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CHAPTER I

THE PROBLEM AND THE SCOPE OF STUDY

1.01 INTRODUCTION

Each and every human being tries to derive happiness, pleasure through his activities. He tries to adjust with the surroundings by overcoming the barriers and crises that he is facing. In other words he tries to cope up with the environment. Hinsie and Campbell (1970, as cited by Gilmore, 1974, P.136) define coping as 'adjusting, adapting or successfully meeting a challenge'.

This results in a constant process of goal setting, estimating alternative possibilities and selecting a course of action. The skillful decision maker is he who faces the problem situation boldly, perceives the problem clearly and realistically, accepts the challenge of ambiguity, complexity and sets out to appraise alternative courses of action - finally arriving at a decision. This is very well mentioned by Gilmore. He says "the process of coping therefore entails not only accurate perception and appraisal of problem, but the capacity to arrive at a decision regarding his own course of action" (Gilmore, 1974, p.229).
Thus a skillful decision maker is bound to be independent, confident, controlled, responsible for his own behaviour. He would also have greater control over his life because he can reduce the amount of uncertainty in his choices and he would limit the degree to which chance or other people determine his future. "Decision-making alone permits man to escape the immediate, to overcome personal biases and prejudices; to free one's self from obeying the will of another, and for plotting one's own personal course of action. Without the development of an effective decision making process, man becomes a virtual 'robot' of society, a reed shaken by the wind, a pawn in the onslaught of the environment, a hopeless creature dependent on luck and chance to provide for all basic needs of life" (Cassel, 1973, p. 310).

Thus decision-making is an essential and inevitable part of every human being. This is more so in case of leaders in different fields where they have to undertake various activities to reach the target along with the subordinates. The success of a person from any profession depends on his capacity to take decisions accurately and at the proper moment. In the present fast changing and developing world where new technologies are emerging
rapidly; one must be prepared to make decisions at any
time under any circumstances if the country, or an entre-
prise, or an institution or an individual has to progress
and develop. "In a changing world, any complacency, hesi-
tation, equivocation and adherence to old ways will result
in the loss of good opportunities; any lack of understand-
ing, inadequate consideration, carelessness and hasty
decision-making will inevitably lead to serious losses"
(Xia Yulong, Liu Ji, Feng Zhijun and Zhang Nianchun, 1983).

Lee Iacocca, former president of the Ford Corporation
in his autobiography conveys that "If I had to sum up in
one word the qualities that make a good manager, I'd say
that it all comes down to decisiveness. You can use the
fanciest computers in the world and you can gather all the
charts and numbers but in the end you have to bring all
your information together, set up a timetable and ACT".
(Iacocca, 1984, p.53). Here he has clearly brought out
the picture of present industrial atmosphere. Today,
the managers have to take their decisions with the limited
amount of available information. If they wait untill
they have all the facts at hand, the market has already
moved ahead, and the opportunity to win is lost.

This awareness of capacity to make effective
decisions resulted into the training programmes for
adults—especially in the field of business and military. These training programmes were to meet the necessity of improving profitability of business decisions and effectiveness of a military force. The results show that training results into the betterment of performance. Recently the computer-based 'management games' and political games' are becoming popular which expose people to the environment in an artificially simulated way for the purpose of training-education. Thus, a large amount of efforts are undertaken to train, improve, enhance the capacity of decision-making of human beings — but only at adult level.

Human beings develop this capacity through various experiences that take place in reality. Man is not born with this ability to make decisions, it is developed and cultivated through his experience and his participation in decision-making. Cassel points out that "Competency in decision-making derives alone from an individual participating in the decision-making process. Such competency is further enhanced when the individual participates in specific areas of decision-making in which real choices are to be made" (Cassel, 1973, p.309).

Thus 'decision-making' has attracted the attention of enthusiastic adults in industry and military.
1.02 SIGNIFICANCE OF THE STUDY

The effective ways of arriving at good decisions to produce more profits, to meet the challenges of the competing world, to establish a firm footing to lead a successful life are strongly found essential in the current developing world. The efforts are made to train managers, army officers to produce better results.

It is believed that an individual is not born with decision-making ability, but he does develop it through his experience. The children, however, are deprived of making decisions for themselves, though some evidence is available to show that such efforts to train the children were made in India in the past. 'Fables of Isap' and stories of 'Birbal' are few examples of such efforts. A fox wishing to live in an unfamiliar wood but getting scared of an imaginary lion, the unwise frog jumping in the well to protect himself from famine and a wiser one avoiding from entering into the well, the grasshopper trying to be peaceful but on guard in a critical moment and not becoming in favour of a particular party, the panther rejecting the honour of ministership - all these stories indirectly convey children to be bold, to face rather than retreat from the problem situation, to think for the consequences, not to get excited even in a
critical moment and to be aware of one's limitations. The stories of 'Birbal' tell the children to evaluate the situation very minutely and to be on guard all the while.

Thus the different aspects of successful decision-making are introduced in literature and the children are motivated indirectly, though, the direct opportunity is rarely provided to children for practicing what they have learnt in the theory. Decision-making is still considered as the responsibility of adults and so the children are made to accept the decisions of adults. This is unfortunately forced on them during the developmental period of their life when they should learn to make useful choices, avoid the wrong choices and accept the consequences. During this period, generally, the children are kept away from reality. The parents give ready-made answers to their problems and indirectly provide them with the partially correct picture of their surroundings. Yet, when the children grow old, they are expected to be good decision makers, responsible for their actions. Not only this but the special training programmes are also conducted for them when they are found lesser in these capacities.
It also doesn't have any formal, systematic place in present educational system in India. Though almost everybody agrees that decision-making ability is an essential aspect of personality and it teaches to cope up with the environment, nobody has ever tried to identify the very nature of this ability in the children. The research also lacks in the appropriate measure to locate this ability among the children.

