

A METHOD TO TRANSLATE ORGANIZATIONAL
EFFECTIVENESS INTO OPERATIONAL DATA
AND A TEST OF ITS PRACTICALITY

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ABSTRACT

A METHOD TO TRANSLATE ORGANIZATIONAL EFFECTIVENESS INTO OPERATIONAL DATA AND A TEST OF ITS PRACTICALITY

by David S. Silkiner

Two organizations, with differing levels of effectiveness were chosen for study. Effectiveness was defined through the degree of accomplishment of 19 common organizational objectives. Company A was the effective organization; Company B was its contrast. Through a study of the organization a three-part scale was designed to measure Knowledge of Objectives, Knowledge of Implementations, and Knowledge of Performance; the three components of the organizational environment. Subjects were all management personnel from foremen to president, inclusive. The following results were obtained:

Personnel of Company A demonstrated a significantly higher level of knowledge of environmental factors than did Company B personnel.

As knowledge was presumed to be a descriptive, rather than a functional variable, four "Human Relations" variables that might have some influence on knowledge were investigated with the following results:

1. Personnel of Company A judged the ^{adequacy}~~accuracy~~ of their communications to be significantly higher than did Company B personnel.
2. Personnel of Company A judged the accuracy of their communications to be significantly higher than did Company B personnel.

3. Personnel of Company A judged their treatment to be significantly more equitable than did Company B personnel.

4. Personnel of Company A judged their degree of participation-cohesion to be significantly higher than did Company B personnel.

A Hierarchical Syndrome Analysis was performed on the data and the patterns tended to substantiate the results above. Company A patterns reflected the criteria of effectiveness and portrayed a profile of a coordinated organization achieving their objectives. On the other hand, patterns of the personnel at Company B demonstrated a heterogeneity of knowledge, with a lower level of agreements and coordination.

These results support the assumption that knowledge of the environmental stimuli will be at a higher level for personnel of an effective organization. The secondary variables indicated factors that could have accounted for this higher level of knowledge and consequent organizational effectiveness. At the conclusion suggestions also were offered concerning some avenues for possible future research utilizing this method.

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PREFACE

Actual work on the theoretical background for this study began almost a full year before the data were collected. The present study is part of a larger research project conducted by the author and Erickson (1964). During this time members of the research team worked with the question of why numerous studies of organizational behavior, had failed as judged by team members to generate many conclusive findings. During this period of study, there was a growing appreciation of the fact that an investigation of organizational effectiveness would necessarily have to be comprehensive in nature.

One promising development of the study of organizational effectiveness evolved from the concept of reality. Mental health theorists have used this concept extensively in developing criteria for determination of normality and patients' effectiveness in dealing with their environment. A person has been diagnosed as mentally healthy by the extent of his ability to deal with his reality and to adapt to situational requirements confronting him. The concept itself, however, has not been a fruitful tool for research and frequently evolves to a philosophical question. Within this context the more objective concept of the environment was proposed as the concept to build the model for the study.

The analogy of the mental health reasoning to organizational behavior appeared to offer an approach to the study of the organization in its totality. If an organization, en toto, is able to define its

operating environment, then this organization might be diagnosed as effective. The present investigation proposes a method to translate this concept of organizational effectiveness into operational data and to test its usefulness in a practical situation.

In order for this investigation to begin, it was necessary to find two organizations with contrasting performance records. Two such organizations were found and became subject to intensive study prior to the development of the primary research tool, a questionnaire. Extensive research into the examination of a collection of records from each of the organizations was conducted. In addition, management personnel from both companies were interviewed. Great care was taken that the primary investigators became extremely familiar with the subject companies. By the time questionnaires had been developed for initial pilot testing - when speaking with representatives of the companies - the investigators could discuss knowledgeably and authoritatively the operations of the two firms.

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The author also owes a debt of gratitude to the organizations and their personnel for their complete cooperation throughout this study. Without their backing and assistance this research would not have been possible. It is hoped that the results of the investigation will in some way be useful to these organizations.

Finally thanks are extended to the author's family for their patience and understanding without which the project would never have begun or reached completion.

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INTRODUCTION

There has been a growing awareness of the importance of considering the ways and means of improving the efficiency and effectiveness of our industrial organizations. The industrial system, as part of the larger social system, has available a limited supply of human and physical assets. If the theoretical concepts of free enterprise and competition embodied in a spirit of laissez faire had been successful in governing our economic institutions, we would not have this concern for preserving our assets for the best possible use (Bloom and Northrup, 1961).

As a result of this concern, there is at the present time a proliferation of organization theories; according to Haire (1959), however, these theories do not truly reflect the industrial environment as it currently exists. Bennis (1959) concurs when he makes the distinction between theorists who talk about organizations without people and theorists who talk about people without organizations. Organization theories of past years have shown this dichotomy of two independent and diverse trends.

The organizations without people are aptly represented by the economic-scientific management classical model. From the economists, we are given theories of wages-funds, labor curves, law of scale, marginal-productivity curves, unity of command, etc. From the scientific management school were developed methods of production which are essentially a mechanical analysis of the job situation.

The economic-scientific management models assume a relatively simple view of man as a passive economic person who maximized gain and minimized loss in a monotonic fashion.

The people without organizations approach represents the growth of the human relations theorists. The appearance of these theories coincided with the realization by many that the economic theories do not adequately explain the organization or its effectiveness and do not account for the people in the organization. Other major factors contributing to the growth of these theories were the social climate of the United States in the 1930's and the realization of the importance of psychological factors in the work situation. Man was now seen as a complex person with many needs; consequently, the emphasis changed from the importance of satisfying organization goals to the importance of satisfying individual goals. In some instances, this change of emphasis was detrimental to organization goals (Haire, 1959).

In this respect, the "human relations theories" are no better than the classical economic models. Haire (1959) states that both theories appear to be based on the Law of Effect: one offers more economic reward, while the other offers more psychological reward; both assume that more performance would result from these rewards. As Haire points out, this assumption seems to be a serious misconception. It is obvious from the work of Mayo (Davis, 1961) and Brayfield and Crockett (1955) that people work for many reasons -- some economic, some psychological -- not necessarily connected with the actual job situation.

Accordingly, since 1950 a number of theorists have attempted to reconcile and integrate classical and modern organization theory. Bennis (1961) refers to these theorists as "revisionists." Davis (1961), for example, talks of the necessity of management control and authority in conjunction with consideration of psychological factors for an effective organization. Likert (Haire, 1959) offers a "modified" theory of the organization, stipulating that the traditional concepts must be joined with the "newer human relations concepts." In short, there exists an awareness of the need to consider both the individual and the organization, and to promote the satisfaction of the goals of both. The industrial concern should be considered as it is - a total social-economic-psychological system demanding recognition of all relevant factors.

