

### Session Objectives:

- To understand the significance of rational decision making
- To understand the decision making process
- To study the different types of managerial decisions
- To understand different decision-making conditions
- To understand management information system and decision support system
- To analyze the systems approach to decision making
- To study group decision making and the forms of group decision making
- To understand the various decision making techniques

### Definition of Decision- Making

"Decision Making is the process through which managers identify organizational problems and attempt to resolve them."

**For instance**, in 1985, when Coca-cola introduced a new sweeter-tasting coke, the public outrage response was totally unexpected. Extensive consumer research earlier had indicated that customers would prefer the new Coke. The CEO felt that Coke would lose its preeminence in the soft-drink industry. He then decided to reintroduce the older version. Within three months the company had the old Coke, renamed Coca-Cola Classic, back on the shelves along with the new product.

### Significance of Decision Making

Managers may not always make the right decision, but they can use their knowledge of appropriate decision-making, to decrease the odds. In case of Coke, the CEO identified the problem, and took the right decision to reintroduce the old Coke back into the market.

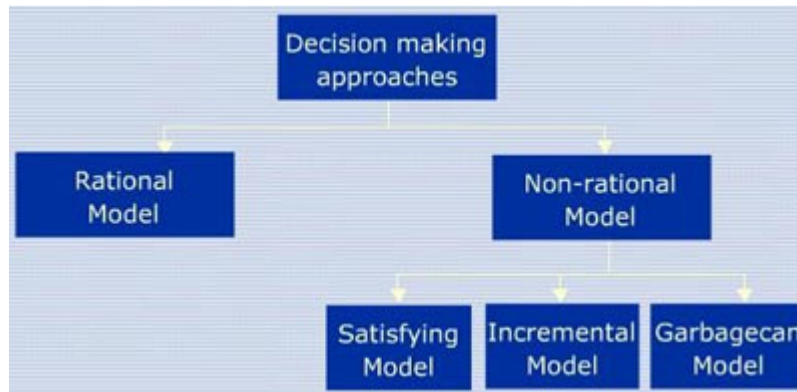
- Use of rational and systematic approach yields better results
- Clarity in understanding the alternative courses
- Aims at best solution

### Limitations of Decision Making

- Decisions are made for future events. As future is uncertain, the decisions cannot be completely rational.
- Difficulty in determining alternatives for accomplishing a goal
- When new opportunities are involved, decision-making seems to be difficult
- In most cases, alternatives cannot be analyzed, inspite of using sophisticated decision-making models
- Limitations of time and information, blocks the rationality of the decision maker

- Decision-making is a game of risk, and humans by nature are risk averters. This nullifies the rational decision making process.

### Managers as Decision Makers



The success of an organization greatly depends on the decisions that managers make. Two major models regarding managerial decision making are: rational and non-rational modes for decision making.

### Rational model

Rational model is based on economic theory, Here, managers are engaged in making rational decisions. They gather relevant information, understand, analyze the possible outcomes and then make a rational decision.

This view was criticized, as management thinkers felt it difficult to obtain perfect information and make a rational decision in complex situations.

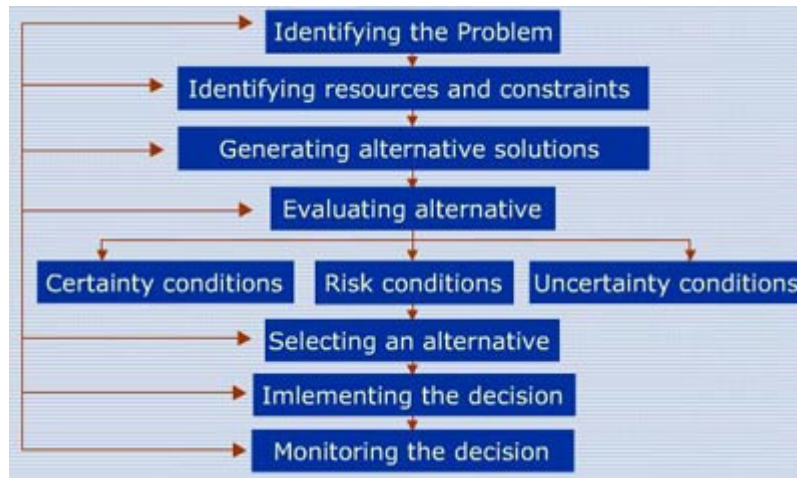
### Non-rational model

Non-rational models are of three types: satisficing model, incremental model and garbage-can model.

- **Satisficing model** – Proposed by Simon, this model states that managers involved in decision making tend to seek alternatives that are most satisfying.
- **Incremental model** – This approach focus on short-term solutions rather than facilitating long-term goals accomplishment.  