It was strongly felt, that in the developing country like India, there is a strong need to assess the decision-making ability of children and to locate the reasons of poor decisions.

With proper guidance and training, the children would learn to be independent, to use their judgement and be responsible for their actions thus emerging as the productive persons to meet the expectations of the society and the Nation.

1.03 **WHAT IS DECISION-MAKING**

The word decision comes from Latin and it means to 'cut off'. The *Shorter Oxford English Dictionary* points out that (1) it is the action of deciding
(a contest, question etc.); settlement, determination, a conclusion, judgement, especially one formally pronounced in a court of law; (2) the making up of one's mind, a resolution; (3) as a quality: determination, firmness, decidedness of character.

Easton (1976) has described that a decision in the broad sense is a complex action beginning with the discovery of a need for change and terminating in the implementation of an action that brings about the needed change. A decision in the narrow sense is a choice.

According to Om Prakash (1991) "decision-making means choosing between alternatives"; whereas Darji and Sharma (1982) comment that "a decision is a deliberate act that generally is a commitment on the part of the decision-maker towards an envisaged course of action of some specificity".

Juniper D.F. (1976) defines "decision-making as the process by which a person selects from two or more possible choices..... A decision does not exist unless there is more than one course of action, alternative or possibility to consider, but if a choice exists, the process of deciding may be utilised".
In short, everybody agrees that decision-making situation is one wherein the individual faces the situation of selecting one way of action among the available many to fulfill his wishes, goals. When one does not have the choice, when there are no alternatives, one does not experience the act of deciding. Thus availability of minimum two alternatives is the basic characteristic of a decision-making situation. While making a decision, the individual weighs the outcomes of his action and by choosing one way of action he cuts off the other possible means or strategies.

1.04 THEORIES OF DECISION-MAKING

Decision theory is vast, complex and to some extent ill defined. Though developed originally by mathematicians, statisticians and economists, it has also gained attraction from psychologists. Economists have been interested in the choices that produce maximum profits or utility whereas mathematicians in developing the mathematical theory of rational decision maker. Psychologists are concerned with the choices that a rational man should make (normative) and the choices that men make in reality (descriptive). The decision theory takes into account the 'rational' man who doesn't get carried away by emotions, can think of what is 'correct', is aware of his motives, and behaves in such a way that he gets the maximum outcome.
1.04.1 **Mathematical decision Theory**

It is also called as 'Game Theory'. It assumes that "each of two persons makes a decision and that these decisions determine a consequence" (Lee, 1971, p.20). Also "that the value of a consequence to a person can be represented by a single number called a utility" (Lee, 1971, p.22). Further the consequences can be evaluated quantitatively for each person on the basis of mathematical analysis.

Here it is assumed that people behave rationally and they choose an option that has maximum expected value.

1.04.2 **Probability Theory**

This theory originated from the understanding that human beings are ignorant about the future happenings and the rational choices are based on the probabilities of such events in future.

In the 18th century, J. Bernoulli, Laplace and Bayes took the approach called as 'classical probability'. The current theories, viz. Frequency Theory (John Venn), Logical Theory (Keynes) and the Personalistic Theory (Finetti and Ramsey) have originated from the classical school approach.
The experimental and theoretical studies regarding the probability were concerned with the predictions people make about random events. These studies were noted down by Lee (1971). The experiments indicated as to how many trials are required to reach a symptote (Edwards, 1961a; Derks, 1962; Beach and Shoenerberger, 1965). It was also noticed that the larger the number of alternatives higher the probability values (Gardner, 1957; Cotton and Rechtschaffer, 1953). Plenty of experiments were undertaken to see the effect of extrinsic rewards on probability prediction (Siegel and Goldstein, 1959; Derks, 1962; Myers, Fort, Katz and Suydam, 1963; Swenson, 1965). The effect of instructions on performance was studied by Goodnow (1955), McCracken, Osterhaut and Voss (1962).

1.04.3 Utility Theory

This was of a great interest to economists as they wanted to study the preferences of individual consumers and so naturally found it necessary to measure the utility to a consumer of some commodity. Lee (1971) noted that Von Neumann and Morgenstern tried to measure utility largely with the choices under the conditions of certainty but eventually revived the theory (1940)
and related it to the risky choices between gambles. Mosteller and Nogee tried to observe in a laboratory situation, the betting behaviour of real subjects for real money. They found "that the higher the expected utility of a bet, the greater was the probability that 's' would choose it" (Lee, 1971, p. 78). Davidson, Suppes and Siegel also tried to measure utility with monetary payoffs in gambles. Later on the studies were made in which subjects were to make realistic choices (Bernoulli and Cramer, 1964) and responded to large amounts of money (Galanter, 1962).

Here, it was assumed that people use objective probabilities while taking a decision, which means that choices are transitive. Though experiments revealed that intransitive patterns of choice do occur, and so stochastic models were developed.

Ofshe and Ofshe (1969) have shown that the theory of maximization of expected utility could be applied to decision-making in both social and non-social situations.

1.04.4 **Information Theory**

Before making a decision, one has to collect the relevant information. This understanding resulted into
the information gathering process in terms of 'information theory' by Shannon (1948 as cited by Lee, 1971). Lee (1971) further pointed out that Edwards (1961, 1962) distinguished between the static and the dynamic decision situations on the basis of available information and the subsequent situations the decision-maker will have to face. Rapoport studied sequential and multistage decision-making and suggested 'dynamic programming model' in 1968 for finding optimal decisions for such situations. While discussing information processing approach to decision theory Boneau (1974) considered the individual as a gatherer, processor and user of information rather than as a stimulus reactor to external events.