Eddy (1962) believes that theories of organizations are essentially strategies or methods of control and that no one method can be shown to be totally effective. He states that the most effective method of control depends upon the situational demands, which includes both the organization and the people. The present study proposes and explores what are considered to be the major dimensions of the operating environment faced by an organization. An effort will be made to measure knowledge of this environment, and to determine if knowledge is related to organizational effectiveness. The method and concept used in this study are revisionist in that both economic and psychological variables are considered.

Preliminary Model

The model in the present study was originally based upon the concept of reality, often used in mental health, and which appears to have gained prominence from the work of Freud. Hellersberg (Thomas, 1950) reports that the question of reality is raised whenever the normality of an individual is doubted. Such questions as: "What is the date today?" "Where are you now?" are asked to verify the degree of the patient's relation to reality and the manner in which the individual adapts to his reality. Jahoda (1953) and Smith (1950) state that the major criterion for normality is the correct perception or awareness of reality.

Barbara (1956) states that "the healthier and the more aware a person is, the more accurate a map he creates of himself, and the more realistically he sees himself, the more will he be able to verbalize facts, situations, or feelings as they are and not as they should be." Maslow and Mittleman (1941) say much the same thing; these authors propose a list of manifestations of normality. Among these manifestations are adequate and efficient contact with reality and its use. Within this frame of reference, emphasis is placed on such things as adequate self-knowledge, objective appraisal of one's assets and liabilities, and adaptability or the ability to change easily if external circumstances cannot be modified. Katz and Stotland (1959) speak of the parallel between veridical perception and the concept of reality in the clinical or cognitive sense. These authors talk about the appropriateness of attitudes and behavior,

meaning the correspondence between beliefs of a person about the world and the characteristics of the world as agreed upon by objective observers.

The statement by Katz and Stotland raises the question of operational data and the problems associated in utilizing reality as an experimental concept. Cherry (1957) says there is no reality as such, as we all have different realities and perceive things differently. To denote something as "real," according to Cherry, resolves to a philosophical question and raises the problem of dualism.

Many of the clinical authors quoted above indicate much the same apprehension with the concept of reality. Hellersberg (1950) states that reality unfortunately has not been defined or investigated as there is a philosophical abstractness that makes objectivity doubtful. Jahoda (1953) states that the concept is useful, although the correct perception of reality as used is not necessarily correct, but only a majority opinion. Barbara (1956) follows this theme and admits reality cannot be known, but only communicated in variable terms, such as "it seems to me, from my point of view, as I see it," etc.

Cherry (1957) states that "reality" should be reserved for internal language for mental experiencing, not external factors or descriptions. Even within this framework, this author maintains that "reality is not really reality, and fundamental concepts are unknown." Peirce (1952), in his pragmatic philosophy, also maintains we cannot know reality, even our own. The best we can do is use

external objective language for description of the signs used for communication.

Thomas (1927) has proposed a concept for social research that offers a more acceptable alternative to this philosophical problem. Thomas states that human behavior is representable in the situation, so social science required empirical research into the "objective" aspects of the situation. The scientist cannot ignore the environment, as "people come to terms with, or adjust to, their situations" and this is the "nearest approach the social scientist is able to make to the use of experiment in social research." The method requires that the scientist define the situation and study behavior in relation to that definition (Sergeant and Williamson, 1958). Furthermore, the method is applicable at both the individual and group levels of existence.

Thus, the present study shifted emphasis from the philosophical concept of reality to the more objective concept of environmental factors as criteria for effectiveness and definition of the situation. With this approach, the definition does not infer or imply what is "reality," but rather a detailing of objective criteria for assessment purposes on an operational level.

Concept of the Organizational Environment

Frost and Erickson (1962) talk about this concept from a different frame of reference; they use a definition of it as a criterion of effectiveness for managerial performance in the organizational setting. R. Tannenbaum, et al (1961) also talk of the environment

as a criterion of managerial effectiveness. These authors state that the loss of contact with the operating environment makes adjustment impossible and adversely influences decisions of major importance. The successful manager is thus seen as one who maintains an accurate assessment of the forces that determine what is most appropriate behavior at any given time, and is able to behave accordingly. Argyris (1957) offers the concept of "reality-centered leadership" based on the diagnosis of the factors of the situation as the most effective means to high performance. This concept assumes that there is no best predetermined set of preferred ways to influence people; instead there should be a diagnosis and confrontation of the environment with the appropriate techniques.

It would appear that an analogy could be made to the organization; the organization also faces an environment described by all conditions, internal and external, which are relevant to the company and must be adapted to in order that organizational performance be effective. If an individual fails to be aware of factors in his environment and says it is Sunday when it is actually Tuesday, he could be evaluated as ineffective. If the individual lacks this knowledge and his time-space-place orientation within his environment is faulty, then he would not function effectively. Similarly, if an organization fails to be aware of factors in its industrial environment, it could be considered ineffective. When an organization as a whole lacks knowledge of its operating environment, appropriate policies, programs, and adaptive behavior are jeopardized.

The organization might then be evaluated as ineffective, endangering its economic position and the psychological factors or forces of its operations. In contrast, an effective organization knows its environmental boundaries and is able to function effectively within these limits and to adapt as required by the situation.

In 1924, Allport (1924) attacked the "group mind fallacy" - the theory held by some philosophers and social scientists, notably Durkheim and LeBon, that the group has a mind of its own, apart from the minds of the individuals composing the group. When it is proposed, as above, that an organization as a whole must possess knowledge of important characteristics in its environment, the "group mind" is not implied. Rather, it is recognition that each member of the organization has a contribution to make to the organization's performance and if the individuals do not know the relevant factors that exist, effective adjustment of the organization will be difficult.

In a similar manner to using the concept of several authors use the concept of feedback. Their position is that for an organization or group to be effective, it must assess the situation and, through a feedback process, inform itself of mechanics of operations, knowledge of and direction of goals and performance (Jenkins, 1962). Mann (1962) reports that a training method utilizing a feedback process is more effective in promoting a change in an individual's attitudes and perceptions toward the organization and other members of the organization. Likert (1961) emphasizes the need for continual assessment and feedback of economic, as well as human, variables

to provide the knowledge required for effective performance. These authors are, in short, taking the position that the criteria of the situation must be known and utilized for an organization to be effective: that is, definition and adjustment to these environmental factors.

The original clinical concept of reality as a criterion of effective behavior has evolved to the concept of the organizational environment and to the discussion of managerial performance, organizational performance, and the need for assessment and utilization of knowledge about this environment. Just as the effective individual needs a knowledge of the environmental factors to enable him to define, determine, and respond appropriately, so does the effective organization. The effective individual needs this knowledge and ability in order that he may adapt, control, or exploit his environments in a similar fashion, the effective organization must process this knowledge and exercise the ability to respond in an appropriate manner. It seems reasonable to expect that an industrial organization whose members have an adequate knowledge of their environmental factors will be more effective than an organization whose members are unaware or ignorant of these factors. The latter condition in an organization would seem to lead to ineffective behavior, inadequate self-appraisal, failure to adapt as necessary, and concomitant dissipation of its human, physical, and economic assets.

