Towards A Systemic Methodology For Evaluating The Impact Of Interventions On Organizational Effectiveness

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A methodology is proposed by which relevant persons can systematically partake in conceptualizing which components of effectiveness are most central to an organization, how to choose evaluation methodologies to measure these components, and how to evaluate the impact of a change program to enhance the effectiveness of the organization.

"Intervention" is defined as the planned action steps of behavioral science consultants and/or internal change agents for the purpose of improving the organization's internal functioning (e.g., the utilization of its human and technological resources), as well as the organization's adaptiveness and responsiveness to its external environment (9). The need for evaluation of such interventions is obvious. The organization is reluctant to allocate resources to programs unless they can be justified in some way. Practicing managers are interested in information, especially cost-benefit data, upon which to justify expenditures both before and after the fact. Academicians also need information to develop theories of, and methods for, organizational development (OD). The needs are apparent yet evaluation results are sparse. Evans (5) estimated that evaluation results are available for fewer than ten percent of all OD intervention programs.

The reason for the lack of evaluation can be

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traced to the nature of organizations and to the interventions themselves. Since organizations are complex systems, a change in one component of the system will have a series of effects on other components. It is difficult to predict the sequence and nature of these changes, and therefore, to establish a means of monitoring the change. Since organizations are open systems, they are constantly being affected by factors internal and external to the organization. It is difficult to separate the effects of intended, internal interventions from the effects of uncontrollable, environmental factors. The intervention itself presents a problem for evaluation. Many organizational change processes are essentially reactive in nature. An initial stimulus produces reactions which cannot be completely predicted so that subsequent stimuli must be tailored to prior reactions. Even when the intervention is proactive, the pattern of change is not completely predictable. To design an evaluation process which is capable of adjusting to the unanticipated results of a change program is difficult. Much of the literature dealing with the evaluation of social change addresses itself to such problems of evaluation (2, 24). In designing effective evaluation programs, there are additional problems involved with the less obvious interactions among the organization, the intervention, and the evaluation program. Furthermore, evaluation designs that have been formulated as experimental and quasi-experimental research designs generally assume statistical conditions of stable agricultural fields rather than conditions of dynamic and turbulent organizational phenomena.

This article first makes explicit the relevant interactions among the stages of an evaluation program by presenting a general systems model of the evaluation process. Since the ultimate goal of any organizational intervention should be to increase effectiveness, a model of organizational effectiveness is presented which facilitates the evaluation of interventions. Finally, a participative, judicial process is outlined which operationalizes the evaluation process and which evaluates the impact of interventions on the various components of organizational effectiveness.

A Model of the Evaluation Process

Mitroff and Sagasti (17) refer to the process of evaluation as an ill-structured problem. Their diamond model can be used to examine this problem and to identify the stages through which a problem is resolved or managed (22) (see Figure 1).

Conceptualization

The first stage in the evaluation process is conceptualization. The evaluator (or group of evaluators) formulates a conceptual model for evaluating the intervention. This model is determined by his or her perspective of the intervention goals, the process of change, and the needs of various recipients for evaluation results. The way in which the evaluator perceives these variables and formulates the model is, in part, determined by personality. The Jungian typology (7) can be utilized to suggest that evaluators will process information in a way that is congruent with the perception component of their personalities, i.e., Sensation (S) or Intuition (N). They will formulate a conceptual model for the evaluation, based upon their perceptions and congruent with the judgment component of their personalities, i.e., Thinking (T) or Feeling (F).

Sensation is the perceptual function (i.e., data input) that focuses on details, specificity, and a factual (here and now) orientation to reality. Intuition seeks to obtain information via global possibilities, imagination, hunches, and a future, holistic orientation. Thinking is the judgmental function concerned with formulating impersonal rules, logical procedures, and analytical approaches for making decisions. Feeling as judgment is concerned with extreme individual cases and with personal and subjective value judgments for decision making. Combining each perception function with each judgment func-

