12

Decision-making

LEARNING OUTCOMES

After studying this chapter, the student shall be able to:

- Understand the concept of decision-making
- Explain the importance of decision-making
- Describe the steps in decision-making
- Analyse rationality in decision-making
- Explain quantitative and qualitative techniques of decision-making

12.1 CONCEPT AND NATURE OF DECISION-MAKING

12.1.1 What is Decision-making?

According to McFarland, "A decision in an act of choice wherein an executive forms a conclusion about what must be done in a given situation. *A decision represents a course of behaviour chosen from a number of possible alternatives*". A decision involves the act of choice and the alternative chosen out of the available alternatives. the process concerned with searching and evaluating alternatives to a problem and selecting the best alternative is known as decision-making.

Decision-making is a process of selection from a set of alternative courses of action which is thought to fulfil the objectives of the decision problem, more satisfactorily than others. It is a course of action which is consciously chosen for achieving a desired result. A decision is something that takes place prior to the actual performance of a course of action that has been chosen. To state this in terms of managerial decision–making, it is an act of choice wherein a manager selects a particular course of action from the available alternatives in a given situation. Managerial decision-making involves the entire process of establishing goals, defining tasks, searching for alternatives and developing plans in order to find the best answer to the decision problem.

12.1.2 Characteristics of Decision-making

The basic characteristics of decision-making are enumerated below:

(i) It is a process of choosing a course of action from among the alternative courses of action.

(ii) It is a human process involving to a great extent, the application of intellectual abilities.

(iii) It is the end process preceded by deliberation and reasoning.

(iv) It is always related to the environment. A manager may take one decision in a particular set of circumstances and another in a different set of circumstances.

(v) It involves a time dimension and a time lag.

(vi) It always has a purpose. Keeping this in view, there may just be a decision not to decide.

(vii) It involves all action like defining the problem and probing and analyzing the various alternatives which take place before a final is made

12.1.3 Types of Decisions

Decisions may be classified according to different bases as highlighted below:

(i) Routine and Strategic Decisions. Tactical or routine decisions are made repetitively following certain established rules, procedures and policies. They neither require collection of new data nor conferring with people. Thus, they taken without much deliberation. Such decisions are generally taken by the managers at the middle and lower management level. Strategic or basic decisions, on the other hand; are more important and so they are taken generally by the management and middle management. The higher the level of a manager, the more strategic decisions; he is required to take. Strategic decisions relate to policy matters and so require a thorough fact finding and analysis of the possible alternatives.

(ii) Policy and Operating Decisions. Policy decisions are of vital importance and are taken by the top management. They affect the entire enterprise. But operating decisions are taken by the lower management in order to put into action, the policy decisions. For instance, the bonus issue is a policy matter which is to be decided by the top management and calculation of bonus is an operating decision which is taken at the lower levels to execute the policy decision.

(iii) Organisaional and Personal Decisions. Organistaional decisions are those which a manager takes in his official capacity. Such decisions can be delegated. But personal decisions, which relate to manager as an individual and not as a member of the organisation; cannot be delegated.

(iv) Programmed and Non-programmed Decisions. The programmed decisions are of a routine and repetitive nature, which are to be dealt

with; according to specific procedures. But the non-programmed decisions arise because of unstructured problems. There is no standard procedure for handling such problems. For instance, if an employee absents himself from his work for a long- time without intimation, the supervisor need not refer this matter to the chief executive. He can deal with such an employee according to the standard procedure which may include charge sheet, suspension, etc. But if a large number of employees absent themselves from work without any intimation, such a problem cannot be dealt in a routine manner. It has to be dealt assuming an unstructured problem and the decision should be taken by the Chief Executive. Non-programmed decisions require thorough study of the problem and scientific analysis of the situational factors. There has to be adequate probing and analysis of various alternatives before taking such decisions.

(v) **Individual and Group Decisions.** When a decision is taken by an individual in the organisation, it is known as individual decision. Such decisions are generally taken in small organisations and in those organisations where autocratic style of management prevails. Groups or collective decisions refer to the decisions which are taken by a group of organisational say members, Board of Directors or a Committee.

12.2 IMPORTANCE OF DECLSION-MAKING

No business can survive without effective decision-making. Decision-making is an essential part of every function of management. In the words of Peter F. Ducker, "***Whatever a manager does, he does through decision-making.***" Decision-making lies deeply embedded in the process of management. Decision-making spreads over all the managerial functions and covers all the areas of enterprise. Management and decision-making are bound up and go side by side. Whether knowingly or unknowingly every manager makes decisions constantly.