Organizational Effectiveness

Georgopoulos and A. Tannenbaum (1957) deal with the concept of goal attainment in the definition of organizational effectiveness. They feel that any definition of effectiveness must consider the objectives of the organization and the means through which the organization sustains itself and attains these objectives, or organization means and ends. An organization must also be able to analyze effectively the situation facing it and adapt and respond with appropriate techniques. These authors also state that this concept of organizational effectiveness is most useful in comparative organizational research, i.e., in relational rather than absolute terms.

Thompson and McEwen (1958) take a similar approach. These authors state that a wide variety of data is available in the organization to provide the basis for the definition of goals which can then lead to the development of implementations and performance. In addition, the organization, to be effective, must adopt strategies for regulating its environment, and must have an ability to adjust in order to survive. One of the requirements for survival appears to be the ability to learn about the environment accurately enough and quickly enough to permit organizational adjustment in time to avoid extinction.

Thus, it appears that any serious consideration of the organizational process must inevitably turn to the question of objectives. Only when we have knowledge of objectives can we make any judgements about implementations and the effectiveness of performance by any organization (Pfiffner and Sherwood, 1960). The organization, to be

effective, must know the factors in its environment and be able to adapt to them. Effectiveness itself is defined as the degree to which objectives are attained, with knowledge and utilization of the environment as the mediating variable which enables the organization to meet its goals or to adjust so that goals can be met. An effective organization then, is the organization that possess knowledge about its environment and is able to adopt to and utilize this knowledge to define and attain its goals in the face of competition and a limited supply of resources. Geogopoulos and Tannenbaum define organizational effectiveness as the extent to which an organization, as a social system, given certain resources and means, fulfills its objectives without incapacitating its means and resources and without placing undue strain upon its members.

Dimensions of the Environment

The literature quoted seems to indicate three major components in the organization's environment. These authors speak of objectives or goals, implementations or strategies, and performance or ends. All of the facts and figures pertaining to the organization seem to be subsumed within these three categories. Reality is defined within this context as the objectives, implementations, and performance of the organization. Each of the dimensions would include economic as well as psychological variables.

Organizational objectives would include all of the goals of the organization. Such things as growth forecasts, predicted profits, predicted sales, production volume, stable work force,

equitable treatment of employees, maintenance of a satisfied work force, commonly appear as objectives of organizations. This is the information that provides direction for the organization.

Implementations would include the strategies, policies, means, or operational actions employed by the organization to attain its goals. This is the mediating process by which objectives are translated into performance data. Typical implementations would be budget allocations, manufacturing processes and methods, channels of distribution and communication, the number of personnel employed, incentive systems for increased productivity, personnel selection, product mix, product line, marketing philosophy.

Performance data would indicate the degree to which objectives were attained. What was the actual growth, the profits, actual sales, the costs of distribution, grievances, lay-offs, scrap costs, participation, wages of employees, manufacturing costs. This data would be the "profit and loss" statement against which the organization is judged.

These three components - objectives, implementations, and performance - would appear to be basic to all organizations, although possibly denoted by different names. Any organization would have objectives, methods to attain them, and performance as the end result. These components may or may not be overtly communicated or specified within the organization.

Supportive of this contention is the manner in which effectiveness has been defined and the apparent generality of these dimensions. Pfiffner and Sherwood (1960) contend that the environmental

adjustments of small firms is relatively the same as that of large firms. Organizations, for example, differ as to size, product, or location; however, they all face common problems to a certain degree. Each organization would have its objectives, implementations, and performance, and would be faced with the problem of attaining knowledge about these environmental factors and then responding in the appropriate manner. Differences between the environment of organizations would be of specific content rather than of the dimensions and the measure of effectiveness.

Figure 1 presents the three dimensions that cut across any organization. The key to the concept and to the method to be proposed pertains to the actual level and knowledge level within the diagram.

FIGURE 1

Dimensions of the Environment

	Objectives	Implementations	Performance
Environmental Factors			
Knowledge			

The environment dimension represents the objectives, implementations, and performance of the organization. The knowledge dimension represents the degree of knowledge that personnel within the firm possess; the way in which members of the organization judge these actual facts and figures of the objectives, implementations, and performance. Such a view raises the idea of discrepancy between the objective factors in the environment and the knowledge of these factors displayed by organization members. With adequate knowledge of these

factors, the organization could probably be evaluated as effective, and, thus, the more effectively will the organization be able to manage and to meet its objectives.

Effectiveness and the Environment

What then, must be considered when an effective organization is described? Realization of the importance of its objectives, and the "extent....to which the organization fulfills its objectives without incapacitating its means and resources and without placing undue strain upon its members" (Georgopoulos and Tannenbaum, 1957). Secondly, the strategies for control of resources (Eddy, 1962) are needed to coordinate and provide the impetus for action in accordance with factors of the situation. These factors would seem to be encompassed within the objectives, implementations, and performance that form the environment of an organization. Thus, the organization must be considered both economically and psychologically as a determination of the strategy of control in the face of the environmental factors confronting the organization.

The ineffective organization is unable to evolve adequate strategies due to lack of knowledge of its economic and psychological constituents, which are defined by its environment. When objectives and implementations are ill-defined and inadequately described, and therefore discrepant, decisions are inappropriate. For instance, under these circumstances, when a new product is considered, engineering, manufacturing, marketing, and cost estimating find it difficult to make accurate analyses and compare them with established performance

criteria. Under these circumstances, approval or disapproval of the new product is not easily obtained by comparison to desired criteria. An organization must have accurate data for effective decision-making and monitoring of progress. If the personnel in an organization are not aware of objectives, implementations, and performance, both economically and psychologically, then it can hardly be expected to follow a rational course of development. Lack of knowledge of relevant factors in the environment extremely limit the organization's capacity for making a sound decision in the light of these environmental considerations. In contrast, the effective organization is one that realizes its economic limitations and potentials, its psychological capacities, and that consequently formulates a strategy of control of these resources to integrate most effectively the organization. It would appear that personnel of the more effective organization would be able to demonstrate little discrepancy between their knowledge and the existing factors in the situation.

PROBLEM AND HYPOTHESES

The experimental problem to be explored is the possibility of describing and measuring the knowledge of implementations of the personnel in an organization and then relating this measure empirically to organizational effectiveness. The relationship between knowledge and effectiveness is not presumed to be functional, but rather to be descriptive of the conditions that exist. Knowledge, itself, is not an explanatory concept. We need to know what factors could have influenced the extent and accuracy of this knowledge of the organization's environment. Within this context a main hypothesis is presented dealing with knowledge and effectiveness. A second section and series of hypotheses are then presented. The latter might be called secondary variables utilized to gain some understanding of knowledge of the environment.