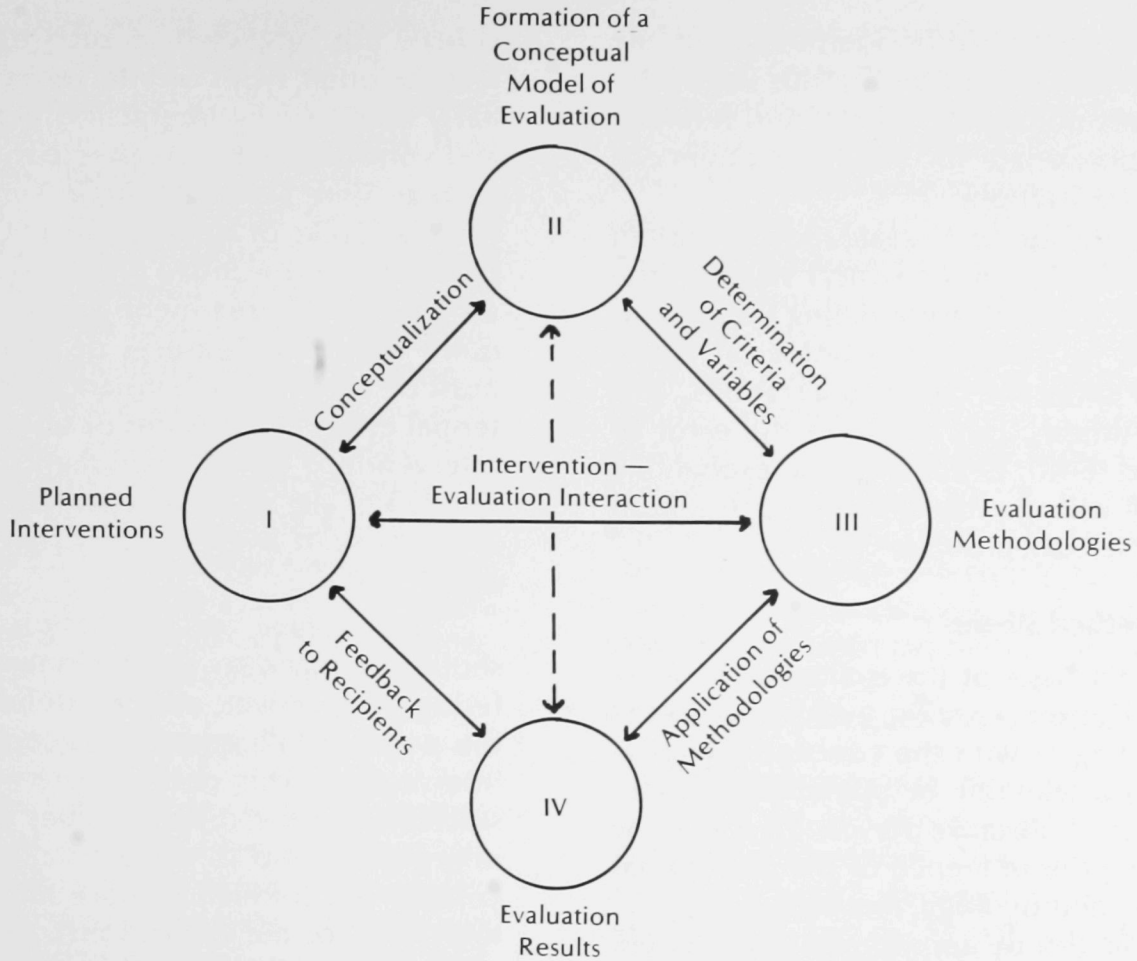

FIGURE 1. A Model of the Evaluation Process.

tion results in four psychological types, also viewed as four information-processing, decision-making dispositions which are relevant to the entire problem solving process (12), and specifically to evaluation (16):

1. Sensation — Thinking (ST),
2. Intuition — Thinking (NT),
3. Sensation — Feeling (SF),
4. Intuition — Feeling (NF).

Various evaluators of the same intervention, utilizing the same apparent information base, may arrive at different conceptual models. The conceptualization stage might result in a more effective model if several personalities were purposefully brought to bear on the problem. Ideally each of the four personality types (ST, NT, NF, SF) would be utilized. Kilmann and Mitroff (10, 11, 12, 16) consistently found that individuals of these four Jungian types define, conceptualize, and solve complex problems quite differently.

In addition, it would be beneficial to include representatives of the various potential recipients of evaluation results. Two basic groups of recipients can be identified: the client and the academic audience. In some cases, the community or other environmental sectors may be relevant audiences. If the evaluator and the change agent are different individuals, the change agent would represent another input. Each of these sources would be represented by different personalities, with different needs for evaluation results and different perceptions of the process of change.

The different needs must be identified and any need conflicts recognized during this stage. The judicial process utilized by Mitroff and Kilmann (16) seems appropriate for such a multidimensional conceptualization.