Herbert A. Simon described decision-making as synonymous with management. Joseph A. Literer felt that decision-making is the **core of managerial activity,** Decision-making involves thinking and deciding before doing and so is inherent in every managerial function. Each manager has to take a number of decisions while performing his functions of planning, organising , staffing, directing and controlling. This is the reason, decision-making is often called the **essence of managing**.

Decision-making and planning are deeply inter-linked. The determination of objectives, policies, programmes, strategies etc, each involves decision-making. The managers also take decisions on the organisational design, staffing, directing and leading the employees in work situations and on regulating performance in tune with per-determined standards. In other words, all managerial functions are preceded by managerial decisions.

The most outstanding quality of a successful manager is his ability, to make sound decisions. A manager has to make up his mind quickly on certain matters. It is not correct to say that the has to make spur of the moment decisions all the time. While taking many decisions, he gets enough time for careful fact finding, analysis of alternatives and choice of the best alternative. Decision-making is a human process. When a manger decides, he chooses a cours which he thinks is the best.

Right from the day when the size of the business used to be very small as compared to the present-day, the importance of decision-making has been there. The only difference is that in today's business environment, decision-making is getting more and complex. The fact remains that managers continuously take decisions and initiate steps to implement them. Thus, management is a blend of thinking, deciding and taking action thereupon.

12.3 DECISION-MAKING PROCESS

The synonyms of the word 'according to most dictionaries are: judicious, logical, sensible, scientific and the like. A rational decision must be distinguished from an intuitive decision which is based on hunch and past experience of the manager and so often lacks objectivity. A rational decision is backed by scientific process involving analysis of the problem, collection of relevant data, review of key factors, evaluation of alternatives and choice of best alternative. Such a decision could be justified on a logical basis and does not suffer from the personal bias of the decision maker.

Scientific decision-making involves the following steps:

(i) Defining the problem.
(ii) Analysing the problem.
(iii) Collection of data.
(iv) Developing alternative.
(v) Review of key factors.
(vi) Selecting the best alternative.
(vii) Implementing the decision.

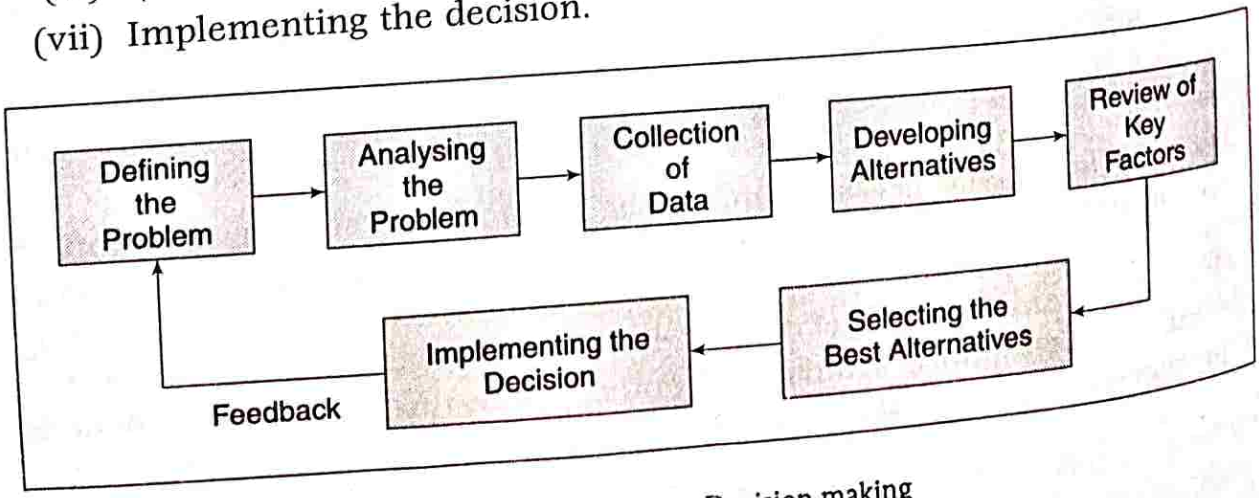

Fig. 12.1 Steps in Decision-making

(i) **Defining the Problem.** Sufficient times should be spent on defining the problem as it is not always easy to define the problem and to see the fundamental thing that is causing the trouble and that needs correction. Practically, no problem ever presents itself in a manner that an immediate decision may be taken. It is, therefore, essential to define the problem before any action is taken, otherwise, the manager will answer the wrong question rather than the core problem. Clear definition of the problem is very important as the right answer can be found only to a right question.

