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Designing Groups for Judgmental Decisions[1]

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To design effective judgmental decision-making groups, one must consider: (1) decision criteria, (2) situation characteristics, (3) membership, and (4) how the group functions. This paper proposes a model for synthesizing these elements. First, interactions among the elements are formulated as *design propositions. Then the propositions are integrated in a decision tree to guide practitioners and researchers.*

Designing groups to make important judgmental decisions on ill-structured problems is a difficult managerial task [Axelrod, 1976; Janis, 1972; MacCrimmon & Taylor, 1976]. Despite the importance of group design, little systematic guidance is available. Although there has been research dealing with design considerations, such research has generally been situation specific [Axelrod, 1976; Doob & Foltz, 1973; Janis, 1972], has stressed single variables [Maier, 1963; Van de Ven & Delbecq, 1974], or has focused primarily on the organization as the unit of analysis [Galbraith, 1977; Kilmann, 1977]. The development of contingency theory suggests a need to address interactions among design variables and their effect on decisions [Kilmann, 1977].

Important judgmental decisions are required in situations where: (1) the potential benefits are substantial, the costs of error are high, and it is difficult to reverse or salvage a poor decision after action commences; (2) information is incomplete or uncertain; (3) there are many feasible alternatives but only a few are known; (4) it is difficult to identify an optimal solution; and (5) feedback about results is not available until long after the decision has been made [Zand, 1974, 1978]. To deal with such ill-structured situations, managers are generally advised to consult or work with a group such as a team of subordinates, a planning committee, or a task force [Maier, 1963; Tannenbaum & Schmidt, 1958; Vroom & Yetton, 1973].

After being advised to use a group, managers are more or less on their own to design the group [McGrath & Altman, 1966]. Yet the decisions a manager makes in designing a judgmental decision-making (JDM) group may substantially affect the quality and character of its judgments. We focus in

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this paper on design decisions made *before* the JDM group meets; most of the systematic guidance available to managers concentrates on how to direct or facilitate the group's process *after* it is convened.

Although facilitating a group's process is often important, there are critical predisposing variables the manager should consider when designing a JDM group. These include: (1) the outcomes desired, (2) the characteristics of the members, and (3) the basic mode of group functioning. These aspects are also affected by (4) the context of the JDM situation [Hackman, 1968]. If the manager's diagnosis of the situational context and design decisions are poor, then the group is apt to make inferior judgments [Collaros & Anderson, 1969; Nutt, 1976 a, b].

Historically, managerial guides for designing a JDM group have not been integrated into a systematic model. Research on the subject is probably best described as being at an early stage of evolution. Variables tend to be isolated and examined within a highly specific context, with little consideration given to interactions. One consequence of this tendency is a pattern of disconnected findings that often do not reliably generalize to different situations.

The feasibility of evolving a systematic, integrative model has become more evident as a result of recent research that reports large and significant interactions among the design variables of a JDM group and the effectiveness of the group's judgments [Stumpf, Freedman, & Zand, 1979]. These and other research findings can contribute to the improved design of JDM groups and future research if a more comprehensive, systematic model is made available - one that includes more of the interactions among variables in a real situation.

We shall propose and outline the *beginning* of such a model. It defines relevant variables, identifies key relationships, and guides the generation of a series of propositions about the design of JDM groups. The model and its derived propositions are then transformed into a decision tree that identifies preferred designs for groups in different JDM situations.

The Design Process

A model of the design process is presented in Figure 1. After identifying and formulating the problem, the manager defines criteria for an effective judgmental decision. Among the salient criteria are the extent to which the decision should be high in quality, acceptable to others, and original [Maier, 1970; Vroom & Yetton, 1973]. These criteria are used later to evaluate the decision. Next, the manager identifies characteristics of the situation likely to affect the decision (for example, What expertise, if any, is required and where is it available?). Then, group members are chosen. Some may be representatives of affected constituencies, others may be experts or co-workers [Kilmann, 1977; Nutt, 1976a, 1976b]. The next step entails selecting a method of group functioning such as interacting, nominal, or delphi [Van de Ven & Delbecq, 1974]. The group then convenes and goes through a process partially defined by the method of group functioning (but also affected by the past history of the group, the leader, and the presence or absence of a group facilitator or mediator. If the manager's initial view of the problem changes as a result of dealing with the JDM group [Mitroff & Emshoff, 1979], then the model may be used again to determine the appropriate group design. After the JDM group arrives at a recommendation, the recommendation is evaluated against the criteria established at the outset. For example, if the manager specifies criteria of quality but not acceptance or originality, then the group's decision would be evaluated entirely on the basis of quality.