Conceptualizing the evaluation problem correctly may be the most critical stage of the entire process. Explicitly formulating the evaluation problem by Jungian psychological types, debating the different conceptualizations, and deriving a synthesis, can minimize the error of the third kind (E-III), defined as: the probability of solving the wrong problem when one should have solved the right problem (15).

Evaluation Methodologies

The second stage of the evaluation process consists of selecting specific evaluation methodologies. It begins with the conceptual model and develops a scientific or operational model for the evaluation. Because personality is a factor in determining the influence of the conceptual model on the methodology, more than one perspective would also be appropriate in this stage, with representation from the different recipient groups. Perhaps a more critical factor is the influence of the evaluation methodology on the intervention itself.

Methodologies such as experimental designs are desirable to the degree that they control extraneous variables, but these techniques may be counter-productive for the intervention. An obvious disruptive influence of experimental designs would be the requirement of random assignment of subjects to test and control groups. Quasi-experimental designs (3) which generally do not require random assignment may still raise issues surrounding the existence of control groups. The effects of an intervention on the behavior of one organizational segment may be influenced by the behavior of unaffected segments. Evidence of such influences exist in the literature. House (6), for example, found that effects of sensitivity training on individual behavior were strongly influenced by the behavior of individuals not subjected to such training. The effects of other types of intervention may be similarly modified by interaction between affected and control groups. Quasi-experimental designs such as Time Series, Multiple Time Series, Institutional Cycle, or Nonequivalent Control Groups (3) avoid the disruptive problems of randomized assignment to treatment groups but often require repeated measures or observations. Care must be taken in such instances to assess the potential effect of measures or observations on the intervention. When instruments such as questionnaires are utilized repeatedly for measurement in such analyses, they may influence the intervention.

The choice of evaluation methodology should be made by several individuals with differing perspectives, after a careful assessment of the possible influences of methodology on the intervention. This decision presupposes a consideration of the relative values attached to the intervention and to the evaluation of the intervention (e.g., which is more important, the intervention or the evaluation?). Consideration of such values is highly individualistic and largely dependent upon personal needs. The organizational member could be expected to place different values on intervention and evaluation than the change agent and the evaluator. Individual change agents or evaluators could additionally be expected to differ on their value emphasis.

The change agent and the evaluator, in their role as consultants, possess great potential influence on the decision of methodology. For this reason, they must make explicit their values. This involves an explicit recognition of their individual needs as well as their ethics. A recognition of individual needs provides a basis for assessing individual preferences among competing methodologies and an explicit statement of ethical positions provides a basis for a choice among such competing methodologies. For example, because the authors' ethical position is to allow individuals greater choice and control over their

own behavior, they would exclude methodologies expected to reduce individual choice or control, even though such methodologies might provide information which would meet their personal academic needs.

Regardless of the evaluation methodology chosen, some basis of comparison for the results of the evaluation is desirable. In cases where intervention boundaries have been set which include only a segment of a total organization, it may be possible to use another segment as a nonequivalent control group or comparable time series (3). When a suitable control group is not available, it is necessary to establish a normative model to use as a basis of comparison. One approach is to use scenarios as a basis of comparison for evaluating the impact of the intervention as in the judicial process to be described.

Results of Evaluation and Feedback

The third and fourth stages in the evaluation process consist of applying (implementing) the chosen methodologies and feeding the results back to the identified recipients who are involved or are affected by the intervention and the evaluation. The most critical factor in these stages is the assurance that the evaluation techniques remain flexible and adaptable. As the intervention progresses, change will be manifested in more and more segments of the organization and in differing forms. The evaluator must be alert for unanticipated consequences and adapt the evaluation process to assess them.

The evaluation has been described as if it consisted of four distinct stages, the completion of which resolved the problem of evaluation, but these stages are interdependent and cyclical in nature. The completion of one full cycle of the evaluation process does not necessarily solve the problem. The feedback of results to the identified recipients may suggest new problems, and a new cycle of planned intervention and evaluation can begin.

Evaluation results should be presented in a form which depends upon the needs of the recipient (client representative, change-agent, evaluator, or organizational member). The client representative and the change agent have similar needs for data from which to evaluate the intervention and to plan future action. The form of presentation may differ depending upon the individual's personality and technical knowledge. The evaluator has an additional need for data to assess the evaluation process. Many interventions also require evaluation feedback to organization members. This group needs data by which to guide future individual and organizational behavior. As a whole, evaluation results shown to different recipients provide information to plan future interventions, new conceptual models of evaluation, modifications in subsequent evaluation methodologies, and so forth.