(ii) **Analysing the Problem.** After clearly recognising the problem, the next phase of decision-making is the analysis of problem which involves classifying the problem and gathering information. Classification is necessary in order to know who should take the decision and who should be consulted in taking it. Without proper classification, the effectiveness of he decision may jeopardized. The problem should be classified keeping in view, the following factors:

(a) the nature of the decision, i.e., whether it is strategic or it is routine

(b) the impact of the decision on other functions

(c) the futurity of the decision

(d) the periodicity of the decision, and

(e) the limiting or strategic factor relevant to the decision.

(iii) **Collection of Data.** A lot of information is required to classify any problem. So long as the required information is not available, any classification would be mis-leading. This will also have an adverse impact on the quality of the decision. Trying to analyse without facts is like guessing directions at a crossing without reading the highway sign-boards. Thus, collection of right type of information is very important in decision-making. It would not be an exaggeration to say that a *decision is as good as the information on which, it is based.*

Collection of facts and figures also requires certain decisions on the part to the manager. He must decide what type of information, he requires and how he can obtain this. Before gathering the information, one must be clear to how much time and money, he can spend in gathering the information he needs. It is also important to note that when one gathers the facts to analyse a problem he wants facts that relate to alternative courses of action. So one must know what the several alternatives are and then should collect information that will help in comparing the alternatives. Needless to say, collection of information is not sufficient, the manager must also know how to use it.

(iv) **Developing Alternatives.** After defining and analysing the problem, the next step in the decision-making process, is the development

of alternative courses of action. Without resorting to the process of developing alternatives, a manager is likely to be guided by his limited imagination. It is rare for alternatives to be lacking for any course of action. But, sometimes; a manager assumes that is only one way of doing a thing . In such a case what the manager has probably not done, is to force himself consider other alternatives. Unless he does so, he cannot reach the decision which is the best possible. From this, can be derived; a key planning principle which may be termed as the principle of alternatives. Alternatives exist for every decision problem. Effective planning involves a search for the alternatives towards the desired goal.

(v) **Review of Key Factors.** While developing alternatives, the principle of limiting factor has to be taken care of. A limiting factor is one which stands in the way of accomplishing the desired goal. It is a key factor in decision-making. If such factors are properly identified, manager can confine his search for alternatives to those which will overcome the limiting factors. Depending upon the situation faced, the limiting factors may be inadequate funds, shortage of human resources, old machines or lack of marketing skills.

(vi) **Selecting the Best Alternative.** In order to make the final choice of the best alternative. one will have to evaluate all the possible alternatives. There are various ways to evaluate alternatives. The most common method is through *intuition*, i.e., choosing a solution that seems to be good at that time. There is an inherent danger in this process because a manager's intuition may wrong on several occasions.

The second way to choose the best alternative is weigh the consequences of one against those of the others. Peter Drucker has laid down four criteria in order to weigh the consequences of various alternatives. They are:

(a) **Risk.** A manager should weigh the risks of each course of action against the expected gains. As a matter of fact, risks are involved in all the solutions. What matters is the intensity of different types of risks in various solutions.

(b) **Economy of Effort.** The best manager is one who can mobilize the resources for the achievement of results with the minimum of efforts. The decision to be chosen should ensure the maximum possible economy of efforts money and time.

(c) **Situation or Timing.** The choice of a course of action will depend upon the situation prevailing at a particular point of time. If the situation has great urgency, the preferable course of action is one that alarms the organisation that something important is happening. If a long and consistent effort is needed, a 'Slow Start Gathers Momentum' approach may be preferable.

(d) **Limitation of Resources.** In choosing among the alternatives, primary attention must be given to those factors that are limiting or strategic to the decision involved. Discovery of the limiting factor lies at the basis of selection from the alternatives and hence of planning and decision-making.

(vii) **Implementing the Decision.** The choice of an alternative will not serve any purpose, if it is not put into practice. The manager is not only concerned with taking a decision, but also with its implementation. He should try to ensure that systematic steps are taken to implement the decision. The main problem which the manager may face at the implementation stage is the resistance by the subordinates who are affected by the decision. If the manager is unable to overcome this resistance, the energy and efforts consumed in decision-making will go waste. In order to make decision acceptable, it is necessary for the manager to make the people understand what the decision involves, what is expected of them and what they should expect from the management. The principle of slow and steady progress should be followed to bring about a change in the behaviour of the subordinates.