Main Hypothesis

1. Personnel in an organization defined as effective by the criteria in Appendix A will display a higher level of knowledge of implementations than personnel in another organization defined as less effective by these criteria.

Secondary Variables and Hypotheses

Secondary variables and hypotheses are the factors that might act as mediating variables to account for the extent of knowledge of implementations.

Many theorists believe that communication is central to the life of the organization. Without communication, coordination of action is necessarily limited. Likert (1961) stresses two qualities the communication system must have. The communication system must be adequate and accurate: Information must be adequately processed; and when transmitted, it must be judged as accurate and reliable.

2. Personnel who judge the communication system of their organization to be adequate will be characterized by a higher level of knowledge of implementations than personnel who judge the communication system of their organization to be less adequate.
3. Personnel who judge the communication system of their organization to be accurate and reliable will be characterized by a higher level of knowledge of implementation than personnel who judge the communication system of their organization to be less accurate and reliable.

People behave in appropriate ways to obtain rewarding experiences and support from their work groups. People work better when they are members of effective, cohesive work groups. A high level of participation and decision-making by the members of the firm are also important to the effective organization (Likert, 1961). Likert proposes a two-fold advantage in conjunction with these variables: "(1) better decisions, based on more accurate information, and (2) greater motivation to implement these decisions."

4. Personnel who judge the level of participation-cohesion⁴ of their organization to be higher than personnel of another organization judge participation-cohesion will be characterized by a higher level of knowledge of implementations.

McGregor (1960) uses the human relations variables of equity as a major factor in effective performance. This concept appears to

encompass economic and psychological factors. Psychologically, we are speaking of the dignity and worth of the organization member: fair treatment as a human being. Economically, we are speaking of fair wages, not only an adequate wage to provide purchasing power, but fairness of a wage in relationship to other wages in the organization, community, and industry (Heneman, 1960).

5. Personnel who judge equity in their organization to be higher than personnel of another organization judge equity to be, will be characterized by a higher level of knowledge of implementations.

METHOD

The experimental design is not a manipulation of human behavior; rather, it is of a case study or systematic observation. The study, as part of a larger research project, took place in two manufacturing concerns in Michigan. These two companies were selected for study because they fall at opposite ends of a continuum of organizational effectiveness. Company A has seemingly progressed steadily in its effectiveness, while Company B has steadily declined over the last five years. In this respect, the contrasts should provide adequate frames of reference for the experimental results. Information is presented in Appendix A that bears on the a priori level of effectiveness of the companies.

In accord with the definition of effectiveness offered earlier, it would appear that Company A is much more effective as an organization than is Company B. Company A is financially sound, is able to generate funds for expansion, generally maintains production and engineering schedules, promotes and maintains the confidence of customers, appears to maintain an equitable and participative atmosphere, and in general, is more cognizant and attuned to its environment. On the other hand, Company B is not financially sound, does not meet its schedules, is not able to generate funds, faces a shrinking market due, in large measure, to lack of customer confidence, and in general, is not aware of, and adaptable to, its

environmental factors. Company A, then, is the organization that is able to adapt and to utilize its resources for attaining its goals, as well as to safeguard its supply of human capabilities to the extent indicated by Item 19 in Appendix A. The a priori determination of differing levels of effectiveness seems to be valid and justified.

Both companies have adopted the Scanlon Plan, a profit sharing plan based on a human relations philosophy (McGregor, 1960). The Plan is designed to improve communication within a firm to utilize more effectively the potential of the firm's human resources, and to reward members with financial gain through bonuses paid for plant-wide cost savings.

Differences between Company A and Company B do exist. Company B at the time of measurement was approximately twice as large as Company A. Company B is unionized. The two firms manufacture different and unrelated products with no common market. However, they are both considered typical organizations in the hierarchy of industrial organizations. Naturally, specific content is different, but generality across the two organizations is readily apparent. The following questions apply to both companies: What is the best level of sales? How should competition from larger firms be met? What new products should be developed and eventually marketed? How many productions workers are required? Is it best to reach profit through volume or by planned profit levels in sales prices? Within this context, both organizations face a similar environment and must deal with similar problems in adjusting to their objectives, implementations, and performance.

Measures

1. Questionnaire on Knowledge of Implementations of the organizations. This test is composed of 50 items based on stated implementations and is intended to be representative of each company's environmental factors.

The information for writing the items came from intensive searches through written records and from interviews with key company personnel. Research included all the written records available and covered such things as policy bulletins, memos, letters, annual reports, financial statements, committee minutes, and production records - many of which covered the past ten years. After this search, interviews were held to probe for additional information, mainly for clarification and specifics. This procedure was followed at both companies. The information gathered pertained to methods of attaining objectives, or implementations. From this information, a pool of test items was developed pertinent to each of the five functional divisions of Personnel, Marketing, Manufacturing, Engineering, and Finance. The original pool consisted of 250 items.

The research team screened and reduced the item pool to 127 items, using the following criteria:

Does the item deal with implementations rather than objectives or performance?

Is the item meaningful to both companies?

Is the item a duplication of other items?

Is the item pertinent to the structural division to which it is assigned?

After the item pool was reduced, the 127 items were pretested and screened with hourly workers for relevance and meaningfulness.

The rationale for using hourly workers was to avoid, as much as possible, contamination of subjects to be used in the actual study. If the workers could see the significance and meaning of the items, it would provide at least a preliminary verification of their applicability to the situation. In addition, to the hourly workers, a person who previously had been Vice President of Manufacturing at both organizations was available to screen the items. These screenings led to editorial revisions and eliminations of 15 items.

After revision, the pool of items consisted of 112 items. The final test was to have ten items representing each division and selected to sample the specific functions of each of the five divisions. Thus, it was not a random sample of items; instead, judges picked 50 items which they thought to be representative of the area covered. However, items from each division were randomly placed in the total test of 50 items. The final form of the test is presented in Appendix B.

Mention should be made concerning the meaning of the scale and its scope. It is designed to be representative of the implementations dimension of both organizations' reality or economic-psychological operating environment. A more accurate description would be that the scale is the experimenter's assessment of the operationally defined industrial environment. In this regard it is not meant to be exhaustive of an unknown population of items, but instead it is meant to be a representative sample by division, and then by division content.

Another experimenter could indeed develop 50 different items, but it is suspected that he would be measuring similar aspects if a representative sample were developed. It would also be quite likely that another experimenter could duplicate the questionnaire. Thus, in the final analysis, the scale is measuring the subject's knowledge of the operational definition of his methods of operation. The method itself imposes no restrictions upon what is sampled nor does it specify the items. In many instances, statements from company records were utilized without change and were recognized by employees of both companies as pertaining to the companies. The method is merely the objective recording and sorting of company records, and building questionnaire items from these records. In this respect, the method would appear superior to asking the subjects to define the factors that are to be measured which could introduce individual perceptions, biases, and subjectivity. In addition, the method imposes no artificial restrictions or manipulations, but instead it allows the subject to participate in answering questions about his operating environment while he remains in this environment.