A Model of Organizational Effectiveness

The improvement of organizational effectiveness is the presumed objective of any organizational intervention. The Jungian framework provides a useful description of organizational effectiveness, i.e., the ST, NT, NF, and SF psychological functions. Conceptualization of organizational (evaluation) problems and components of organizational effectiveness is influenced by the same basic psychological functions.

The ST type would approach the conceptualization and measurement of organizational effectiveness through detailed, impersonal facts and impersonal, analytical reasoning. The goal of the ST component (labelled Internal Efficiency) would be to maximize the ratio of outputs to inputs. The NT type would approach effectiveness through the whole or gestalt, by synthesis and impersonal, analytical reasoning. The goal of this NT component (termed External Efficiency) would be to maximize the bargaining position of the organization in environment exchanges. The SF type would approach effectiveness through detailed facts and personalistic value judgments. The goal of this SF component (labelled Internal Effectiveness) would be to maximize member motivation. The NF type would

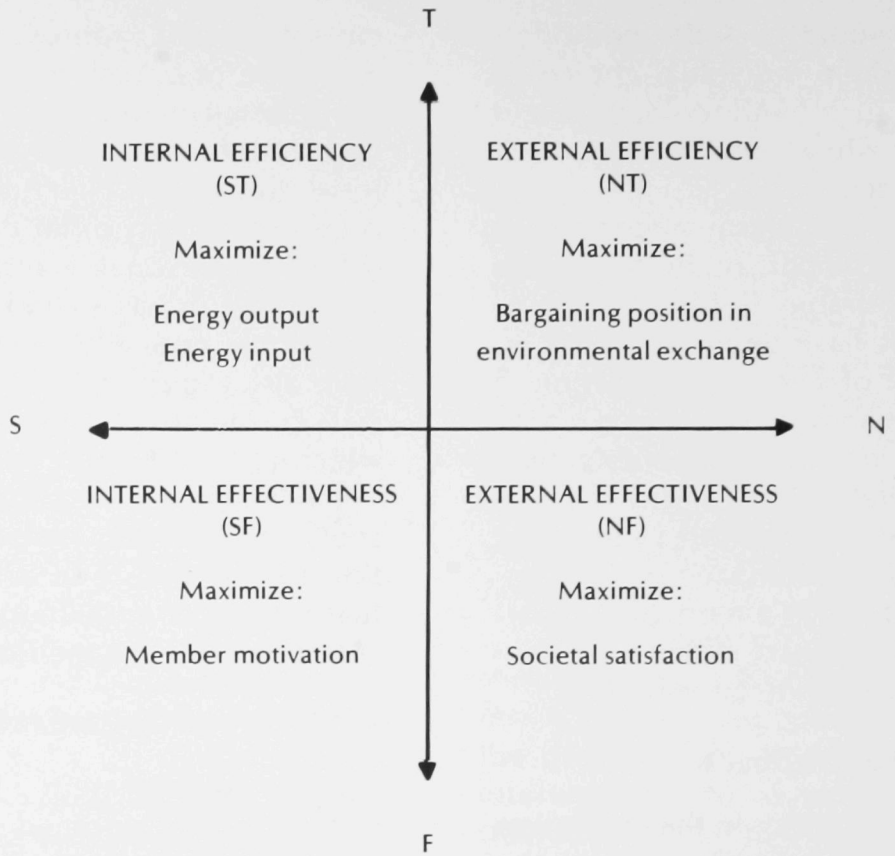

FIGURE 2. A Model of Organizational Effectiveness.

approach effectiveness through the gestalt, by synthesis and personalistic value judgments. This NF component will be referred to as External Effectiveness; its goal would be to maximize societal satisfaction.

Figure 2 presents the general framework of the Model of Organizational Effectiveness. The major dimensions of efficiency and effectiveness are similar to the components of organizational effectiveness identified by Katz and Kahn (8). They defined organizational effectiveness as the maximization of return to the organization by economic, technical and political means. A major difference in the two models evolves from the internal and external dimensions. Katz and Kahn perceived economic and technical means as being essentially internal to the organization and political means as essentially external. This model explicitly recognizes internal and external components of each.

