

Up to this point different types of decisions and methods of dealing with them have been discussed in terms of programmed and nonprogrammed activity. An alternative approach is to view decisions as falling into three categories; policy decisions, strategic decisions and tactical decisions. These types of decisions are closely related to the levels in the organization at which decisions are made. The policy decision is made by top level managers, the strategic decision by middle managers and the tactical decision by lower levels of the hierarchy. An analysis of decision making in terms of these levels and types of decisions could, perhaps, assist in clarifying the arguments which abound in the literature concerning the level at which decisions should be made (Beckhard, 1969; Dill, 1964; Drucker, 1967; Likert, 1961; Uris, 1962).

For this purpose, it is necessary to be able to distinguish between policy, strategic and tactical decisions. A distinction in terms of programmed and nonprogrammed activity would not be valuable as policy, strategic and tactical decisions may be either programmed or nonprogrammed. However, using Kepner-Tregoe terminology, it may be said that the policy decision is made with 'Musts' and 'adverse consequences' in mind. The strategic decision, which is more detailed than the policy decision, is made in terms of 'Wants' and 'adverse consequences'. Finally, the tactical decision, which details the entire objective, is formulated in terms of 'Musts', 'Wants' and 'adverse consequences', with the emphasis being laid on the 'Want' objectives.

A further distinction between these three types of decisions may be made in terms of the processes involved in attaining effective human relationships during the decision making procedure, and the actual decision making technique utilized when making each type of decision. With the top level policy decision, and to a large extent the strategic decision, the major emphasis is on the human relationships involved in its formulation. The lowest level decision, the tactical decision, however, relies heavily for success on the decision making technique used. It can be seen, therefore, that as long as management development programmes concentrate on developing human relationships, e.g. The Managerial Grid (Blake and Mouton, 1964), Sensitivity Training (Bradford, Gibb and Benne, 1964) and Rational Training (Ellis and Blum, 1967), rather than specific techniques which can be used by managers, only the top level decision making abilities will be affected. For a decision making programme to be truly comprehensive, therefore, it must deal with both the human relationship and the technical aspects of decision making. The Kepner-Tregoe approach provides the basis of information analysis and use which is essential for the tactical and to an extent, the strategic decisions. However, in its applicability to almost every aspect of managerial functioning, the human relationship training required for effective policy decisions is also considered, although not emphasised.

INFLUENCES ON DECISION MAKING

It has been shown that decision making is influenced by supervisory styles (Blake and Mouton, 1961; 1964; Likert, 1961; Newman, 1958), communication patterns (Blake and Mouton, 1961; Likert, 1961; Simon, 1960), training in orderly thinking (Blake and Mouton, 1961; Simon, 1960), member participation in group decision making discussions (Blake and Mouton, 1961; Maier, 1950; 1963; Vroom, 1959; Zelko, 1957), personality variables in group members (Baumgartel, 1956; French, Israel and As, 1960; Jacobson, 1951; Vroom, 1959), size of decision making group (Bales, 1955), the group discussion leader (Maier, 1950), sex of group members (Thompson and Tuden, 1964), social status of group members (Thompson and Tuden, 1964) and availability of information (Thompson and Tuden, 1964).

Of these influences, inadequate communication and consequently a lack of information, present a major threat to the effective functioning of the Kepner-Tregoe decision making process. This lack of communication can easily occur in group decision making situations where group conflict can arise as a result of differing role expectations, personality variables and participation levels of group members. The Kepner-Tregoe approach to dealing with such conflict is 'rational' rather than 'humanistic', in that the factual content of the decision situation is considered, while the emotional processes involved in group functioning are largely disregarded. It is possible that the Kepner-Tregoe programme could be enriched by placing more emphasis on dealing with the emotional processes involved in group problem solving and

decision making situations in addition to the existing stress placed on rational thinking.