Scoring was on a basis of correct answers to the 50 items; the highest possible score then would be a "50". Three response categories were used: True, False, and Don't Know. The Don't Know category was to serve a dual purpose. First, Don't Know answers were to be scored separately as an additional variable (See Section 6a). Secondly, the use of three response categories would tend to control a positive response set. An answer, to be correct, had to be either True or False, with the 50 items divided equally between True and False items.

Testing was not done during company time. Envelopes containing tests and instructions were personally delivered to subjects at work; the tests were taken home to be completed and picked up by the experimenters when the subjects came back to work.

At the time of testing, Company A was running on a peak production schedule, and testing during working hours would have been too disruptive. The situation at Company B also did not favor testing at the plant or during working hours. Company B was facing bankruptcy and simply could not afford the lost time or expense involved. In addition, at both Companies questionnaires could not be administered at the plant to salesmen who were out of town. Instructions to subjects are in Appendix B.

2. Questionnaire on Knowledge of Objectives. This was developed and administered by the same procedures at the same time by Erickson (1964). (Appendix B)

3. Questionnaire on Knowledge of Performance. This was developed and administered by the same procedures at the same time as a joint project by Erickson and the author. (Appendix A) The Performance Scale differs in that it consists of 75 items. Twenty-five items (five from each division) deal with physical or economic performance and 50 items deal with psychological and human relations performance. In addition, these 50 items contain four sub-scales which are discussed under Section 6b. (Sub-scales are in Appendix C)

One further point remains to be made concerning the Objectives, Implementations, and Performance Scales. All of the items that were used had an objective basis for the answer somewhere within the files

of the organization or from data gleaned from the interviews. The experimenters did not furnish the answers for questions; instead, they recorded the answers as found in the organization.

4. Demographic Data. Data was obtained dealing with the following variables: age, length of time with the company, level in the company, and functional division.

5. Control Measures I: Test Attention. Three items are repeated at the end of the Implementations Scale to obtain an estimate of test attention. In a sense, these items can be thought of as furnishing reliability data. This data provides 3 simple checks to see if subjects were paying attention. Three items on the Objective Scale and four items on the Performance Scale are also repeated for the same purpose.

6. Control Measures II:

(a) Don't Know Scale: As mentioned previously, a Don't Know response category was utilized as a control measure. In this respect, the Don't Know answers serves as an additional variable bearing on the amount of knowledge an individual possesses. The assumption is that a Don't Know answer indicates a lack of knowledge, and this should be at a minimum for an effective organization. If communications were inadequate, it would also appear that the Don't Know score would be higher.

The instructions for the scale emphasized that the Don't Know category was to be used only in case the subject completely lacked any knowledge or information pertaining to the item.

(b) The 50 items in the Performance Scale dealing with psychological factors were broken down to form four sub-scales. A description of each scale is presented below. The scales are in Appendix C.

Equity (10 items): This set of items deals with the subject's judgments of the fairness of their wages, their share of the firm's profits, the adequacy of their wages in relation to external criteria: in general, the fairness of treatment or the extent to which the employees judge themselves treated as human beings.

Adequacy of Communications (10 items): This scale pertains to the adequacy and availability of communication networks. Do people get the information they need to operate? Are there sources of information available to people so that they can get the information they need? Is a feedback mechanism operative and effective?

Realism of Communications (15 items): This scale pertains to the judgment of realism or accuracy of the communications which employees receive. When a memo, engineering report or a production report is received, can it be relied on for completeness, clarity, or reliability, and then acted upon?

Participation-Cohesion (15 items): These items pertain to the subject's judgments of participation and cohesion. Does responsibility for decisions exist at the proper levels? Do people work as a cooperative team? Are employees encouraged and allowed to make contributions to the organization's efforts?

These scales were used as controls for some of the factors that might account for the amount of Knowledge of Objectives, Implementations, and Performance that a subject indicates by his knowledge

score. They are considered psychological variables as contrasted to economic variables. The four sub-scales comprise the 50 items of the Performance Scale that deal with psychological variables; thus, they are subject to double interpretation. First, they form a part of the total performance score of 75 items; secondly, they form the basis of the sub-scales which provides some measure of a member's judgments.

When items of these scales are scored as part of the total Performance score, a subject must correctly identify the item as either True or False. To this extent, he has accurate knowledge of the performance of the company. When these items are scored to form the sub-scales, the objective truth or falsity of a statement is ignored; instead, the subject's judgments of the statement are scored. The manner in which a subject responds is indicative of his judgment of that factor in the organization. Thus, regardless of whether a statement is objectively True or False, if the subject answers in a positive vein and has a more favorable judgment of that factor in the company, the subject receives a score of one on that item. By summing across responses on each of the sub-scales, it is possible to determine individual judgments of four different factors or variables; Adequacy of Communications, Realism of Communications, Equity, and Participation-Cohesion.

Statistical Analysis

Statistical analysis of the major hypothesis will be accomplished by cross-company comparisons. Differences existing between the

companies on the three Knowledge Scales and the Don't Know responses, as well as scores on the four sub-scales, will be tested. To obtain as much generality as possible, nonparametric procedures will be utilized. The statistic chosen for analysis is the Mann-Whitney U, as described by Siegal (1956).

Possible relations between structural or demographic variables and knowledge will be analyzed by Median tests. These analyses will be made within companies.

The items repeated at the end of each scale as a check of test attention will be compared across companies. The analysis will be done utilizing the Mann-Whitney U.

Since the study is exploratory, post hoc analyses of the data is anticipated. The entree for these analyses will be through the use of McQuitty's Hierarchical Syndrome Analysis (1960). This technique is similar to factor analysis, except that the assumption of linearity is not imposed. Thus, the data is allowed to vary in a nonrestrictive manner and the method might be considered a nonparametric type of factor analysis. In this respect patterns, rather than factors, are formed and it is possible to describe subjects by the patterns of their responses. The benefit of this analysis is to explore the data to determine which, if any, variables are reflected in the similarity of patterns of responses by subjects. Even though every person is presumed to be unique in terms of all the characteristics which he possesses, it is assumed that patterns can be extracted from configurations possessed by many people (McQuitty, 1960).

Within the orientation that two or more persons are identical or similar with respect to these patterns, these patterns may be used to classify people into descriptive categories.

2

RESULTS

Results deal first with returned questionnaires and subjects. The following section deals with the hypotheses presented previously. These cross-company comparisons on the measuring instruments used in the study are made utilizing the Mann-Whitney U statistic. Cross-company comparisons include analysis of the items repeated at the end of the Objectives, Implementations, and Performance Scales. Within company investigations are presented next. These investigations include analysis of structural and demographic variables as related to Knowledge scores. A section on Hierarchical Syndrome Analysis follows. One further analysis needs to be mentioned. During the screening of records information came to light dealing with the health of the personnel involved in the study. Records indicated that personnel in Company B were prone to more ailments of a psychosomatic nature which could possibly reflect the strain of working in that environment (See Appendix A). Accordingly, it was decided to investigate this possibility more fully; the last section deals with this data.