The Model of Organizational Effectiveness derives additional substance from elaboration on each of the four model components vis à vis organizational behavior literature. In essence, various theories and frameworks of organizational effectiveness have dealt with Jungian components.

Internal Efficiency

The ST or Internal Efficiency component is equivalent to the traditional notion of productivity included in several discussions of organizational effectiveness. Mott (18) calls this the production criterion and identifies three variables: quantity, quality, and efficiency. Internal Efficiency is the traditional subject of industrial engineering, concentrating on work flows and controls to optimize quantity, quality, and efficiency. This component is also the subject of microeconomic analysis, particularly in regard to marginal

productivity of variable resources as a function of costs. Briefly, the Internal Efficiency component focuses on the conversion of inputs to outputs and the minimization of the conversion costs via the efficient allocation of tasks and division of labor.

External Efficiency

The NT or External Efficiency component deals with the acquisition of resources and the distribution of products and services. Yuchtman and Seashore (25) utilized a system resource approach to organizational effectiveness. They define the effectiveness of an organization:

> in terms of its bargaining position, as reflected in the ability of the organization, in either absolute or relative terms, to exploit its environment in the acquisition of scarce and valued resources (25, p. 898).

This is similar to the concept of Lawrence and Lorsch (13), in that the bargaining position of an organization is dependent upon its ability to successfully interface with its environment.

External Efficiency is also involved with micro and macro economic issues concerning markets for resources and for the final product. Decisions on plant location, pricing, and market segmentation require accurate and timely environmental information. Thus, External Efficiency focuses on the efficient transfer of technical and informational resources between the organization and its environment, emphasizing that the organization is dependent on its environment for such exchanges.

External Effectiveness

Yuchtman and Seashore (25) recognized dangers in maximizing the exploitation of the organization's environment but gave few clues as to what constitutes optimal exploitation. The NF or External Effectiveness component addresses this problem by assessing environmental or societal satisfaction.

Pickle and Friedlander (20) approached this component through what they termed organizational success. They identified seven "parties-at-interest" who determine organizational success: owners, customers, suppliers, employees, community members, creditors, and local, state, and federal governments. They argue that the criterion on which to measure organizational effectiveness is the success in fulfilling societal needs. Each of the seven societal parties was measured in terms of their satisfaction relative to the 97 small businesses included in their study. The satisfaction of the various parties is positively but moderately related. This would seem to imply that organizational interaction with the environment should be consistent but that specific attempts to satisfy diverse groups are necessary.

The External Effectiveness component thus considers the relationship between the organization and its environment, but not the technical or strictly informational exchange. The emphasis is on the rapport or commitments that can be developed with external clients and segments, and the extent to which the organization provides some useful and meaningful product or service — not measured simply by price and market share, but by assessments of satisfaction.

Internal Effectiveness

The SF or Internal Effectiveness component contains factors relating to individual motivation. Various expectancy theories of motivation are useful in identifying some of these factors (21, 23). These theories generally assert that an individual will be motivated to the degree that he/she sees his/her efforts leading to high performance and the fulfillment of positively attractive personal goals or needs. Thus, factors such as job design, reward systems, and personal development influence Internal Effectiveness.

The impact of group processes on Internal Effectiveness is also important. Mott (18) includes an adaptation criterion in his model of organizational effectiveness. He finds that interpersonal relations and social integration are important in facilitating communication in general, and problem-solving in particular. These processes are exemplified in the way organizations anticipate problems and develop satisfactory and

timely solutions, and in the promptness and prevalence of the acceptance of solutions by organizational members. Internal Effectiveness is concerned with the motivation and commitment of particular organizational members to perform specified tasks, as well as the interpersonal relationships that are necessary to facilitate task-related behavior.

Overall Organizational Effectiveness

The four components of effectiveness are interrelated as follows: The SF and ST components are oriented to the internal functioning of the organization, motivating individuals to perform tasks that have been efficiently designed. The NT and NF components are focused on the organization-environment interface, securing the necessary inputs for organization activity, effectively distributing the outputs, and conducting organization-environment interactions in a manner that promotes relevance, confidence, and satisfaction for affected segments of society. Together, the ST and NT components concentrate on technical, informational, and economic aspects of organizational effectiveness (internal and external), while the SF and NF components involve human, motivational, and qualitative aspects. This conceptualization suggests that organizational effectiveness is a multiplicative function of the four components:

Organizational Effectiveness = (Internal Efficiency x External Efficiency x Internal Effectiveness x External Effectiveness)

The Jungian framework of organizational effectiveness does not imply that any one component is more important than another but it does imply that the components represent distinctly different perspectives which may conflict. A factor in one component will affect factors in other components and tradeoffs may be necessary to optimize overall organizational effectiveness. The relative importance of the components to an organization will differ depending upon its structure, personnel, technologies, environment, and objectives.