The model suggests interactions among decision criteria, situation characteristics, membership, and functioning. The decision criteria specified by the manager make some combinations of membership and functioning superior and therefore preferable to others. Situational characteristics influence the relationship between decision criteria and both membership and functioning. Specifying only criteria or membership or functioning, without considering other design parameters and their interactions, may lead to the design of a JDM group that has a substantial probability of making inferior decisions.

If one starts with a poorly designed JDM group, then the group's efforts may be impeded by such diverse and deeply rooted adverse conditions as ill-specified criteria, inappropriate members, and ineffective behavior. Even superior facilitation skills may be overwhelmed. The model implies that a well-designed group is apt to confront fewer ad-

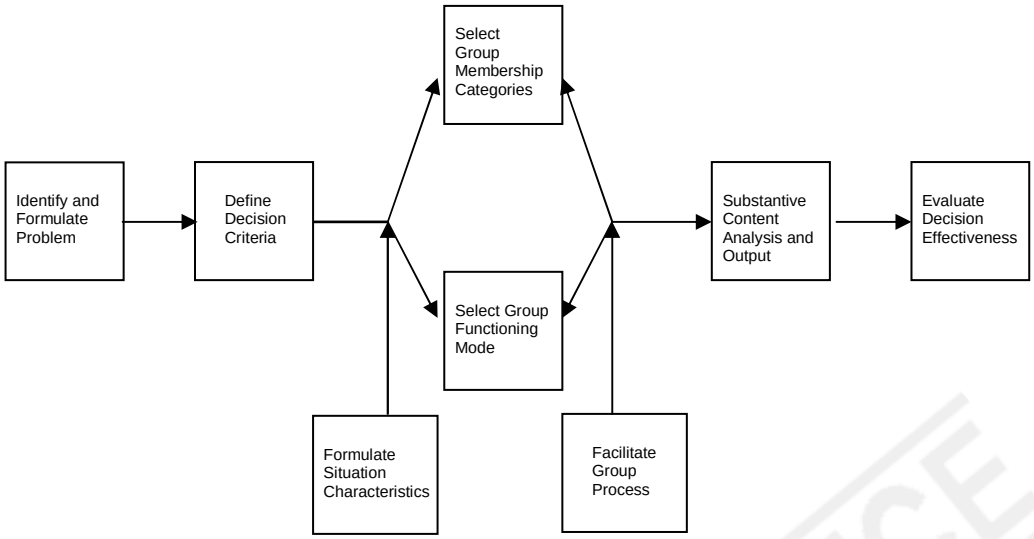

Figure 1
Model for Designing JDM Groups

verse preconditions; therefore, it may be better able to tolerate deficiencies in group process and still make superior decisions. We acknowledge the importance of group process and its effects on decisions [Cartwright & Zander, 1968; Hackman, 1976; Zaleznik & Moment, 1967]. However, by focusing on design decisions that precede group process, we hope to show managers how to avoid creating poor JDM groups that demand more from the group process than it may reasonably deliver.

The Decision Situation

Initially it is desirable to distinguish between decision criteria that are properties desired in the judgment, and situation characteristics that often are beyond the manager's control (see Figure 1). Later, for ease of discussion, we shall use the phrase "decision situation" to mean decision criteria and situation characteristics, because both concepts collectively define the JDM situation.

Decision criteria The manager's initial view of a problem in this model includes specification of three potential properties of an effective judgmental decision: quality, acceptance, and originality. Quality is generally a primary characteristic desired in important judgmental decisions. Some dimensions of quality are (1) efficiency, or ratio of output to input; (2) cost, as a proportion of net worth; (3) effects of failure; (4) ease of implementation; (5) time period over which the decision will be effective; and (6) estimated likelihood that the decision will attain key goals.