In addition, the Kepner-Tregoe decision maker must guard against the influence of personal bias when setting objectives and when assessing risk. A further obstacle to effective Kepner-Tregoe decision making is presented by the difficulties encountered when co-operating with people unfamiliar with the system. This difficulty has been pointed out by Blake and Mouton (1961) with regard to the Managerial Grid programme. It is with respect to this aspect of decision making also that training in group functioning would be of most value.

POTENTIAL PROBLEM ANALYSIS

Kepner and Tregoe (1965) postulate a sequence of three processes, the first of which is a problem analysis, the second, a decision analysis, and the third, a potential problem analysis. The analysis of a problem, i.e. the discovery of its cause, is followed by a decision about what course of action to take to cope with it. Once a course of action has been selected, a plan must be drawn up to implement it. Finally, this plan must be examined for potential problems.

Before proceeding further, the distinction between planning and potential problem analysis must be drawn. According to Kepner and Tregoe (1968) planning is:

"that process which describes and schedules the way in which resources will be modified and utilized to implement and maintain courses of action which have been selected" (p. R7D, 002).

A major part of the information needed for the plan can be extracted from the analysis of the decision which led to this choice of action (Kepner and Tregoe, 1968; Newman, 1958; Schein, 1969). Kepner and Tregoe (1965) do not deal with the entire planning activity of the manager, but concentrate on one aspect of this activity - that of potential problem analysis. Potential problem analysis is the systematic examination of a future course of action or activity with a view to detecting those things that might go wrong when implementing the plan. Furthermore, potential problem analysis considers what steps are necessary to prevent those things from going wrong and to protect against their effects should they still occur. This essential aspect of planning is rarely conducted by managers due to the lack of a conceptual framework within which to work (Kepner and Tregoe, 1965; Schein, 1969).

1. the definition of potential problem analysis, reference is made to two types of action, preventive and contingent. Preventive action removes the possible cause of a problem or removes its probability, while contingent action provides standby arrangements to offset or minimize the effects of a serious potential problem. In addition to these two types of actions - preventive and contingent - Kepner and Tregoe propose a further three possible actions which may be taken by the manager when dealing with problems (1965). These additional three actions are interim action, adaptive action and corrective action. Interim action is taken after a problem has been discovered but before its cause has been found. It buys time for the

manager so that he can investigate the cause of the deviation without having too great a time pressure on him. Adaptive action permits the manager to live with the tolerable effects of the deviation, or with an ineradicable cause, while corrective action, the final type of action proposed by Kepner and Tregoe (1965) eliminates the known cause of the problem.

It must be remembered that any single action or combination of these actions taken by the manager requires planning. Furthermore, each of these plans will require potential problem analysis. Potential problem analysis is a continuous process and need not end until the manager is confident of his success. However, Kepner and Tregoe (1965; 1968) have outlined procedures which serve to ensure that the time invested in a potential problem analysis is productive. In addition to these procedures, however, Kepner and Tregoe (1968) advocate that the manager allocate a limited amount of time to the entire potential problem analysis process. It has been found that such time restraints focus attention on those aspects of the plan which require the most investigation, and keep the process from degenerating into endless detail (Kepner and Tregoe, 1968).

STAGES IN POTENTIAL PROBLEM ANALYSIS

Identify critical areas

To focus the time and effort of his potential problem analysis, the manager must identify the areas of the plan which are crucial for its success, or which present a

cluster of potential trouble spots. These aspects of the plan are termed 'critical areas' by Kepner and Tregoe (1965). The adverse consequences arrived at during the decision analysis are of assistance in specifying these critical areas.

Anticipate problems

Having identified the major critical aspects of a plan, it is necessary to specify particular problems which may arise within these areas. In reviewing a critical area to generate potential problems, a manager's primary concern is 'What could go wrong with this aspect of the plan?' The manager's experience and his ability to project events logically into the future are of assistance in predicting potential problems. The advantages of having two or more people working together to develop this list of potential problems are obvious. As with the generation of alternatives in decision making, the principle objective at this stage is to generate potential problems and not to evaluate them at the same time.