The most obvious tradeoffs exist between the efficiency and effectiveness components. Maximization of Internal Efficiency in some instances might require work flows controlled by mechanistic devices. This may negatively affect Internal Effectiveness by lowering the motivational level of organizational members. Similarly, maximization of External Efficiency through exploitation of natural resources may negatively affect External Effectiveness through increased social costs to the community. This in turn may result in reaction by the community which will impose restrictions on Internal Efficiency.

Another way of illustrating these interrelationships is by noting that if any component of effectiveness is extremely low (e.g., zero) then overall effectiveness is also low (e.g., zero), regardless of the state of the other three components (i.e., anything multiplied by zero is zero). For example, an organization may concentrate on optimizing work flows, arrangements of machinery, and specific procedures for handling materials (ST), but may have ignored the matter of motivating employees to actually perform tasks, to work the machines efficiently, and to adhere or be committed to the stated procedures (SF). Ignoring this SF component, even if the ST component is highly attained, will render overall effectiveness low or zero, especially if there is a strike and no employee works at all! The same is true even if the NT and NF sources of effectiveness are well managed (e.g., relations with other organizations and community demand for the organization's product).

The same holds true for deficiencies in the other components. For example, work flows could be designed in an efficient manner (ST) and members motivated to perform specific tasks (SF) but the organization might not be able to obtain the materials from suppliers to produce the firm's products (NT), or the product might not be wanted by consumers (NF). In the latter case, internal aspects of effectiveness are fine but external aspects have not been anticipated or managed well. In contrast, the organ-