In brief, it could be said that decision theory is mainly concerned with the utility and probability of decisions. The proponents of various theories have not succeeded in measuring the probabilities of decision. They have in fact found it difficult even to define utility when alternatives are complex. Thus all the above mentioned theories have not been above to throw light on the process of decision-making.

1.04.5 Theory of Cognitive Dissonance

Festinger's theory of cognitive dissonance (1957) tried to deal with how a person makes a decision, how
does he behave in a pre-decision situation, what will be his reaction after he has made the decision and what is the relation between pre-decision and post-decision conditions.

When a person is faced with the decision between two alternatives he tries to evaluate the merits and demerits of both these alternatives impartially. This requires the collection of relevant information and tallying it with the purpose. On the basis of this, a preference order is prepared – a decision is yet to be made. The individual continues to collect new information and reevaluate it against the old one until his preference order is not upset due to new information and he is confident about it – then he reaches the decision. This is followed by the dissonance reduction period. This theory assumes that dissonance reduction begins only after the decisions have been made and also that the making of the decision produces dissonance. Then "the amount of dissonance that exists after the decision has been made is a direct function of the number of things the person knows that are inconsistent with that particular decision. It is clear from this, then, that greater the conflict before the decision, the greater the dissonance
afterward" (Festinger, 1964, p.5). So - "the more a person has thought over the relevant details before dissonance is aroused, the more rapidly does dissonance reduction proceed after the dissonance has been introduced ... the more time the person spent thinking about the alternatives in the pre-decision period, the greater was the amount of dissonance reduction in the post decision period ...." (Festinger, 1964, p.153).

The tendency to prefer consonant to dissonant material in the post-decision period was noted clearly though, if the dissonant material was very useful, this tendency was not observed. Festinger and Walster (1964) also noted a strong tendency of decision reversal in immediate post decision period as a result of unreduced dissonance.

Thus the theory begins at the onset of conflict between at least two alternatives, and ends at reduction of dissonance that has taken place due to the commitment of decision. It is clear that the decision behaviour of a person is explained in terms of pre-decision and post-decision conditions that are different but connected with each other.
1.04.6 **Psychoanalytic Theory**

Rangell (1969) has given a psychoanalytic contribution to decision theory. He says that decision-making is a function of ego. The ego through internal scanning, screens the present partial gratification to ascertain if the past traumatic data is brought back and then signals either anxiety or safety. If anxiety is pointed out, there is ego conflict as to what to do next. The ego faces with the choices and is compelled to make one. These internal conflicts are greatly affected by the unconscious and genetic determinants.

In short, mathematical decision theory has been applied to improve the profitability of business decisions and the effectiveness of military force. Ramsey, Von Neumann and Morgestern have started the mathematical work in utility theory, though there is a lack of further experimental and theoretical work.

The utility aspect of decision is studied because the consequences of decisions are to be assessed properly. The theory deals with the general desirability of the possible consequences to the decision-maker with the help of small monetary payoffs and does not take into
consideration the satisfaction, pleasure, personal affiliation, autonomy, social status one derives from the decisions.

Such classical theories of decision-making are applicable to limited types of situations in which the various alternatives and their consequences are well defined. These are not applicable for solving problems of real world. Kozielecki (1971) tried to formulize 'satisfying theory' for the first time. He tried to describe human behaviour in ill-defined situations, in which the decision-maker must first explore the possible courses of action and predict their consequences for the selection of one of the actions.

Matsubara (1973) presented a 'Situational Decision Theory I', where he pointed out that the main task of constructing a decision theory should be to describe how the characteristics of human behaviour are influenced by value judgements in a given situation.

Fischhoff (1983) provided a number of obstacles that may prevent people from making decisions in their own interests or from reaching agreement with others who
share those interests. There are difficulties in understanding probabilistic processes; limited access to relevant information, being overconfident in one's knowledge, not knowing how to make trade-offs among these consequences, failures to understand technical terms, failure to acknowledge widely shared assumptions.

The traditional theories of decision-making that suggest the rational approach of maximization of subjective utility fails to satisfy the needs of present world. Rationality must take into account the impact of socio-psychological forces that may make the individual select the alternative of low utility (Hollnagel, 1976).

Thus, though decision theory is vast and complex it is ill defined and has scope for its development.

1.05 MODELS OF DECISION-MAKING

It has been pointed out earlier that the human beings are rational in the sense that they try to make choices giving them maximum profits, pleasures, social recognition. While doing so, they judge and evaluate the possible courses of action, weigh them and choose an option with optimum gain or payoff. However in
reality, it is noted that human beings are not so neat and logical while selecting. The selection is invariably affected by the incomplete information, decision-maker's personality, his emotions, values, others' opinions etc. etc.

Nicholas Nicolaidis analysed 332 administrative decisions made by public officials. "Far from decisions being based purely on rational reasons, he found strong admixtures of emotions, power politics, the influence of other people and the individual decision maker's own values ........

......... Moreover, the decision-makers rarely settled for the best or optimum solution as recommended by the management text-books, but tended to look for a satisfactory compromise among two or more of the courses or solutions" (Adair, 1971, p.63).

1.05.1 Normative and Descriptive Models

The realization into the limitations in thinking for decision-making as mentioned above resulted into 'normative' and 'descriptive' models. Normative model specifies what decision should be taken, whereas descriptive model tells what decision is taken or will be taken. Normative model
implies that 'the larger and more important the decision, the more likely is the decision maker to calculate carefully the potential consequences of his act and so try to make the normatively correct decision'. Descriptive model contains "description of the environment and task facing the organism, and the description of the basic response tendencies that the organism brings to the environment and task" (Edwards, Lindman and Philips, 1965, p.264).