After listing potential problems, each one must be evaluated with regard to the amount of threat which it holds out for the plan. The threat of a potential problem is expressed in terms of 'Probability' of occurrence and 'Seriousness' if it should occur. The threat of a potential problem can be reduced by taking actions to lower its probability of occurrence (Preventive Action) or to minimize the seriousness of the problem if it should occur (Contingent Action).

Select action

Preventive action can only be taken if the manager is aware of the cause or causes of the potential problem. In some instances a cause may be impossible to prevent e.g. a change in the economic climate. When this occurs, contingent action must be instituted to minimize its effect on the plan. The cost and scope of contingent actions will be reduced to the degree that preventive actions can be taken.

Provide for information

For each contingent action that has been planned, a means must be provided to activate that action should the problem occur. A feedback system, or a 'trigger', is necessary to indicate that the problem has actually occurred, and that contingent action is required. Furthermore, it is necessary to provide mileposts in the plan that will provide for reporting progress.

It can be said then, that a potential problem analysis is based on two popular maxims: firstly Murphy's law, that, if it can go wrong it will, and secondly, that prevention is better than cure.

OBSTACLES TO THE USE OF THE POTENTIAL PROBLEM ANALYSIS SEQUENCE

This relatively new dimension that Kepner and Tregoe (1965) have brought to planning is faced with numerous obstacles. Firstly, most managers spend their time curing today's problems rather than preventing tomorrow's. As Kepner and Tregoe (1965) say, this is not surprising:

"since the major rewards in money and promotion so often go to those who show the best records

of solving current problems in management and there is rarely a direct reward for those whose foresight keeps problems from occurring" (p. 208).

The second factor mitigating against the application of potential problem analysis is the common conviction of managers and other planners, that any plan of theirs is workable, or they would not have suggested it in the first place. It is difficult for them to ask the question, 'What could go wrong?'

Thirdly, there is a common tendency for people to think, on the basis of a superficial examination, that they fully understand all the implications of a plan.

Finally, the process of potential problem analysis may be abused if potential problems are viewed from the point of view of one party only. As with problem solving, if a plan involves the participation of two parties, for example, the organization as a whole as well as the individual, the desires of both parties must be considered. For the effective implementation of a plan, the potential problems of both the individual and the organization must be overcome.

Potential problem analysis is an essential ingredient of the role of today's managers. It is a way of coping with change and with the planning of change, a vital characteristic of modern organizations (Beckhard, 1969; Bennis, 1966; 1969; Bennis, Benne and Chin, 1971;

Walton, 1969). Without the ability to cope with change and the tools with which to institute change, modern managers will flounder. Kepner and Tregoe (1965), with their problem solving, decision making and potential problem analysis sequence, offer one means of withstanding the forces exerted on organizations by our viable environment.

ACHIEVEMENT MOTIVATION

Atkinson (1964) has proposed that the theory of achievement motivation attempts to account for:

"the determinants of direction, magnitude, and persistence of behaviour in a limited domain of human activities. It applies only when an individual knows that his performance will be evaluated (by himself or by others) in terms of some standard of excellence and that the consequences of his action will be either a favourable evaluation (success) or an unfavourable evaluation (failure)" (p. 240).

Achievement motivation, then, can be described as the pursuit of an achievement goal when the latter is regarded as success in competition with a standard of excellence (McClelland, Atkinson, Clark and Lowell, 1958).

The study of achievement motivation was instigated by McClelland and Atkinson in 1948 (Atkinson, 1964). McClelland and Atkinson began to combine the clinical insight, that human motivation is expressed in free-associative thought, with the experimental methods of manipulating and controlling the strength of motivation. Furthermore, McClelland and

Atkinson adapted Murray's (1936) technique of eliciting imaginative stories in response to Thematic Apperception Test (TAT) pictures, for use as a measuring device. Their initial investigations led to the finding that hunger drive could be detected through an analysis of stories elicited from subjects while being deprived of food. As a result of this finding, research was instigated to examine whether other motives (e.g. the motive to achieve) could also be detected by a content analysis of imaginative stories of subjects.