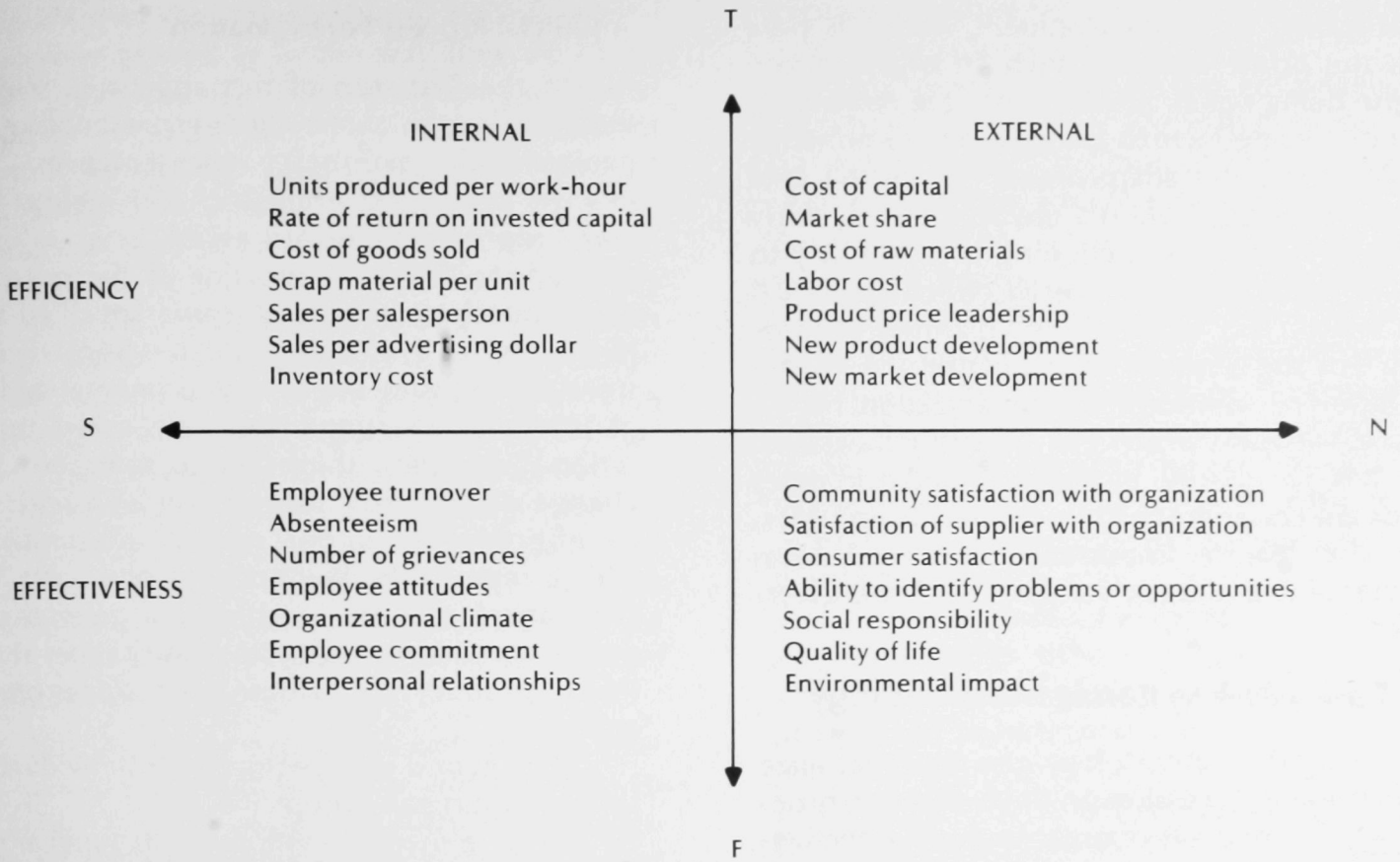

FIGURE 3. Measures of Organizational Effectiveness.

ization may be effective in securing raw materials and engaging in good relations with clients and consumers (NT and NF), but because of deficiencies in internal functioning, the product or service might be produced at a cost too high for the organization to survive.

The Impact of Interventions on Organizational Effectiveness

An organizational intervention may primarily affect job design and work flows (Internal Efficiency) and individual commitment and group cohesiveness (Internal Effectiveness). It may also have an impact on External Efficiency and External Effectiveness through problem solving and strategic planning activities (10). It would be helpful to be able to explicitly indicate the impact of interventions on organizational effectiveness.

While the exact specification of variables depends upon a given organization and the particular planned intervention, certain variable types can be anticipated. These types vary from "hard", economic variables in the efficiency components to "soft", social-psychological variables in the effectiveness components.

Figure 3 suggests some generally applicable measures which may be used to assess performance in each of the four components. A particular organization would have to weight the relative importance of variables within a component as well as the relative importance of components to overall effectiveness, in planning and evaluating the impact of interventions. For example, an organization operating in a very dynamic environment would probably emphasize the external components of effectiveness since these critically determine the adaptability of the

organization to its environment, which is perhaps the prime issue for such an organization, all else being equal. Interventions are more likely to be planned which are expected to enhance the organization's adaptiveness (10). In the case where the organization's environment is fairly stable, the internal functioning is most likely to be the prime issue for overall effectiveness (all else equal) and interventions planned accordingly. For the purpose of evaluating the impact of these interventions, the organization has to choose variables which can be easily measured and has to choose evaluation methodologies which are congruent with such specific variables, after the relative importance of effectiveness components and basic variable types are ascertained.

Towards A Systemic Methodology

A specific methodology can operationalize the foregoing discussion on the evaluation process and the concepts of organizational effectiveness. A judicial process can be outlined by which organizational members (including others affected by the intervention and the evaluation of the intervention) can systematically partake in conceptualizing the various aspects of effectiveness that are most central to their organization, how to choose evaluation methodologies to measure those components of effectiveness, and then to actually evaluate the impact of an intervention designed to enhance overall organizational effectiveness. An explicit objective of this judicial process is to minimize the type III error, i.e., the probability of solving the wrong problem (15), by (a) conceptualizing the evaluation problem in a number of different ways via different personality types and via representatives for different recipient groups; (b) debating advantages and disadvantages of various conceptual models of the evaluation problem and evaluation methodologies for it; and (c) deriving a synthesis which capitalizes on the strengths and weaknesses of each alternative position at each stage of the evaluation problem.

A Judicial Process For Evaluation

In the first step of this approach, relevant individuals such as the client representative, organizational member representatives, the change agent, the evaluator, and societal segment representatives are asked, prior to intervention, to develop scenarios of the organization's development up to some specified time in the future. By developing a different scenario for each relevant set of environmental and organizational situations, they are asked to describe how they think the organization will change without any intervention with regard to its effectiveness under various circumstances with a reasonable likelihood of occurring. Circumstances may be variations in general economic conditions, technological change, alteration of product mix, change in consumer preferences, etc.