1.05.2 Satisfying and Optimizing Models

The process of satisfying model begins with the perception of a problem or a need for action and reaches upto diagnosis stage. One way of action is recommended, its consequences are predicted and judged. If it satisfies the objective, it is accepted and the decision process ends there. If the recommended action is not satisfactory, other actions are examined. This continues till the acceptable solution is arrived at.

On the contrary the optimising model demands that one identifies all the possible alternatives and then evaluates, judges them to undertake the action. Easton (1976) has provided a number of steps in this model.
(1) Recognise the need for change
(2) Diagnose the problematic situation
(3) Identify affected interests, define decision objectives
(4) Translate objectives into criteria, identify all feasible alternatives
(5) Predict outcomes of alternatives on all objectives; quantify outcomes
(6) Translate outcome scores into value scores
(7) Weigh decision criteria
(8) Select a rule for identifying the 'best' alternative; compute best alternative
(9) Complete computations and make the choice
(10) Choose and implement your best alternative.

Mills, Meltzer and Clark (1977) found that the tendency to use an optimising decision strategy is followed when there is a smaller number of options whereas when there are large number of options, the tendency to use satisfying strategy comes forth.

A variety of models in different fields have been noted. They vary in content as well as its application.
Some of the models are more theoretical (Pollay; Mohr; Hesketh; McAllister, Mitchell and Beach; Nawakowska; Griffin; Jepson and Dilley), while some give importance to the application of model to lead a successful life (Maskay and Juhasz; Kanfer and Busemeyer; Dieterly; Schrenk). Some of the models also emphasize the characteristics of the decision-maker (Hadar; El-Gazzar; Laird, Laird, Fruehling and Swift).

1.05.3 Theoretical Models

A model of 'decision times' in a difficult decision situations (Pollay, 1970) predicts that in difficult situations decision makers will take less time when all the alternatives are equally attractive than when some alternatives are inferior and easily rejected. The model also specifies the way in which the expectations of decision makers are revised with experience. Mohr (1976) proposed two separate and incompatible models to account for the 'matching' that occurs in choice behaviour. An organism is said to 'match' when relative response rates equal the relative reinforcement frequencies. The density matching model states that organisms average their responses to a stimulus to conform to the frequency of reinforcement to the stimulus. The momentary maximization model states that organisms match as a result of local and immediate
events rather than average across events. Though the experimental investigation revealed that neither model was satisfactory.

Hesketh (1978) briefly discussed decision-making in general, and presented four different models - the Expectancy Theory, the Lens Model, the Bayes Theorem and the Subjective Expected Utility Model. All these models share the common assumption - human beings can make accurate probability estimates. These are found having certain limitations though they are proved useful.

'A Contingency Model' for the selection of decision strategy was tested by McAllister, Mitchell and Beach (1979). The model suggests that when -

- decisions are more significant,
- the decision can not be reversed and
- the decision maker is responsible for his actions,
then the decision strategy will be more analytical and result in a greater investment of time and effort than in the opposite condition.

Based on the 'subjective expected utility model' and the model of 'achievement motivation', Nowakowska (1980)
proposed a model of 'decision under risk'. He tried to determine the domains of probabilities of success in which the risky decision is preferable to a safe one. He pointed out the 'non-normal' risk areas. Too high probabilities of success of a safe decision made the risky decision inferior one.

Jepson and Dilley (1974) pointed out that vocational decision-making models are similar to decision theory in many ways. Though no evaluative conclusions were made, it was noted that the models could be applied to different types of decisions. Also the models vary in their assumptions about the decision maker and the conditions in which the decision is made.

1.05.4 **Applicable models**

A model of an idealised process of decision-making based on empirical and theoretical research was presented by Schrenk (1969). The model contained following three phrases -

1. Problem Recognition
2. Problem Diagnosis
3. Action Selection.
Marianne, E. (1973) studied the effectiveness of a systematic instructional model on rational decision-making of 6th grade students. The model used was adapted from Stufflebeam model (1970) and consisted of 4 step instructional process to approach the problem:

1. List alternatives
2. List consequences
3. Choose value issues that are suitable and generalizable
4. Make a choice of the value that is most important. Choose the best alternative.

The model was found statistically reliable for the steps 1, 2 and 4.

A more specific and concrete model that explains 'the clarification process' that can be applied to resolve a problem or to make a decision was presented by Dieterly (1930). The model consisted of:

1. The five phase prescriptive sequence based on previous approaches to problem solving and decision-making, and
2. the information manipulation function.

The model is dependent on information flow. It conveys the possible constraints of individual
indifferences and experience in attaining success while resolving decision-problem conditions.

A seven step model (Maskay and Juhász, 1983) that can be used by adults to help young people learn the skills necessary for decision-making especially the sexual decisions, was found effective. Though this model focussed on the adolescents and sexual decisions, the steps given could be applied to a variety of decisions and could be used by individuals of different age and background.

1.05.5 Models Emphasizing the Decision-Maker

In 1938, Augustin Cournot pointed out for the first time that each producer believes that his rivals will take the same actions in the coming period as in the preceding period. On the basis of this Hadar (1968) tried to make the decision-maker aware of the anticipation of the actions of his opponent or rival - especially in the field of economics where a number of different brands of a particular product are sold in market. It is implied in the model that decision-maker never changes his strategy in spite of the fact that the forecasts about his rivals' actions are always wrong.
Diagram I.1

The Process of Decision-Making

External Stimulus Opportunity

→

Organizational and Personal pressures

Data Information or Perception

Resolution of conflict/Influence and Commitment

Adaptive feedback & New Data

→

Decision Maker

→

Problem Formulation

Analysis, Techniques Negotiations

Risk, Values, Resources Required

Economic & Behavioural Effects

→

Decision

→

Consequences

→

Results compared with objectives
A simplified description of how decisions are carried out in the industries is very well outlined by Patz and Rowe (1977). The same process of decision-making could be applied in other fields as well.