One of the major problems faced by McClelland and his co-workers at this stage of their investigations was the need for a reliable method of scoring the stories obtained. Consequently, a method of scoring the stories elicited by the TAT pictures in terms of achievement motivation was developed (McClelland et al., 1958). This measure of achievement motivation has been subsequently used in the majority of studies related to the achievement motive (McClelland et al., 1958) although, in recent years, measures of achievement other than the TAT have been developed (Aronson, 1958; French, 1958; Hermans, 1970; Lynn, 1969; Mukherjee, 1965).

Research into achievement motivation has led to the discovery of a number of behaviour patterns which are closely associated with people scoring high in achievement motivation. According to McClelland (1958) people with a high need for achievement work harder at laboratory tasks, learn faster (McClelland, Atkinson, Clark and Lowell, 1953), do somewhat better school work in high school (Ricciuti and

Sadacca, 1955), and seem to do their best work when it counts for their record and not when other special incentives are introduced such as pressure from the outside to do well (Atkinson and Reitman, 1958) money prizes (Atkinson, 1958; Davis, 1957) or time off from work (French, 1958). They are more resistant to social pressure (McClelland et al., 1953), chose experts over friends as work partners (Davis, 1957; French, 1956) and tend to be more active in college or community activities (de Charms, Morrison, Reitman and McClelland, 1955; Kaltenbach and McClelland, 1957). They like risky occupations (McClelland, 1956) perform better under longer odds (Atkinson, 1958) and chose moderate risks over either safe or speculative ones (McClelland, 1956). High achievers furthermore set goals which are potentially attainable, and choose to participate in activities where they have some influence over the outcome rather than in activities where the outcome is determined by chance (McClelland, 1971). Furthermore, they need concrete feedback on how they do (McClelland, 1971). Finally, they come from families in which there has been stress on early self-reliance and mastery (Winterbottom, 1958) and oddly enough, they cannot report accurately when asked whether they have a high need for achievement or not (de Charms et al., 1955; McClelland et al., 1953).

McClelland (1971) has, furthermore, suggested those factors which lead to the development of high achievement motivation in individuals. He indicates that high achievement motivation develops in homes where parents

set moderately high achievement goals but, where, in addition, they are warm, encouraging and non-authoritarian in helping their children reach these goals (McClelland, 1971). In addition, the more individualistic and more activist the religious ethos of the environment, the more strongly achievement motivation is fostered (Heckhausen, 1967).

The relationship between early training in achievement behaviour and later achievement oriented activity (McClelland, 1971; Winterbottom, 1958) can be seen too, in the correlations which have regularly been found between the achievement content of popular literature e.g. songs or children's textbooks, and subsequent rates of economic growth (McClelland, 1971). Studies have shown this relationship to hold true in Ancient Greece, in Spain in the Middle Ages, in England from 1400-1800 as well as among contemporary nations whether capitalistic or communistic, developed or underdeveloped (Brown, 1965; McClelland, 1971).

These findings have led to a new development in research on the need for achievement. Having ascertained achievement levels in individuals or nations before their effects were widespread, it seemed feasible to attempt to use this knowledge to foster economic development (McClelland, 1971). Consequently, McClelland and his co-workers began experimenting with techniques designed to develop need for achievement, particularly in business executives (Brown, 1965; McClelland, 1971). Some success in developing the need for achievement by means of a

course designed for this purpose has been reported by McClelland (1971). However, one of the major obstacles to the success of this achievement motivation development course is the finding that following the course, achievement motivation may drop if the course participant returns to an environment which does not present opportunities for achievement oriented behaviour (McClelland, 1971). In support of this finding, Litwin (1958) and Litwin and Stringer (1966) have reported that organizational climate plays a determining role in the achievement motivation of workers. These findings indicate that environmental factors play a vital role in the maintenance of achievement motivation. Because of the important implications for economic development, it is necessary to provide some means for overcoming this obstacle to the development of achievement motivation.

