4 Decision-making procedures

4.1 Decision-making procedure defined

A decision-making procedure can be defined as a system of rules for obtaining and analyzing information which can be applied to the resolution of a certain type of decision problem (Grünig, 1990, p. 69 f.; Gygi, 1982, p. 20; Klein, 1971, p. 31; Kühn, 1978, p. 52 and 139; Little, 1970, p. B-469 f.; Streim, 1975, p. 145 f.).

A decision-making procedure must present a system of rules which addresses all the essential sub-tasks involved in resolving a decision problem. These are: problem discovery and analysis, the development and evaluation of options, the specification of the overall consequences of the options and the decision. Rules that only support the actor in overcoming one of these tasks are not referred to as decision-making procedures. Such rules include techniques to support the search for options, often called creativity techniques, and rules for summarizing individual consequences of an option into its overall consequences, known as decision maxims.

Very different types of rule systems can be found. In form they range from verbal descriptions with or without decision process diagrams to mathematical algorithms of varying degrees of complexity. The content-related differences are more important however. The most important criteria for the differentiation of decision-making procedures and the resultant categories are introduced in section 4.2.

The rules in decision-making procedures refer primarily to the processing of relevant information. They usually only contain vague indications about what information is needed to solve a problem and often make no recommendations as to how to procure the information. This is understandable as the potential for the procurement of decision-relevant information depends on the particular conditions.
4.2 The different types of decision-making procedures

4.2.1 The parameters of decision-making procedures and their values

Management science aims to support the decision-maker in his task and has proposed a large number of procedures. They can be subdivided according to a number of parameters. From a practical viewpoint, three parameters seem important:

- the range of different problems that the procedures can be applied to
- the formal restrictions on the use of the procedures
- the quality of the solutions produced

First we can distinguish between general decision-making procedures, helpful in tackling any problem, and problem-specific ones designed to handle particular types of problems. Two examples of problem specific procedures are portfolio planning, and determining the optimal quantity of stock to be held of a particular product group.

Secondly, the use of a decision-making procedure can involve restrictive conditions. Some of these will be explicitly named. However, there will also be implicit conditions that manifest themselves to the actor as unexpected restrictions or difficulties during the application of the procedure. The most common formal restriction is that the procedure only admits quantitative decision variables and quantitative decision criteria and thus only takes quantitative aspects of the problem into account. For the moment we will distinguish only between procedures with formal application restrictions and those which have no important formal application restrictions.

Thirdly, in regard to the quality of the solution produced by the procedures, it makes sense to distinguish between:

- procedures that aim at an optimal solution and
- procedures that do not aim at an optimal solution but normally produce a solution which is considered satisfactory by the actor.

Figure 4.1 provides a summary.