El - Gazzar (1974) with a new approach for considering individual and situational determinants of decision-making presented the model that takes into consideration individual decision-making tendencies and fears. The parameters of the model are approach-avoidance disposition, allowable risk and tolerable fear. Here decision-making behaviour is explained in terms of achievement motive, internal-external control of reinforcement, intrinsic-extrinsic orientation and facilitating, debilitating anxieties.

Thus a wide variety of models applicable in the field of marketing, economics, ergonomics, education, family relations and clinical psychology were traced down. Some of the models are analytical-theory oriented while others are designed taking into account the applicability of model. Though efforts have been made to study the decision-making through various angles, it
still remains to be a challenging area to study the decision-making of individuals due to its complexity and ever changing nature of decision-situations, unavailability of proper data regarding good decision-making, lack of knowledge regarding the role of personality and dearth of objective criteria for correct decisions. Brickacek (1970) has discussed the general problems concerning theoretical models of decision-making as follows -

(a) Extrapolation of verified findings (experimental method, subjects and utility of alternatives used),

(b) Criteria of correct decisions (adequacy of decision made, latency time, subjective confidence of correctness),

(c) Role of personality characteristics, and

(d) Comparative research of various experimental conditions.
1.06 THE PROCESS OF DECISION-MAKING

Many researchers have tried to provide with the steps, phases, stages of decision-making, the outline of which is presented (Table-I. 1) here. Fortunately, it could be said that though different researchers name the stages differently and the number of phases vary according to the importance given to a particular phase, they do agree on the main phases of the process of decision-making. These phases could be listed as -

1. Specify the aim,
2. Reviewing the factors,
3. Courses open,
4. Making the decision,
5. Implementing the decision (Adair, 1971).

1. Specify the aim

Unless one knows, what he wants to achieve, he is not in a position to move towards the goal. This is the foundation of the decision-making process. Adair has differentiated the purpose-as an ultimate goal described in general and non-specific language, the aim-as more specific and defined target than the purpose and the objective-as aim broken down into specific goal or targets (Adair, 1971, pp.52-54).
<table>
<thead>
<tr>
<th>Step</th>
<th>Activity</th>
<th>Description</th>
</tr>
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<tbody>
<tr>
<td>1.1</td>
<td>Making a decision</td>
<td>Focus on plan to select alternatives</td>
</tr>
<tr>
<td>2.1</td>
<td>Design alternatives</td>
<td>Design alternative actions</td>
</tr>
<tr>
<td>3.1</td>
<td>Rank importance</td>
<td>Ranking factors that define the atm entry specifications</td>
</tr>
<tr>
<td>4.1</td>
<td>Finding solutions</td>
<td>Finding alternative specifications</td>
</tr>
<tr>
<td>5.1</td>
<td>Analyzing alternatives</td>
<td>Analyzing evaluation of alternatives</td>
</tr>
<tr>
<td>6.1</td>
<td>Comparing decision-making</td>
<td>Comparing decision-making the decision</td>
</tr>
<tr>
<td>7.1</td>
<td>Implementing decision</td>
<td>Implementing decision-making the decision</td>
</tr>
<tr>
<td>8.1</td>
<td>Communicating decision</td>
<td>Communicating decision-making the decision</td>
</tr>
</tbody>
</table>

The stages of decision-making are shown in Table 1.1.
This phase however, has been divided specifically into two parts by some experts. The first part deals with the analysis or evaluation of possible courses open in terms of their consequences, probabilities and desirability. Newman (as cited by Om Prakash, 1981) calls this as 'Analysis', Juniper (1976) as 'Evaluation', Keeney and Tregoe (1965) as 'Evaluation of Alternatives', and Janis and Mann (1977) as 'Weighing Alternatives'. In the second part, the thinking is 'cut off' and one way of action is weighed heavily and selected for execution. Newman calls this phase as 'selecting plan to follow', Simon considers this as a 'choice activity', Moore (1982); Janis and Mann consider this as a 'commitment' phase.

5. Implementing the decision

The act of decision is complete when it is implemented and executed. At this phase, reconsideration of the decision is implied. "There is a point of no return between the time when the decision has been made and the moment when the commitment to it is judged to be irrevocable in terms of consequences" (Adair, 1971, p.61). Thus the decision-maker should feel the decision as an actuality and may modify it if the change is required; thus approaching towards the point of no return.
Kepner and Tregoe call this as 'Tentative Decision' that fulfills the 'must' requirements of the decision situation. They then suggest for the 'Adverse consequences' which means problems arising in future because of the action i.e. tentative decision taken. They suggest for the change in decision if the threat by adverse consequences is too great. Hence the decision should be implemented only after the careful examination of the consequences and then they are to be lived with.

Xia Yulong, Liu Ji, Feng Zhijun and Zhang Nianchun (1983) - these Chinese social scientists - have described scientific decision-making into eight steps as follows -

1. The Discovery of Problems
2. Determination of the Goal
3. Value Standards
4. Making Plans
5. Analysis and Assessment
6. Selecting the Best Scheme
7. Verification through Experiment

It is noted that the essence of the scientific decision-making contains the phases enumerated by Adair. The
Chinese social scientists, however, have intentionally stressed the scientific and more objective methods for the various steps in decision-making.

In the 1st step they try to emphasize the leader's role for the discovery of problems as he is supposed to have the clear vision for future as well as the acquaintance with the present management and administration.