Subjects

In Company A 100% returns were realized. In Company B 95% of the questionnaires were returned, 69 out of an original pool of 73 subjects. The nonreturns were subjects from the Engineering,

Marketing, Manufacturing, and Personnel divisions. For statistical analysis, it was necessary to collapse the number of managerial levels to two and the functional divisions to four. Table 1 presents a breakdown and description of subjects.

TABLE 1
Description of Subjects

<u>Division</u>	<u>Level</u>			
	<u>Top</u>		<u>Bottom</u>	
	<u>Co.A</u>	<u>Co.B</u>	<u>Co.A</u>	<u>Co.B</u>
Engineering	2	6	9	11
Manufacturing	2	5	11	22
Marketing	1	3	6	17
Personnel-Finance	<u>3</u>	<u>3</u>	<u>4</u>	<u>2</u>
Total	8	17	30	52
	<u>Co.A</u>		<u>Co.B</u>	
Total Subjects	38		69	
X Age	35.8		46.3	
X Length with Company (years)	7.5		9.6	

Cross-Company Comparisons

The ten items repeated were analyzed and compared across the two companies using the Mann-Whitney U. Following the procedure recommended by Siegal (1956), a z score was utilized for significance test. The normal approximation of the Mann-Whitney U statistic is permissible whenever the smaller sample size is greater than 20. Table 2 presents the percentages of agreement for all three scales and the results of the comparison across companies for the ten items repeated. The percentages are presented for illustrative purposes only, the

significance test was accomplished using raw scores of agreements. The difference between Company A and Company B personnel was not significant. On the basis of these results, it cannot be concluded that any differences in the knowledge scores is due to possible lack of attention to the task by personnel in either company.

TABLE 2
Comparison on Repeated Items

Scale	Co. A	Co. B	
Know. of Objectives	.98	.97	(3 items)
Know. of Implementations	.96	.95	(3 items)
Know. of Performance	.97	.95	(4 items)
Total	.971	.958	(10 items)
z	.759		

Table 3 presents the $\bar{X}$'s, Mdn.'s, and SD's of the scales for subjects in both companies. Means are not utilized in the analysis and are reported for descriptive purposes only. SD's are reported for visual comparison of the subjects' variability of scores.

TABLE 3
 $\bar{X}$'s, Mdn.'s, and SD's for the Scales

Scale	$\bar{X}$		Mdn.		SD	
	Co.A	Co.B	Co.A	Co.B	Co.A	Co.B
Implementations	38.87	21.43	39.25	22.08	4.84	5.36
Imple. D.K.	3.24	5.91	1.50	3.44	3.82	6.50
Performance	59.37	36.70	60.50	37.80	6.72	10.06
Perf. D.K.	4.66	10.71	1.75	8.00	5.60	9.10
Realism	10.13	6.91	10.10	6.25	2.06	3.56
Adequacy	7.95	4.61	8.57	4.67	1.68	2.13
Equity	8.50	4.99	8.68	4.97	1.27	1.78
Parti.-Cohesion	11.18	8.43	11.28	8.47	1.58	2.29

The $\bar{X}$'s and Mdn.'s are very comparable except for the two Don't Know Scales where extreme values inflated the $\bar{X}$'s somewhat. It also seems that Company B personnel were more heterogeneous in their responses.

Tests of significance are presented in Table 4 for the cross-company comparisons on the scales used in the study. These results will reflect on the hypotheses. Again the normal approximation of the Mann-Whitney U is utilized for significance tests.

TABLE 4
Tests of Significance Between
Company A and Company B

Scale	z score
Implementations	4.02**
Implementations Don't Know	2.25*
Performance	4.45**
Performance Don't Know	3.81**
Realism of Communications	8.37**
Adequacy of Communications	5.96**
Equity	5.01**
Participation-Cohesion	6.73**

*p = .012

**p < .01

Using similar techniques Erickson (1964) also reports significant differences on the Objectives Scale and the Objectives Don't Know Scale when compared across companies. As illustrated in Appendix A, the two companies present a distinct contrast in terms of their effectiveness. Company A, as defined by the criteria in Appendix A, is relatively effective, whereas Company B is approaching a state of dissipation of its resources. No single effectiveness rating or score was devised; instead, the material in Appendix A was used in a global sense, considering each of the factors listed.

Differences between were apparently reflected in the evidence presented above in Table 4. All five hypotheses which were presented were confirmed. A discussion of each of the hypotheses is presented below:

1. Personnel in an organization defined as effective by the criteria in Appendix A will display a higher level of knowledge of implementations than personnel in another organization defined as less effective by these criteria.

The results of the comparisons suggest that the major hypothesis may be worthy of further investigation. Significant results were also obtained on Knowledge of Performance and Knowledge of Objectives Scales. The personnel from Company A displayed a higher level of knowledge of their operating environment than the personnel from Company B. This higher level of knowledge would seem to develop the framework for Company A's high level of effectiveness as reported in Appendix A. It can be concluded that Company A personnel are aware of their objectives, implementations, and performance, as defined by their responses to the scales, and are able to make adaptive changes to maintain a high level of effectiveness. On the other hand, Company B personnel do not appear cognizant of the defined factors in their environment; this situation is also reflected in Appendix A. In addition, the significant results on the Don't Know responses are supportive of these conclusions as Company B personnel did not appear to have the necessary knowledge required to be effective.

The relationship between knowledge and effectiveness is not presumed to be functional; instead it is descriptive of the conditions

that exist. Knowledge, itself, is not an explanatory concept, but instead it would seem to be a resultant of other factors that make possible the translation of organizational operations to effective levels. Within this context, four secondary variables and hypotheses were presented, which, as mediating factors might be able to account for the differences between the knowledge of personnel within the two companies. These hypotheses will now be considered:

2. Personnel who judge the communication system of their organization to be adequate will be characterized by a higher level of knowledge of implementations than personnel who judge the communication system of their organization to be less adequate.

This hypothesis deals with the variable of communication and, more specifically, with the judged adequacy and availability of communications for the transmission of information. This hypothesis was supported in a cross-company comparison on a scale designed to test this factor. In effect, there was another means of testing this hypothesis since additional substantiation for this difference was found in the significant differences in Don't Know responses. Although they are an indirect measure, these responses would appear to be relevant, since a possible contributing factor to Don't Know responses would be the adequacy of communications within the organization. If the individuals within a company do not have available to them information concerning the company's implementations, then their percentage of Don't Know responses would tend to increase due to their unfamiliarity with the required material. Personnel at

Personnel who judge the communication system of their organization to be adequate will be characterized by a higher level of knowledge of implementations than personnel who judge the communication system of their organization to be less adequate.