It is better to check the results after putting the decision into practice. The reasons for following up of decisions are as follows:

(i) If the decision is a good one, one will know what to do, if faced with the similar problem again.

(ii) If the decision is a bad one, one will know what not to do the next time.

(iii) If the decision is bad and one follows up soon enough, corrective action may still be possible.

In order to achieve proper follow up, the management should devise an efficient system of feedback information. This information will be very useful in taking corrective measures and in taking right decisions in the future.

12.4 RATIONALITY IN DECISION-MAKING

12.4.1 What is a Rational Decision?

Effective decision-making requires a rational choice of a course of action. There is a need to define the term 'rational' here. *Rationality is the ability to follow a systematic, logical and thorough approach in decision-making.* Thus, if a decision is taken after thorough analysis and reasoning and weighing the consequences of various alternatives, such a decision will be called an objective or rational decision. Gross suggested three dimensions to determine rationality: (i) the extent to which a given action satisfies human interests; (ii) feasibility of means to the given end; and (iii) consistency.

12.4.2 Rational Economic Model of Decision-making

The classical management thinkers stressed that managerial decisions must be rational. They argued that the decision-making is an 'economic man' and is guided by economic considerations in choosing solution to a problem. Obviously, he will find the optimum solution to maximise the advantages. The classical approach is based on the following assumptions:

(i) The decision-making intends to maximise economic gains.

(ii) He is fully objective and rational totally uninfluenced by emotions.

(iii) He can identify the problem clearly and precisely.

(iv) He has full information about various alternatives and is able to evaluate them intelligently to find out which alternatives is the best.

(v) He has complete freedom to choose the best alternative.

The rational economic model is prescriptive and explains how decision-making should behave. But perfect rationality is a norm which can be aimed at but not stained. In real life, the decision-maker cannot be completely rational due to several constraints. The decision-making behaviour is contingent upon personal and environmental factors. *Thus, managers may not be rational decision-makers in real life.*

12.4.3 Administrative Model of Decision-making (Bounded Rationality)

In actual practice, managers take decision which involve different combinations of intuition and rational thinking. A manager who depends much upon intuition, is more subjective and a person who depends much upon logical thinking is more objective. This is what Herbert Simon has called the **'principle of bounded rationality'**.

Causes of Bound Rationality: The managers are unable to make perfectly rational decisions due to the following constraints or limitations:

(i) The individual does not study and analyse the problem fully because of personal bias, indifferent attitude, etc.

(ii) The individual does not have the full knowledge of the alternatives and/or their consequences.

(iii) The individual interprets the organisational goals in his own way. He may adopt a course of action which according to him. will meet the goals effectively.

(iv) The individual dose not search for the best solution, but for 'good enough solutions'. In other words, he aims at 'satisfactory' rather than 'optimum decision'.

(v) The decision-making situation may involve multiple goals, all which can't be maximized simultaneously. Further, these goals may be of conflicting nature.

(vi) The effectiveness of a decision is dependent upon environmental factors which are beyond the control of decision makers. Thus, the consequences of various alternatives cannot be anticipated perfectly because of uncertain environment.

Rationality of the individuals is generally affected by the above limitations. **The concept of bounded rationality explains the behaviour of people in practice. The administrative man seeks satisficing (not optimal) decisions which are satisfactory for practical purposes.** He makes decisions which are good enough and do not make undue demands on his time, efforts and money. It recognizes that a man cannot be expected to have full knowledge and information and his capacity to perceive, and retrieve information is not unlimited. The traditional theory of complete rational and economic man cannot work in practice.

12.5 TECHNIQUES OF DECISION-MAKING (QUANTITATIVE)

The process of managerial decision-making has become very cumbersome. In order to evaluate the alternative, certain quantitative techniques have been developed which facilitate making objective decisions. Some of these techniques are discussed below.

MC = MR

1. **Marginal Cost Analysis.** The technique is also known as marginal costing as under it the additional revenues from additional costs are compared. The profits are maximum at the level where marginal revenues and marginal costs are equal. Marginal analysis can also be used in comparing factors other than costs and revenues. For instance, in order to find the optimum output of a machine, one can vary inputs against output until the additional inputs equal the additional output. This would be the point of the maximum efficiency of the machine. Break-even analysis is the modification of this technique which tells the management the point of production where there is not profit and no loss.