In the 2nd step they stress (a) the analysis of the existing conditions with the help of fact finding meetings of different people and with the help of statistical data (b) forecasting for setting the goals. 'Delphi Method', 'Regression Analysis' and 'Extrapolation' are the effective forecasting methods considered by them. Then follows the step of value standards consisting of -

(a) dividing goals into definite value targets (academic, economic and social)
(b) determining the importance and priority of various targets and
(c) analyzing the restricting conditions.

Adair has suggested 'specify the aim' meaning dividing goals into definite value targets as described
in (a) above and 'reviewing the factors' meaning determining the priority of targets and analyzing the limiting conditions as described in (b) and (c) above.

In order to anticipate the possible courses of action these social scientists suggest the use of brain trust technologies such as 'brain storming', 'game theory' and 'Gordon method'.

The 'selected best scheme' resembles the 'tentative decision' (Kepner and Tregoe) and is open for verification. If this scheme or decision proves to be reliable for the accomplishment of the target, it is ready for implementation. Here the social scientists in China recommend the special attention to feedback systems. This enables to -

- lay down the rules and regulations,
- judge the result of implementation and
- correct errors whenever they occur.

The effective decisions to attain the goal would be reached after following the steps of decision-making. As this procedure serves as a general guide, there is no need to follow each and every step rigidly. Overlapping as well as omission of the steps may occur occasionally without damaging the decision.
Svenson and Montgomery (1974) studied the decision made in a complex situation i.e. dynamic process of decision-making. They revealed that the character of a decision process depends on the decision-maker's personality and the situation. It was assumed that the decision-makers have some fixed sequence of applications of decision rules, information seeking and re-evaluation of information consistently across situations. Further they have suggested a 'think-aloud' technique to obtain more data.

Schvaneveldt and Adams (1983) studied the decision-making process of adolescents and suggested that the acquisition of adult level competency in decision-making is not a linear process but a stop and go, up and down journey with periods of stagnation interspersed with rapid acceleration and wild fluctuations. The age, sex, temperament, religion, family situation and family life style determine the extent to which the adolescent will engage himself in the decision-making process.

They also commented that the decision-making skill develops as one matures, gets more involved in society, and becomes open to situations persistently.
Certain factors such as information-seeking in a social influence situation, anticipation of forthcoming information, amount of information, the effect of commitment and choice are studied in relation to pre-decisional processes (Crawford and Haaland, 1971; Mann, Janis and Chaplin 1969; Potter and Anderson 1980; Mann and Taylor, 1970). Post-decisional determinants have also been studied by few (Rosnow, Gitter and Holz, 1969; O'Donnell and Brown, 1971; Frey and Rosch, 1984).

1.07 DECISION-MAKING AND PROBLEM SOLVING

A close study of decision-making process stimulated curiosity to know the resemblance between decision-making and problem solving and also the distinction between the two.

In a problem solving task, the subject is provided with some basic information and is expected to solve a problem - the solution of which is already determined by the experimenter. The experiment continues till the subject reaches the expected solution.

In a decision-making task also subject is put in a situation with some basic information and is asked to
arrive at a decision - to choose a course of action. The choice made by subject may be 'correct' or 'incorrect'.

In both the types subject has to identify the problem and select a way to overcome that. "In problem-solving, the method must be applied to obtain the solution. In decision-making, the method is only identified with the application implied" (Dieterly, 1980, pp.3-4). In both the types subject has to move from an undesired state—problem state or decision state—to the desired state i.e. the solution or the choice in order to reach the goal or to terminate the decision-problem condition. In problem solving, one can get the feedback of applied method to solve the situation quickly whereas in decision-making it is not so, as the consequences of these are to be evaluated in future.

"In problem solving research, the process is discussed after the data have been collected, in decision-making research the process is typically identified in some form prior to task completion" (Dieterly, 1980, p. 3).

Thus it could be said that in both the situations a particular condition exists and another condition is
expected. But in decision-making more stress is firstly on the selection of alternative to act and secondly on the execution or implementation of that decision.

If a hypothetical continuum is imagined then problem solving would begin with the perception of problem through reviewing the factors, setting alternative courses open to the problem situation and end up arriving at a tentative course of action. Further, decision-making would take over this tentative solution, judge and evaluate it against the aim, advantages, feasibility and make for sure whether to implement it or modify it and eventually implement it with the readiness to accept the consequences.

Probably, as indicated by Larson "a problem condition precedes a decision and maintains that the critical aspect of decision-making is defining the problem" (Dieterly, 1980).

Hence it can be said that though these two are separate processes, they are mixed together finely and so it becomes difficult to demarcate their boundaries. "We must therefore firmly reject the idea that problem-solving and decision-making are so far apart that ne'er the twain shall meet. The two are alike and different at the same time" (Adair, 1971, p.31).
1.03 CREATIVITY AND DECISION-MAKING

Creative thinking defined as 'bringing out novel ideas' influences problem solving process. "Creative thinking produces novel outcomes, and problem solving involves producing a new response to a new situation, which is a novel outcome. Thus problem solving has creative aspects" (Guilford, 1977, p.161).

Kepner and Tregoe comment that "creative problem solving deals entirely with generating alternatives. It begs the question of how one can possibly select the best, most rational action for correcting a problem when the problem and its cause are unknown or obscure. It makes the untenable assumption that the characteristics of the problem and its cause are unimportant. It leaps from 'we have to do nothing' to 'let's go that way' paying little heed to the 'what' and 'why' of the situation, that impels the action in the first place" (Kepner and Tregoe, 1965, p. 52).