Company A, when compared to personnel at Company B, demonstrated that they judged their communications systems to be more adequate, and their performance, as measured by fewer Don't Know responses, also appeared to indicate more availability of information and consequent information or knowledge.

3. Personnel who judge the communications system of their organization to be accurate and reliable will be characterized by a higher level of knowledge of implementations than personnel who judge the communication system of their organization to be less accurate and reliable.

Results of this cross-company comparison indicate that personnel at Company A tend to judge the information they receive as more accurate and reliable and, hence, possibly a more positive source of information for action. Personnel at Company B, on the other hand, judge the communications transmitted within their organization to be significantly less accurate and reliable. These personnel, then, might tend to discount information received and, in effect, would receive no information. Within this framework, personnel at Company B would suffer from a possible lack of knowledge of implementations.

Thus, at Company B, it was found not only that information is apparently lacking but also that information which is transmitted does not appear to be judged as accurate and reliable. Appendix A would seem to reflect the consequences of these factors. Personnel at Company B do not seem to coordinate their activities; management staff meetings appear to be non-existent; and mechanisms for transmitting information are apparently inactive. By contrast, Company A follows a vigorous program of information transmission to all employees

and coordinates effort through management staff meetings which are held at least weekly.

4. Personnel who judge the level of participation-cohesion of their organization to be higher than personnel of another organization judge participation-cohesion will be characterized by a higher level of knowledge of implementation.

Evidence supporting this hypothesis was provided by a significant difference between Company A and Company B personnel on the Participation-Cohesion Scale. As mentioned previously, Likert (1961) proposes that these variables are effective in promoting better decisions-decisions based on more accurate information-as well as greater motivation to implement these decisions. The atmosphere at Company A is apparently judged to be conducive to promoting this personnel participation within a cohesive framework of cooperation. In effect, the personnel at Company A indicate that they are more a part of the organization than personnel at Company B and are possibly willing to invest personally in the welfare of the organization. It seems likely that this opportunity to participate in a cohesive atmosphere and the promotion of personal involvement would tend to motivate individuals to serve the goals, programs and policies of their company, and to monitor the company's progress. Within this context, personnel would need and be more apt to possess greater knowledge of their operating environment. At Company A it appears that there is high higher level of knowledge concerning their environment. At Company A there appears to be, relative to Company B, higher quality production, lower scrap and waste, more coordination and cooperation between divisions and

levels, efforts to involve and inform employees, and a relatively effective Scanlon Plan suggestion; all factors which could contribute to and result from this higher level of participation and cohesion (Blum, 1956; Coch and French, 1961, 1961a).

5. Personnel who judge equity in their organization to be higher than personnel of another organization judge equity to be, will be characterized by a higher level of knowledge of implementations.

As discussed earlier, this concept concerns the fair treatment of personnel in both an economic and psychological manner. Psychologically, are employees considered and treated as capable and adult humans, and economically, are the employees paid an adequate wage in relationship to other wages in the organization, community, and industry? Results indicate that personnel at Company A consider themselves to be treated more equitably than do personnel at Company B. These results parallel the conclusions drawn concerning participation and cohesion and, appear to be another contributing factor to the higher level of knowledge displayed by Company A personnel. The performance of the two companies as listed in Appendix A would seem to verify these findings, although in terms of wages, the personnel at Company B appear to be treated equitably. Company B pays very competitive wages, both in terms of its industry and its area of labor supply. However, the two companies do present distinct differences on matters that deal with psychological equity. In Appendix A, for example, it is found that Company A provides steady and stable employment; there are high continuous bonuses; the number of grievances are low; and as judged by the personnel, there exists a more

psychologically sound environment for work.

Within-Company Analysis

Table 5 presents the chi-square values of Median tests for structural and demographic variables as related to Knowledge of Implementations.

None of these data were significant. No relationship was demonstrated between Knowledge of Implementations scores and any of the structural or demographic variables. Erickson (1964) reports similar findings between these variables and Knowledge of Objectives and Knowledge of Performance scores.

TABLE 5
Structural-Demographic Variables as Related
to Knowledge of Implementations Scores

Variable	df	chi-square	
		Within Co.A	Within Co.B
Age of Subjects	2	0.14	0.31
Management Level	1	0.29	0.82
Tenure with Company	2	1.15	4.97
Divisional Placement	2	0.18	2.50

df = 1, 3.8 = Pr.(.05)
df = 2, 6.0 = Pr.(.05)

Hierarchical Syndrome Analysis

Presented in this section are the results of the Syndrome Analysis for the Implementations and Performance Scales. See Erickson (1964) for patterns formed by responses to the Objectives Scale.