2. **Cost-Benefit Analysis.** It is a technique of weighing alternatives where the optimum solution cannot be conveniently reduced to monetary terms as in the case of marginal cost analysis. It is used for choosing among alternatives to identify a preferred choice when objectives are far less specific than those expressed by such clear quantities as sales, costs or profits. For instance, social objectives may be to reduce pollution of air and water which lacks precision. Cost models may be developed to show cost estimates for each alternative and benefit model to show the relationship between each alternative and its effectiveness. Then, synthesing models, combining these results, may be made to show the relationships of costs and effectiveness for each alternative.

3. **Operations Research.** Operations Research has been defined as the scientific method of analysis of organisational problems to provide the executive the needed quantitative information in making suitable decisions. The object of operations research is to provide the managers with a scientific basis for

solving organisational problems involving the interaction of components of the oranisation. In days gone by, executive decisions used to be taken on the basis intuition, subjectively or past experience even in big ortganisations. Operations research seeks to replace this process by analytic, objective and quantitative basis based on information supplied by the system in operation and possibly without disturbing the operation.

Operations research is widely used in modem business organisarions. For instance, inventory models are used to control the level of inventory. Linear programming is useful for allocation of work among individuals in the organisation. Sequencing theory helps the management to determine the sequence of particular operations. In addition to these, three are other techniques like queuing theory, games theory, reliability theory and marketing theory which are important tools of operations research which can be used by the management to analyse the problems and take decisions.

4. Linear Programming. Linear programming is a technique devised for determining the optimum combination of limiting resources to achieve a given objective. It is based on the assumption that there exists a linear relationship between variables and that the limits of variations could be ascertained. It is particularly helpful where input data can be quantified and objectives are subject to definite measurement. It is applicable in such problem areas as production planning, transportation, warehouse location and utilisation of production and warehousing facilities at an overall minimum cost. Linear programming involves maximisation of minimisation of a linear function subject to a set of some real or assumed restrictions known as constraints.

5. Network Analysis. Network analysis is used for planning and controlling the project activities. Under this, a project is broken down to small operations which are engaged in a logical cycle. The next step is to decide the sequence of operations to be performed. A network diagram may be drawn to present the relationship between all the operations involved. The diagram will reveal gaps in the flow plans. It will also show the interdependence of various activities of project and point out the activities which should be completed before the others are initiated. A number of network techniques have been developed of which PERT (Programme Evaluation and Review Technique) and CPM (Critical Path Method) have become very popular.

12.6 TECHNIQUES OF DECISION-MAKING (QUALITATIVE)

The techniques of group decision-making include: (1) brainstorming, (2) nominal group technique (NGT), (3) delphi technique, (4) fishbowling technique and, (5) consensus mapping technique. These techniques are discussed below:

1. Brainstorming. Alex F. Osborn is credited with development of the technique of brainstorming for problem solving. It involves a group of people, usually between five and ten, sitting around a table in a classroom setting, generating

ideas in the form of free interaction. The primary focus of the brainstorming technique is more on *'generation of ideas'*, rather than on "evaluation of ideas". The rationale of this technique is that if a large number of ideas can be generated, then it is likely that there will be a unique and creative solution among them. All these ideas are written on the blackboard so that everybody can every idea and try to improve upon them. The leader of the group defines and explains the nature of the problem to the group members and the rules to be followed. For example, the problem may be finding a suitable name for a new soft drink or a beauty-aid. The four basic rules of brainstorming are as under:

(i) No criticism is allowed.

(ii) Freewheeling is always welcome. The wilder the idea the better it is. It is easier to jot down than to think up ideas.

(iii) Quantity is desirable.

(iv) Combination and improvements are sought from members.

One session of brainstorming exercise may generate around 50 ideas. Brainstorming is very useful in advertising agencies, armed forces, governmental and non-governmental organistaions. The ideas are based on spontaneous thinking and the atmosphere of the group is supportive in nature. An idea generated by a member acts a stimulus for generating ideas by others. A brainstorming session may last 40 to 60 minutes.

'Brainstorming' suffers from the following limitations:

(i) It is not effective when the problem is complex and vague.

(ii) Arranging the session is a time- consuming process.

(iii) It is a costly technique if experts from outside are invited.

(iv) It might produce superficial ideas or solutions.

2. **Nominal Group Technique.** This technique is used when a high degree of innovation and idea generation is required. A nominal group exists in name only as the members have minimal interaction before producing a decision. This technique is highly structured and contains the following steps:

(i) Around six to ten participants are brought together and presented with a problem.