Schultz, W.N. (1974) has recommended a tested guide for an orderly and creative way to solve problems - creative challenge solving 'Brain-Paper' and in this he has suggested widely used 'Brain-storming' technique for generating ideas.
Hence, it can be said that creative thinking influences decision-making in a specific limited manner. It would be helpful especially for generating novel, unique alternatives to the existing problems. It would enable one to think of an unusual, original way of reaching the goal.

Creative thinking would enable one to locate the problem in a variety of ways which could be useful for considering all the elements that affect the decision situation. It would also help one to generate various courses of action including the novel and the unique ones — thus providing a wide range of variety for selection of an action.

In 1959, Meadow, Parnes and Reese studied the influence of brain-storming instructions and problem sequence on a creative problem solving test and noted that significantly more good ideas for solutions were produced under the brain-storming instructions. Also, significantly more good solutions were produced under the deferred judgement instructions when they were given first than when they followed concurrent judgement instructions.
Ekel (1971) reported that creative thinking is involved in the activity of decision-making especially while defining the set of hypotheses, defining the probability distribution.

Christian (1972) on the basis of his studies with power - despatching engineers, concluded that making complex decisions is a result of problem-solving process – an act of original thinking which emanates from algorithmic reasoning and heuristic searching. The strategic and tactical thinking are also found to be inter-related in this study.

While studying the influence of decision-making on attitudes, creativity, motor skills and self concept, the teacher dominated group in which the teacher dominated all classroom decisions and the shared decision-making group in which subjects were encouraged to participate in decision-making scored significantly higher scores than the control group. Further, it was also noticed that the shared decision-making group scored significantly higher than the teacher-dominated group on creativity, motor skills and self-concept (Schempp, Cheffers, and Zaichkowsky, 1983).
1.09 TYPES OF DECISIONS

The different kinds of decisions could be classified with the help of -

- number of participants involved in the process,
- the frequency of occurrence of the problem,
- the complexity of the task,
- the number of decisions required to arrive at the target.

This classification is an artificial one in order to visualize the general varieties of decisions. In reality, one faces the decision situations in a very complex manner where one cannot distinguish clearly among the different types.

1.09.1 Number of Participants

It is quite clear that when decision is pertaining to only one individual it is an 'individual decision'. One individual when faced with the problem, analyses it, considers the alternatives and consequences, selects a course of action for himself and then executes it; whereas in a 'Group decision' there are more than one individuals involved in the decision-making process.

The group decisions are further classified according to the amount and manner of participation of individuals in the process.
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<tbody>
<tr>
<td>Types</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Own Decision</td>
<td>Autocratic aggressive</td>
<td>Autocratic</td>
<td></td>
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<tr>
<td>2. -</td>
<td>Autocratic submissive</td>
<td>Autocratic information</td>
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<tr>
<td>3. Prior consultation</td>
<td>Democratic parliamentary</td>
<td>Consultation</td>
<td></td>
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<tr>
<td>4. Joint decision-making</td>
<td>-</td>
<td>Negotiation</td>
<td></td>
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<tr>
<td>5. Delegation</td>
<td>Laissezfaire</td>
<td>Delegation</td>
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</tbody>
</table>
Prescott (1980) has described the role of the participants - the leader and the group members - in the process of decision-making.

Table - I.3

<table>
<thead>
<tr>
<th>Types</th>
<th>Participants</th>
<th>Role of participants</th>
<th>Who makes the decision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autocratic</td>
<td>Leader</td>
<td>Leader generates and evaluates solutions alone</td>
<td>Leader</td>
</tr>
<tr>
<td>Autocratic Information or Skill seeking</td>
<td>Leader and others</td>
<td>Others provide leader with skill or information and leader generates and evaluates solutions alone</td>
<td>Leader</td>
</tr>
<tr>
<td>Consultation</td>
<td>Leader and others</td>
<td>Others generate solutions or make recommendations</td>
<td>Leader</td>
</tr>
<tr>
<td>Negotiation</td>
<td>Leader and others</td>
<td>Others negotiate a solution with leader</td>
<td>Leader and group together</td>
</tr>
<tr>
<td>Delegation</td>
<td>Leader and others</td>
<td>Group generates, evaluates and makes decision</td>
<td>Group</td>
</tr>
</tbody>
</table>
A similar type of classification on a continuum of leadership has been provided by Adair (1971) with the view of managers and their subordinates working in the industries.

1.09.2 The Frequency of Occurrence

Programmed decisions "exist to guide administrators and non-administrative personnel in highly repetitive, routine decisions" (Stephen, 1978). These decisions serve as guides for the recurring activities. "Unprogrammed decisions include programs, strategies and budgets. Their life is short, since they exist for a particular or single use" (Stephen, 1978). They come into existence when a trivial problem appears suddenly and demands judgement and creativity.

1.09.3 The Complexity of the Task

When a selection of course of action is based on varieties of available information, it is a complex task; whereas when one tries to generate one solution with sufficient amount of information it is a simple task.

The complex decision can also be considered as the 'strategic decision' because it is concerned with many
factors at a time and is also concerned with defining the problem. The strategic decision is the key decision which can not be neglected; and is to be diagnosed and analysed properly. This consists of the 'limiting factor' (Bernard, 1976) that is essential to meet the purpose. The tactical decisions as opposed to the strategic decisions lack in the complexity and are recurring.

1.09.4 The Number of Decisions

When a decision-maker takes into account the available information, uses it to make a decision, receives some payoff and then gets over the situation, it is a 'static' decision. But in some cases decision-maker faces a sequence of decisions that may or may not be related to one another or they may or may not tend to seek the same goal - this is then called as a 'dynamic' decision.

Barnard Chester, I. (1976) also has distinguished between a 'positive' and a 'negative' decision. Positive decision is a decision to act or to do something. Action of deciding to stop, to cease, to withdraw are also positive decisions. A negative decision is 'not to decide'. This may take place because, the problem under consideration
is not relevant, there is lack of sufficient relevant information or the decision maker lacks the necessary competence.