KEPNER-TREGOE AND ACHIEVEMENT MOTIVATION

In recent years management development programmes have placed emphasis on either the human element or the functional component of organizational development. The managerial grid (Blake and Mouton, 1964) has stressed human relationships. Management by objectives (Humble, 1970; Odiorne, 1965) on the other hand, by placing major emphasis on managerial functions such as the setting of objectives, has evaded the modern stress on human processes. Kepner and Tregoe (1965) by emphasising techniques of problem solving and decision making, falls into the same category as management by objectives. The distinction which exists between the human

relationship training procedures and training procedures concentrating on functions, must for the benefit of organizations be broken down. As Beckhard (1969) says:

"I believe that in the years ahead there will be a new fusion of efforts of those who are trying to prepare managers for organization leadership through the teaching of better decision making methods and information analysis and use, and those who are trying to prepare managerial talent to be able to optimize the creativity and potential of the human resources in the organization" (p.117).

An examination of the Kepner-Tregoe programme indicates that while concentrating on developing techniques of problem solving and decision making, it does not neglect the development of human resources, in particular that of achievement motivation. Behaviour patterns which are developed in course participants appear similar to some of the characteristics of people with a high need for achievement. For example, McClelland (1961) has stated that the high achiever prefers to have responsibility for his actions and consequently is not inclined to trust his success or failure to chance. The Kepner-Tregoe process provides the manager with tools which enable him to accept this responsibility. He can readily accept the responsibility because he has learned how to test the validity of postulated causes of problems and because he is able, to an extent, to predict and control the outcome of decisions.

The characteristic of high achievers to take responsibility for actions, is closely related to their risk taking behaviour. Although the point has been debated (Atkinson and Litwin, 1960; Cummin, 1967; de Charms and Dave, 1965; Kogan and Wallach, 1967), McClelland's (1961) evidence that high achievers are moderate risk takers still has some validity. If it is true that high achievers are moderate risk takers, then further support for the proposal that the behaviour of high achievers is similar to that of Kepner-Tregoe managers is provided. This is so because Kepner-Tregoe managers are provided with tools (adverse consequence thinking, preventive and contingent action) whereby they are able to assess the risk of undertakings as well as control this risk to some extent and choose, like the high achievers, a situation preferring a moderate risk.

Risk taking behaviour hinges on a further characteristic of high achievers; their need for knowledge of results (McClelland, 1971). Kepner and Tregoe (1965) also place continual stress on the need for knowledge of results of Kepner-Tregoe managers. The problem solving sequence and the potential problem analysis sequence, in particular, incorporate stages which are aimed at providing knowledge of the results obtained by utilizing the sequences. For example, the problem analysis sequence provides for the verification of the cause of the problem, which would indicate whether or not the problem analysis sequence had been adequately utilized. In addition, the injunction to 'provide for information' found in potential problem analysis, would allow the Kepner-Tregoe manager to ascertain the success or failure of his planning activity.

Furthermore, it has been shown that high achievers prefer experts to friends as working partners (McClelland, 1961). A distinctive feature of the Kepner-Tregoe programme is its continual emphasis on the value of correct and relevant information for problem solving and decision making. One means of obtaining the information required to solve problems or make decisions is to consult with people who have the necessary knowledge. Hence, managers trained in Kepner-Tregoe processes will probably choose experts who have the required knowledge rather than friends, as working partners.

Finally, Samuelson (1957) has reported that high achievers show independent behaviour when placed in conflict with majority opinions. In addition, they are optimistic about their future success in their jobs. This independent behaviour in the face of conflict would be strengthened by the knowledge that the convictions forming the basis of a problem analysis or decision analysis were correct. The application of Kepner-Tregoe processes would provide a rational basis for such assumptions. In addition, this surity of thought would provide a logical basis for optimism about future success.