The second step requires the individuals to form into Jungian groups (i.e. an ST, NT, SF, and NF group) either by their assessed Jungian psychological types (19) or by a content analysis of their scenarios, in order to parallel the Jungian components of effectiveness. The individuals are then asked to develop a group scenario for each relevant circumstance by combining or integrating their individual scenarios. This typically results in four very different perspectives, where the differences may be more extreme than the initial individual perspectives. Thus, the ST group tends to emphasize and develop strong arguments for the Internal Efficiency component, the NT group argues for the External Efficiency component, the SF group supports the Internal Effectiveness component, and the NF group emphasizes the External Effectiveness component (12).

The specified variables in Figure 3 can serve as a guide in this stage of the process. The correlation between Jungian group and its endorsement of the corresponding effectiveness component may be only moderate with additional personality or situational factors overriding the Jungian dispositions. For instance, individuals

may differ in their awareness of environmental influences as well as in the way they deal with such influences (1). The actual environmental characteristics may differ between organizations as well as among differentiated segments of the same organization (13). In terms of the latter, individuals tend to endorse external component criteria and variables more heavily when they perceive the environment to be dynamic than when they perceive it to be stable. These additional factors, while often partially overriding the Jungian personality influence, do not detract from the dialectic nature of the scenarios. Instead, these other factors help put the scenarios into a perspective consistent with the particular organization while preserving the Jungian spokesperson who best understands his or her own type of scenario, and consequently, can generally best argue for it.

The third step explicitly examines the four differentiated group products and attempts to integrate them in some new form or synthesis. Two or more individuals from each of the four Jungian groups meet as an integrated group to discuss their different scenarios, assumptions, and values. A "lively" debate is fostered in which the different perspectives are exaggerated, challenged, examined, denied, projected, etc. Each individual is encouraged to critically question and address the strengths and weaknesses of his or her perspective.

Once each individual in the integrated group has achieved this objective, the process moves toward the synthesis stage. The atmosphere changes, and each group member attempts to provide integrative solutions, capitalizing on the strengths of each position while hopefully minimizing or subduing the weaknesses. Finally, this group proposes an integrated scenario for each relevant circumstance which satisfactorily addresses the issues developed by the different perspectives. The scenario which most closely approximates the actual series of circumstances in which the organization finds itself during the intervention, becomes a conceptual yardstick for the remaining states of the evaluation process shown in Figure 1.

This approach has certain advantages over the development of a normative model based on theory alone. The judicial process does not require activities which would adversely affect the intervention, since it occurs before implementation begins. The process of comparison between variables described in the scenario, and those occurring during and after intervention, requires no more disruptive measurement than other techniques. The resulting "yardstick" includes circumstances and perspectives particular to the organization, which may be difficult to interpret from a purely theoretical standpoint. The scenario approach may improve the intervention by helping initially to identify organizational problems which otherwise might not be discovered until a later stage. Finally, the judicial process can be instituted at any time throughout the intervention and evaluation process in order to adapt to unintended consequences and unforeseen developments. This enables the process to be adaptive and proactive and not just reactive as are most evaluation approaches.

Conclusions

Perhaps measuring and evaluating organizational change is so ambiguous and ill-defined that both change agents and academic researchers have tended to stay away from the problem. But organizations which have engaged in such change programs are less likely to be satisfied with avoiding the evaluation issue, especially with the tightening and scarcity of resources. Therefore, the development and use of evaluation processes probably will be more and more demanded by organizational clients.

Furthermore, the complexity and lack of definition in evaluating interventions do not obviate the development of evaluation methodologies which rely on qualitative as well as quantitative data and processes. The particular framework of organizational effectiveness presented in this article, including the judicial process of in-

volving organizational members (and others) in the evaluation process, highlights the possibility of developing approaches appropriate to complex and ill-defined evaluation problems. While such approaches as the judicial process will never be completely quantitative and objective, they do provide a means of addressing the problem. Once it is realized that complex problems will always contain subjective and qualitative aspects and that these can be assessed (12), then the social sciences will no longer have to avoid subjective processes or stay away from complex problems such as evaluating organizational change. Hopefully this article will stimulate researchers and change agents to confront the evaluation problem more explicitly and to develop and use the type of judicial process suggested.

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