(ii) They develop solutions independently, often writing them on cards.

(iii) Their ideas are shared with others in a structured format (e.g., a round-robin process that ensures all members get the opportunity to present their ideas) There is no discussion. The ideas are put on a blackboard or flip chart for all to see.

(iv) Brief time is allotted so that questions can be asked—but only for clarifications.

(v) Group members individually designate their preferences for the best alternatives by secret ballot.

(vi) The group "decision" is announced.

The nominal group technique has two principal advantages. It helps overcome the negative effects of power and status differences among group members. There is no chance of domination by any member. It can be used to explore problems to generate alternatives, or to evaluate them. Its primary disadvantage lies in its structured nature, which may limit creativity. The group members may feel frustrated as they don't get any opportunity to benefit from cross-fertilization of less.

3. Delphi Technique. The Delphi technique was originally developed by Rand Corporation as a method to systematically gather the judgments of experts for use in developing forecasts. It is designed for group that do not meet face to face. For instance, the product development manager of a major toy manufacturer might use the Delphi technique to obtain the views of industry experts to forecast developments in the dynamic toy market.

This technique involves four basic steps. Firstly, a panel of experts on the particular problem at hand is drawn from both inside and outside the organisation. Secondly, each expert is asked to make anonymous predictions or forecasts. Thirdly, each expert is provided composite feedback of the ways various experts have answered the problem. Lastly, each expert is free to change his opinion on the basis of the feed-back. This process is repeated several times till consensus decision is reached.

The Delphi technique is used to:

(i) Determine or develop a range of possible alternatives;

(ii) Explore or expose underlying presumptions of information leading to different judgments;

(iii) Seek information which may generate a consensus on the part of the respondent group;

(iv) Correlate informed judgements on a topic spanning a wide range of disciplines; and

(v) Educate the respondent group on the diverse and inter-related aspects of the problem.

The Delphi technique is time consuming, but the availability of computers and electronic transmission (e-mails) of response can speed up the Delphi process. Through their use, the interactive process of collecting input and feeding back group data can be greatly abbreviated. Thus, use of advanced information technique has helped overcome the major limitation of the Delphi process.

4. Fishbowling Technique. This technique is a variation of brainstorming process, but is more structured and focused. Here, the group of experts (from six to eight) is seated around a circle with a single chair in the centre of the circle. One member of the group or the group leader is invited to sit in the centre chair and give views about the problem and his proposition of a solution. The

other group members can ask him questions but there is no cross-talk. Once the member in the centre chair has finished talking and his viewpoint is fully understood, the leaves the centre chair and joins the group in the circle. Then the second member is called upon to sit in the centre chair and give his view in the light of the views expressed earlier. The members can ask question to the centre based upon the new ideas presented by the member in the centre as well as the ideas presented earlier. Exchange between the centre chair and the group members continues until the turn of each member to occupy the central chair is over.

All the members work upon the same database, though their views over the problem may differ. After all the experts have presented their views from the centre chair, the group will discuss the various alternatives suggested and ultimately arrive at a consensus decision.

5. Consensus Mapping Technique. Consensus mapping technique is used for consolidating results from several task-forces or project groups and is suited for problems that are multi-dimensional, have interconnected elements. This technique begins after a task group has developed and evaluated a number of ideas.

Consensus mapping technique of group decision-making tries to pool the ideas generated by several task sub-groups to arrive at a decision. The facilitators encourage participants to search for clusters and categories of ideas. This search includes listing and discussion of alternative clusters and categories by the sub-groups, and then generation of a single classification scheme by group members working as a group or in pairs or trios. Then the facilitators consolidate the different schemes developed by sub-groups into a representative scheme that acts as a 'strawman map' for the entire group. Group members then work to revise the strawman map into a mutually acceptable solution. This exercise is repeated until the group as a whole arrives at a single, consolidated map and a final decision based on that.

REVIEW QUESTIONS

1. What is decision-making? Discuss the process of decision-making.
2. What are various steps in the process of decision-making? Also discuss the limits of rational decision-making.
3. "Whatever a manager does, he does through decision-making". Amplify the above statement and describe the different steps in the process of decision of decision-making.
4. "Decision-making is the essence of management". Comment.
5. What steps are essential in the process of managerial decision-making? Also discuss the limits of rational decision-making.
6. Explain the concept of rationality in decision-making. What are the limits of