1.10 THE STATEMENT OF THE PROBLEM

In the present study the researcher was interested in 'identifying the ability of decision-making in social situations among young adolescents'.

The work was done in two parts -

Part - I This part consisted of developing a satisfactory and reliable tool to measure the decision-making ability of children.

Part - II This part dealt with the correlational analysis of various factors that seemed to have a role in decision-making behaviour. This enabled the researcher to identify the factors of decision-making ability of children.

1.11 THE SCOPE AND LIMITATIONS OF THE STUDY

The present study was related to the decision-making ability of -
- children in the age group of 12 to 13½ years i.e. the young adolescents,
- both boys and girls,
- in the social situations.

Here, decision-making was considered as an act of choosing, so naturally the decision-making ability was considered as an ability to make the choice and make the selection from the given alternatives. It was expected that a good decision-maker would arrive at a decision that is suitable and desirable in a given situation.

The reasons as to why the group of young adolescents was selected could be mentioned here. Adolescence means growth into maturity. The adolescent period has been located as ranging from age 12 to 21. It is the time when a child normally learns to gain confidence, develops independent thinking and establishes his independent identity. This is the period between childhood and adulthood. One has to learn to weigh alternatives and make choices. One has to understand the society and has to learn to participate in it.
This is the period where one has to make the choice that will have lasting effects on his life. In brief, this is the period in which he has to learn to undertake the responsibilities and at the same time enjoy the freedom of adulthood. If he acquires competence in weighing alternatives, setting priorities and selecting his actions, he can shape his future and be successful in life.

It was felt, that the responses of the boys and girls from the adolescent age group would have been affected and influenced by the adjustment problems of adolescence that they face. Secondly, the participants from adolescent group would be more interested in solving their own problems such as dis-agreement with parents, friendship with the opposite sex, career, selection etc. etc.

The researcher was, however, more interested to know the decision-making ability of young children unconfused by their physical changes and unclouded by their mental turmoil. It was, therefore, imperative to identify and assess the decision-making ability of children at an early age i.e. before they are actually forced to face the
everchanging surroundings. They, in such a situation, would be in a position to be aware of themselves. They could and would realize their own strengths and weaknesses and would have a better chance for improvement. Hence, the beginning of the adolescent period i.e. young adolescence was chosen to study the sample of boys and girls.

Incidentally, the difference in the maturity of boys and girls have been pointed out by many in their earlier studies though no special consideration was given towards it in the present study. This was primarily because it was out of context and scope of the present study and secondarily due to the expected difficulties in the data collection.

The sample was drawn from school going children belonging to middle class of socio-economic level. The data were obtained from the children attending 'Marathi'\(^1\) medium schools in Pune City.

\(^1\) Local vernacular language
Every human, being a 'social animal' has to live in the society. He has to set and fulfill his ambitions by giving due consideration to his social surrounding and hence decision-making in social situations becomes the main interest for the present study.

The social field of an individual is as wide as ocean; so it was desirable to limit its boundaries in such a manner that all the facets of one's social life find its place with due weightage and are well represented. Home, School and Entertainment are the most important areas *1 which occupy almost all the time in the life of a child. It is, therefore, essential to study these areas to identify the decision-making ability of any child. Any situation is a social situation where some other person - either physically or at times just by imagination - is also present. It is obvious that in such a situation the decision-maker's choice or selection of alternatives is likely to be influenced by the other person present.

Though, the present work was not designed according to any single specific theory of decision-making, the

*1 Here onwards the 'area' will denote the content area of the tool of decision-making.
researcher resorted to the maximum utility approach and accepted the analysis of process of decision-making given by Adair (1971). It was believed that the decisions would be affected by the -

- morals appreciated in the society,

- ethical values honoured such as - respect the elders, teachers; be honest; be co-operative etc. etc.,

- decision-maker's belongingness to his social world e.g. his parents, siblings, relatives, friends, teachers etc. etc. and

- decision-maker's personality.

A variety of decision situations were prepared and were presented with the sufficient amount of information. The amount of necessary information to be presented in an item was verified by the students other than sample group and secondly with the help of two psychologists. The information was presented in an easily comprehensible manner. For each situation, five properly defined alternatives were suggested and the sample children were told to select one from among the given alternatives. With the
help of proper instructions, a desirable mental set was created for the children to select the alternatives for different situations. It was believed that the children would express their own decisions for implementation while selecting the alternative. Though the limitations of the study did not allow the opportunity to check whether the children do behave accordingly in reality, it was assumed that they would do so.

1.12 **SUMMARY**

Decision making defined as 'an act of choosing' has been studied with great interest. The decision theories emerged to study how people make the choice. These theories were developed on the basis of probabilities of events in future, utility of a particular commodity, information gathering process, the relevant information available in the pre-decision and post-decision conditions and the functioning of an individual's ego. Various models to arrive at effective decisions were developed, and the process of decision-making was also studied.

Every human being, while coping with the surroundings, undergoes the process of goal-setting, developing,
judging the possibilities and then selecting a path of action i.e. making the decision. The need of good decision-makers has been strongly felt in almost every field to meet the challenges of present everchanging world.

The earlier researchers agreed that the capacity to make the efficient decisions is developed through experience and hence they evolved the training programmes for army officers and managers, i.e. primarily for adults. The decision-making ability of children - who are the decision makers of tomorrow - however has not found to have been studied, measured and assessed so far. They seem to have too few a training programmes. It is essential to identify and measure their decision-making ability in their formative years. The present study attempts to identify and measure this ability among young adolescents in social situations.