In some circumstances, when all alternatives are sufficiently high in quality and there is little variance among them, the quality criterion is met a priori and ceases to be a relevant decision criterion. For example, Maier [1963] describes the case of redistributing six telephone repair trucks among a six-person repair crew after the oldest truck has been replaced by a new one. The six trucks can be assigned in 720 different ways. All 720 alternatives are equally high in quality, because each alternative provides adequate equipment for the crew to do its work properly. Thus quality recedes as a relevant criterion; however, some alternatives - such as assigning the oldest truck to a senior member or the new truck to a junior member - may be less acceptable than others.

The second decision property is acceptance by various affected parties. Not all decisions require acceptance, but without acceptance some types of decisions can be rendered ineffective by overt blocking or covert subversion during implementation [Maier, 1963; Vroom & Yetton, 1973].

Third, there is often a need to seek an original decision. At times, for example, when existing solutions are well known and widely used by competitors, a manager may seek a decision requiring ideas

not previously recognized or attempted. At other times, such as those requiring rapid response or tight control of costs, a manager may limit the decision to established ideas.

Situation characteristics Situational variance is a crucial aspect of JDM group design. The manager must analyze the characteristics of the situation to avoid designing a group likely to recommend ineffective decisions. Three aspects of the situation are considered in this model: availability of expertise, span of the decision, and intragroup conflict. These specific characteristics are considered because they affect the choice of group membership and functioning [Stumpf et al., 1979]; it is not presumed that they exhaust the full set of possibilities.

Availability of expertise refers to whether special expertise is needed to solve a problem, and if so, what is the source of persons with relevant knowledge, skill, and information. When experts are needed and are not available in the manager's work force, outside expertise must be obtained to assure a high quality decision.

Decision span is the extent to which persons outside the manager's control are likely to be affected by the decision [Katz & Kahn, 1966]. A narrow-span decision affects only internal parties, such as the manager's subordinates; but a broad-span decision – such as one with environmental impact or consumer impact – may affect many outside parties. A decision's span affects who should be selected to be a group member to increase the likelihood that the decision will be accepted by individuals or groups who could otherwise negate its effectiveness [Delbecq, Van de Ven, & Gustafson, 1975; Maier, 1963].

Intragroup conflict refers to the degree to which JDM group members "are likely to be in disagreement over a preferred solution" [Vroom & Yetton, 1973, p. 30]. Members may disagree for many reasons; for example, they may differ in values, in perceptions of outcomes, or in estimates of costs. The effects of conflict can be functional or dysfunctional. If conflict is expected to be dysfunctional, the design decisions or the group process, or both, should aim to minimize negative effects [Maier & Thurber, 1969].

Membership Persons may be selected for a JDM group for several reasons; for example, they may possess attributes that place them in one *or* more of the following roles: (1) Expert: one who has the relevant knowledge, skill, and information deemed necessary by the manager to make a quality decision [Nutt, 1976a]. (2) Representative: one who can present the views and advocate the interests of a constituency or interest group and can influence acceptance of the decision by that constituency [Gergen, 1968; Maier, 1963; Vroom & Yetton, 1973]. (3) Co-worker: one who holds a position inside the unit making the decision and whose concerns reflect those of the unit.

To avoid confusion, two characteristics are proposed to describe the membership of a specific group: (1) the primary reason for selecting an individual (for expertise, to represent a constituency, or because the person is a co-worker), and (2) the overall composition of the group (primarily experts, representatives, or co-workers).

Group functioning A manager may choose to structure the manner in which the group functions: interacting, nominal, and delphi. An interacting group is defined as a discussion group in which members can interact throughout the decision-making process [Maier, 1963, 1970].

A nominal group [Van de Ven & Delbecq, 1971, 1974] uses a structured process in which members first privately generate ideas, then present their ideas to the group in a round-robin fashion. Next, they have an open discussion followed by an independent ranking of the ideas generated. Finally, the group decision is mathematically derived through a pooled ranking.

A delphi group uses a structured, statistical procedure to process written opinions of individual members who are not permitted to interact, and who may remain anonymous to each other [Dalkey & Helmer, 1963]. The group leader or administrator examines individual ideas, reformulates the problem, and provides controlled feedback to the individuals. The members then re-evaluate their original ideas in light of the feedback and submit another individual opinion. The group leader determines the number of iterations used, which usually depends on the time available and the degree of agreement desired (more iterations generally yield greater agreement).