**For instance,** increasing sales through sales promotion is a short-term decision taken by the management.
- **Garbage-can model** - This model is most appropriate for judgment tasks in organizations where managers have no specific goal preference, the involvement of participants fluctuates with the amount of time and effort given, and choices are inconsistent and not well defined.

### Decision Making Process



**Determining the problem:** It involves identifying the problem. Identification of a problem has three stages: scanning, categorization and diagnosis.

- **Scanning** involves monitoring the work situation for changing circumstances that may signal the emergence of a problem. Changing circumstances can take different forms such as completion, government policies, price regulation etc. which hamper the growth.

**For instance,** during the 1970's, Swiss watchmakers noticed that the relatively inexpensive watches that were produced in Japan and Hong Kong were sold in Switzerland. Entry of these watches from Japan and Hong Kong posed a threat to domestic manufacturers.

- **Categorization** enables an understanding of the discrepancy between actual and planned objectives.
- **Diagnosis** involves gathering of additional information and specifying the nature and causes of the problem.

**Identifying resources of constraints:** Involves identifying factors that help to solve (money, materials, time) or limit (lack of resources) managers efforts to solve the problem.

**Generate alternative solutions:** Development of alternative solutions can be facilitated through brain storming, wherein manager jots down the possible solutions, generate an idea, and build upon ideas.

**Evaluating alternative solutions:** Evaluation entails a careful consideration of strengths and weaknesses of each alternative, before finalization. Each alternative should be evaluated systematically based upon feasibility, quality, acceptability, cost reversibility and ethics.

When Coca-cola company ran into difficulties, while introducing a new formula for Coke; it was still able to reverse the decision by reintroducing its old formula as Coke classic.

**Selecting alternatives:** Selection of alternatives can be based upon experience, experimentation, and research.

- Past experience is helpful when the firm is new to the market. It can follow the experience of other players in the market, and then act appropriately.
- Experiment is a challenging task. For instance, Coke's experiment with new sweet formula, turned out to be a failure.
- Research is considered to be an effective technique for selecting an alternative because it studies the nature and relationship among the variables.

**Implementing the decision:** It involves implementing the activities for achieving the objectives.

**Monitoring:** Comparing planned with the actual objectives. In case any differences arise, they are corrected.

**Types of Managerial Decisions**

Managerial decisions are of two types: programmed and non-programmed managerial decisions. (also refer table 1)

**Programmed decisions**

Programmed decisions are routine, repetitive, well-structured situations developed through the use of predetermined decision rules.

**Examples include**, frequent maintenance and servicing of factory machinery and equipment, decision about what disciplinary action is to be taken when an employee reports to work in an intoxicated condition etc.

In most organizations, programmed decisions are made by the lower level managers, since the problems they encounter tend to be routine in nature and involve lesser skills of decision making.

**Non programmed decisions**

Non programmed decisions are predetermined. Here, decision rules are impractical, because the situations are novel and/or ill-structured. Most non programmed decisions are taken at the top-level, as they involve effective decision making and creativity.

**Table 1: Managerial decisional making**

Organization	Programmed decisions	Non-programmed decisions
Fast food restaurant	Determine supplies to be reordered.	Identify the location for new franchisee.
University	Decide if students meet graduation requirements.	Choose new academic programs
Automaker	Determine union employee pay rates.	select new car design.

**Decision Making Conditions ( Certainty, Uncertainty and Risk)**

Managers sometimes are clear about environmental conditions, but at other times, they don't seem to have any clue. In such circumstances, the available conditions for a decision maker are certainty, uncertainty and risk.

**Decision making under certainty**

When the decision maker knows with reasonable certainty about what the available alternatives are, and what conditions are associated with each alternative; then a state of certainty is said to exist.

**For example**, Air India needs to buy ten jumbo jets. The decision is from whom to buy. Air India has two choices: McDonnell Douglas, and Airbus. Each of these companies are known for their quality products. Air India can choose from any of these alternatives. Here, for making the choice, there is less ambiguity and there is a relatively lower chance of making a bad decision.

### Decision making under risk

In some situations, a manager is able to estimate the level of probability at which certain variables could occur. The ability to estimate may be due to experience, incomplete but reliable information or, in some cases, an accurate report. When estimates are made, a degree of risk is involved. However some amount of information about the situation is available. The situation requires estimating the probability that one or more known variables might influence the decision being made.

### Decision making under uncertainty

A condition of uncertainty exists when a manager is faced with reaching a decision with no historical data concerning the variables and/or unknowns and their probability of occurrence.

**For instance**, the decision to introduce Kellogg corn flakes in India was made under uncertainty.

### Modern Approach to Decision Making Under Uncertainty

Modern approach to decision making under uncertainty helps in improving the quality of decision making. For making such decisions, there are three approaches: risk analysis, decision trees and preference theory.