It is possible then that the Kepner-Tregoe programme, by developing characteristics of achievement motivated people, will develop achievement motivation. A learning theory approach to behaviour indicates that underlying attitudes and motives can be changed by altering actual behaviour patterns. Therefore, if the Kepner-Tregoe

programme results in achievement behaviour, it can be suggested that it will foster achievement motivation. Further support for the proposal that the Kepner-Tregoe programme develops achievement motivation can be found in the similarity of the methods of training used by both McClelland (1965a) and Kepner and Tregoe (1965) in their development courses. McClelland (1965a) has shown that achievement motivation can be developed if the following characteristics are taken into account in the training programme:

1. The participant must be convinced that he can, will or should develop achievement motivation.
2. The participant must understand the principles involved.
3. The participant must be able to apply the principles to his own work.
4. The participant must be able to see the consequences of this application in his life.
5. It must be demonstrated that the principles will enhance the society in which he lives and his environment.
6. The participant must commit himself to achieve goals in life relating to his new knowledge.
7. A record of progress towards achievement of these goals must be kept.
8. The individual's attitudes will only be changed in a warm supporting environment.
9. Finally, the individual must be assigned a membership in a new reference group.

These then are the principles which underlie an achievement development course. The same principles underlie the Kepner-Tregoe seminar. Firstly, the need for better problem solving and decision making which exists in industry is rationally pointed out. Secondly, the procedures of problem analysis and decision analysis are elucidated with constant reference to the individual's own work situation. The work manual used on the course consists of aids to the application of Kepner-Tregoe principles to the job. The consequences of applying the principles of problem solving, decision making and potential problem analysis are stressed in relation to the individual, the organization and through them, the environment. The participants are also required to set out their objectives for the six months following the course and these are reviewed by the course leader at the end of this period. Finally, the new knowledge is acquired in a congenial atmosphere where group spirit is fostered.

It seems then that the principles underlying the Kepner-Tregoe programme are similar to those underlying McClelland's achievement development course. If these principles are essential for the development of achievement motivation (McClelland, 1965a), then it is feasible to propose that the Kepner-Tregoe programme by following these principles also develops achievement motivation.

For the purposes of this study, then, it may be proposed that the Kepner-Tregoe programme will cause an increase in achievement motivation. This proposition

is supported by the suggestions that:

1. Kepner-Tregoe by developing behaviour patterns which are characteristic of high achievers, will develop the achievement motivation underlying such behaviours, and
2. Kepner-Tregoe courses are conducted in a manner conducive to the changing of attitudes to achievement.

The present study, therefore, was conducted to investigate whether the Kepner-Tregoe seminar, including the six-month 'follow-up' period (Appendix 3), would cause an increase in achievement motivation in managers.

PROCEDURE

Subjects

104 Managers from organizations throughout South Africa served as subjects. These managers were divided into two groups, an Experimental and a Control group. The Experimental group attended Kepner-Tregoe 'Apex' programmes, designed primarily for middle management, while the Control group did not. 57 Managers constituted the Experimental group while the Control group consisted of 47 managers from the same organizations and of approximately the same position in the organizational hierarchy as the Experimental group.

The achievement motivation questionnaire

A forced-choice achievement motivation questionnaire (AMQ) consisting of 34 items was drawn up (Appendix 1). Some of these items were adapted from the Hermans (1970) questionnaire measure of achievement motivation, while others were based on the concepts of achievement motivation found in the literature (McClelland, 1961; McClelland et al., 1953). The four alternative answers to each of the 34 items were scored from one to four. Thus total scores on the AMQ could range from 34-136, with high scores indicating a high need for achievement.

Method

The AMQ was administered to the Experimental group before the start of the Kepner-Tregoe 'Apex' course (pre-test) and again at the completion of the six-month 'follow-up' period (post-test). At the same time as the Experimental group pre-

Author Chalmers B E

Name of thesis The effect of a management development programme on need for achievement 1972

PUBLISHER:

University of the Witwatersrand, Johannesburg

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