus broadening their own horizons. Participation was an on-going process and was confined to organizational structure.

There is a growing body of knowledge showing that effective schools are those that are good at two-way communications, listening to their teachers and taking their views into account before making decisions. Effective management of a complex organization like a school is less likely without real opportunities being created for teachers to participate in decision-making processes. Most teachers like to be consulted about major issues and to have the opportunity to put forward ideas and suggestions. In general, however, many felt they had little say in school decision-making and particularly objected to being considered after a course of action had been decided on. Senior staffs were seen as having the right to make decisions but “pseudo-democracy” was something to be avoided and could contribute to low morale. But expectations did vary according to the significance of the matter being discussed.

Elaborate consultative procedures over matters deemed inconsequential or of minor importance were seen as time-consuming and irritating. Similarly, indecisiveness and slow decision-making were seen as undesirable qualities in school leaders, and teachers liked to see an outcome from the consultative process. There is a need, therefore, for those in leadership positions to create genuine opportunities for participation and yet be prepared, on occasions, to make decisions with little or no consultation. A lot will depend on the issue and the level of commitment that is required.

Although, both in literature and from the research studies, participative decision-making was generally regarded positively, there were, more or less, dangers associated with it. Having to make decisions on many aspects of school policy may place too much responsibility on class teachers. Indeed, excessive commitment by teachers may result in some teachers may choose to opt out of working parties or not attend meetings, seeing their first commitments, as teachers, as catering for the needs of pupils and thus giving other matters (e.g., extra curricula activities) preference. It appeared that job satisfaction was enhanced when teachers were able to contribute at the level they desired yet still perform their main role effectively.

Effective middle managers need to be able to operate in all modes – there is no single style that can be identified as the most appropriate for every person in every situation. However, whatever style is used, it should be open and clear and, perhaps

above all, consistent. Teachers need to know how decisions, both in department/section and schools, are likely to be made and matters of significance resolved. Effective leaders were also shown to have a major concern for achieving tasks and for fulfilling the social and professional needs of colleagues. Leaders have to be adaptable to match constantly changing situations and it was important for department and faculty heads to lead by example and to be a source of ideas.

### **Attitudes to Decision-Making**

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### **Leadership and Decision-Making**

A useful definition of leadership style is that given by Sergiovanni and Elliot (1975) who see it as the way an individual expresses leadership, uses power and authority, arrives at decisions and in general interacts with others. Various attempts have been made to draw up typologies of leadership, some of which, it is argued (Nias, 1980), assume value connotation – for example, delineating the “autocrat” as caring little for the feeling of others. The autocratic mode may be quickest at the point of decision-making but has a long implementation time; a decision will take longer to arrive at by a consultation process but will increase commitment and implementation is likely to be faster.

Routine activities may be differentiated from higher level ones, a distinction which would seem to parallel “transactional leadership” – and fixing and dealing are necessary in administration – and “transforming leadership” which involves leaders and followers raising one another to higher levels of motivation. It could be argued that it is in transforming leadership that participative decision-making is crucial and this would explain why this seemed to be a feature of the more effective department/section in various studies.

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