- **Risk analysis** : Risk analysis involves knowledge of the size and the nature of the risk involved, in choosing a particular course of action.

Before the launch of its Versa model, Maruti, conducted risk analysis in the areas of capital investment, cost of production and pricing.

- **Decision trees** : A graphical representation of alternative courses of action with the possible outcomes, comprises a decision tree. It depicts the various decision points, chances, events and probabilities involved in various decision- courses that might be undertaken.
- **Preference or utility theory** : This theory is based on the notion that individuals' attitudes towards risk will vary. Some individuals are willing to take risk (gamble), whereas others are not willing to take risk or take only low risk (risk averters). Managers play both these roles, when they are uncertain about the outcome.

## Management Information System

Management Information System gathers more comprehensive data and organizes and summarizes the data in a form, that is useful to functional managers. It also provides them with timely information.

An ideal model for MIS comprises of four components – data gathering, data entry, data transformation and information utilization. The database for this model is stored in such a way that a user can select, modify, calculate, and transform this database into any other useful application.

### Decision Support System

An important component of the MIS is Decision Support System (DSS). DSS is a computer-based information system that supports the process of managerial decision-making in a situation that is not well structured. Though this system does not replace the process of managerial decision-making, it still makes decision-making more effective.

The following are the different characteristics of DSS

- Data for DSS are based on managerial decisions rather than databases
- Easy to understand and use, as software is quite simple and contains less technical terms.
- Availability of interactive processing, enables getting a quick response from other members in the organization.
- DSS is flexible, as it can be adapted to any external environment

### Systems Approach to Decision Making

The systems approach to decision making emphasizes that:

- Decisions cannot be made in a closed-system environment.
- Since each department or unit of an enterprise is a subsystem of an entire enterprise, managers must be responsive to the policies and programs of other organizational units.
- Any decision taken by a manager should include the thinking and attitude of the people as they are a part of the social system.
- At some point a decision has to be made and someone must select a course of action from among alternatives, taking into account events and forces in the environment in which the decision is made.

### Group decision making

Today, more and more organizations are creating groups, and encouraging individuals to participate in decision making. Let us study different forms of decision making groups.

- **Interacting groups:** In interacting groups, the members are open to discuss, argue and agree on the best alternative.
- **Delphi group:** In a Delphi group, the participants do not meet face-to-face. But, they provide expert opinion on ambiguous problems. The first step in using delphi procedure is to obtain the cooperation of panel of experts. Next a problem is presented to them and they are asked to anonymously give their opinions. The people coordinating the delphi group, collect the responses, average them and ask the experts for another prediction. The delphi technique is not used for routine, everyday decisions because of the time and expenditure that it involves.
- **Nominal groups:** A nominal group is a structured technique used to generate creative and innovate alternatives or ideas. Unlike the Delphi technique, where members do not see each other, nominal group always brings them together.

### Decision Making Techniques

The following five techniques are used in the decision making process:

**Marginal analysis:** This technique enables an assessment of additional output derived for an extra amount of input-resource that is added. This option is viable for evaluating alternatives in the decision making process.

**Financial analysis:** It enables an estimation of the profitability of investment, calculation of pay-back period, and an analysis of cash inflows and outflows.

**Break- Even analysis:** Break even occurs when total revenues equal total costs, or when profit is nil. At this point, it becomes necessary to cover the fixed cost. Break-Even technique aids in making a comparative analysis of the alternatives that are available, based on price, fixed cost and variable cost per unit.

**Ratio analysis:** It compares the financial statements to evaluate the organization's financial position, strengths and weaknesses, historical performance etc.

### Operations research techniques

Operations research techniques enables the use of quantitative techniques in decision making. Some of them are:

- **Linear programming** – It enables the decision maker to allocate scarce resources optimally and maximize profits. This technique is used mainly in product mix decisions, inventory management problems, scheduling production facilities etc.
- **Queuing or waiting-line method** – Queuing method is a scientific approach for optimizing customer service.
- **Game theory** - This technique enables to formulate a strategy based on the competitor's strengths and decisions and one's own actions.
- **Simulation** – Simulation is used to evaluate the alternatives for complex problems.
- **Decision tree** – Another mathematical approach, which enables to choose between several alternative courses of action.

### Summary

- Decision making – definition, significance and limitations
- Managerial decision making – rational and non-rational model
- Decision making process
- Types of decisions
- Decision making under uncertainty – risk analysis, decision trees, utility theory
- Management information system and decision support system
- Systems approach to decision making
- Group decision-making interacting groups, delphi group, and nominal groups
- Decision making techniques – marginal analysis, financial analysis, ratio analysis, operations research techniques and linear programming