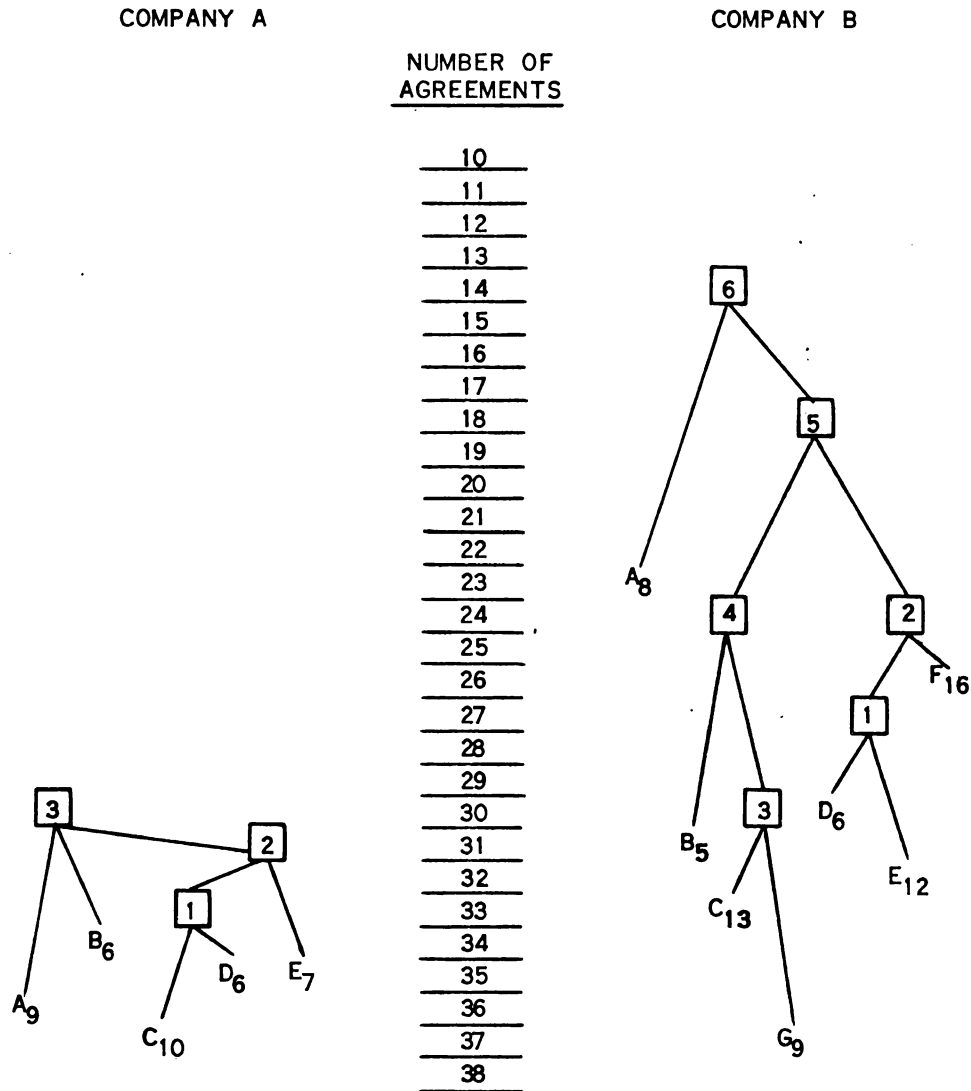
1

Implementations patterns will be described and discussed before Performance results. In both instances analyses of pattern content and structure are presented. Statistical analysis of trends indicated by the content of the patterns was rendered meaningless due to the small sample sizes. To the author's knowledge no appropriate statistical tests are available to adequately analyze the data and the results are thus presented in a descriptive sense as used by McQuitty (1960).

Implementations: Figure 2 presents the structure of the patterns formed by responses to the Implementations Scale. The maximum number of agreements is 50, the total number of items on the scale. The lettered symbols on the figure represent a group of people who are associated by similarity of responses. The subscript is the number of people within the group. Numbered figures are merely junctions where groups combine to form patterns, and these figures contain the sum of people within the basic lettered groups. The scale represents the number of agreements for the groups, or the number of agreements for two or more groups which later formed a larger pattern.

FIGURE 2

COMPANY A (N=38) AND COMPANY B (N=69) HIERARCHICAL SYNDROME
STRUCTURE FORMED BY RESPONSES ON IMPLEMENTATIONS SCALE



THE LETTERED GROUPS REPRESENT A GROUP OF PEOPLE. THE SUBSCRIPT
IS THE NUMBER OF PEOPLE IN THE GROUP. THE NUMBERS ARE JUNC-
TIONS WHERE BASIC GROUPS COME TOGETHER TO FORM PATTERNS, AND
REPRESENT THE SUM OF THE PEOPLE IN THE LETTERED GROUPS.

From the scale it can be seen that the people within Company A appear to be more homogeneous in that they form groups at higher levels than personnel within Company B. Company A patterns resolve into a final global agreement at a much higher level than Company B personnel and present a more unified total pattern. At Company A all personnel agree at the level of 30, which all personnel within the organization share; whereas at Company B the final basic group is not formed until 23 agreements, and the total resolution is not reached until 14 agreements. It would seem evident that the personnel at Company A share a much larger pool of commonality and the Company B personnel are more heterogeneous in their responses on knowledge of Company operations. The structure at Company B presents one other difference. Group A is not assimilated into the structure until the final resolution and could be considered an independent group that has little in common with the rest of the organization.

Table 7 presents a breakdown of the basic patterns by content areas of level, division, tenure, and split of subjects in the group in relationship to the median on the Implementations Scale. Due to the previously mentioned shortage of subjects, the results of the breakdown by content of the groups do not provide any relatively clear-cut evidence of a statistical nature. However, there are some trends or indications associated with some of the groups that seem worthy of description.

TABLE 6

Content of Patterns Formed by Responses to
the Implementations Scale

<u>Company A Personnel</u>														
Group	No. of Agreements	Level		Division				Tenure					Mdn.	
		0	1	1	2	3	4	0	1	2	3	4	5	+ -
A(n=9)	36	2	7	3	3	2	1	2	1	4	2	-	-	8 1
B(n=6)	34	-	6	3	2	-	1	2	1	3	-	-	-	3 3
C(n=10)	37	1	9	2	5	2	1	2	3	4	-	-	1	4 6
D(n=6)	35	5	1	1	1	1	3	1	1	1	2	-	1	3 3
E(n=7)	35	-	7	2	2	2	1	-	1	1	2	1	2	1 6
Total		8	30	11	13	7	7	7	7	13	6	1	4	19 19

<u>Company B Personnel</u>														
Group	No. of Agreements	Level		Division				Tenure					Mdn.	
		0	1	1	2	3	4	0	1	2	3	4	5	+ -
A(n=8)	23	1	7	2	3	2	1	-	1	3	2	-	2	3 5
B(n=5)	31	3	2	1	3	1	-	-	-	2	-	-	3	4 1
C(n=13)	33	1	12	2	7	4	-	1	2	1	2	2	5	6 7
D(n=6)	30	-	6	-	2	4	-	-	2	1	1	1	1	5 1
E(n=12)	32	3	9	2	4	4	2	4	2	2	-	2	2	6 6
F(n=16)	26	7	9	9	5	1	1	3	4	3	-	2	4	3 13
G(n=9)	37	3	6	1	3	4	1	-	-	-	5	1	3	7 2
Total		18	51	17	27	20	5	8	11	12	10	8	20	34 35

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Company A: Following is a description of salient features of the groups:

1. Group A: The results indicate that Group A might be described as high knowledge personnel. Of the nine people in the group, eight are above the median on the Implementations Scale, indicating that the group possesses, as a whole, a fairly high level of accurate knowledge.

2. Group B: This is a group of personnel from the lower echelon of the Company. This group has the lowest number of shared agreements (34) within Company A.

3. Group C: Group C can be described as production personnel sharing a high level of agreements, with a majority of its members from the Manufacturing Division and the lower echelon of management within the Company. This description would best fit a group of foremen.

4. Group D: This is possibly the most interesting group, with five out of the eight being upper level personnel in the Company. This grouping seems to be in line with the manner in which operations are handled at Company A. Frequent staff meetings and communications among the top level of management are the practice for making decisions on operating policies of the Company; Group D appears to represent this management team.

5. Group E: This is a group of lower management personnel, with six out of seven members below the median, indicating that this configuration of personnel shares a common pool of inaccurate knowledge or information about the implementations of the Company. This

group also contains a higher proportion of long tenure personnel than other groups.

Company B: Following is a description of salient features of the groups:

1. Group A: A high proportion of the members of this group are from the lower levels of management. This group has the lowest number of agreements or shared responses and does not join the structure of patterns until the final resolution. This pattern would indicate that the group displays somewhat different knowledge from that displayed by the rest of the personnel in the organization.

2. Group B: Of the five members in this group, three are from the upper levels of management. The group has above average scores on Knowledge of Implementations.

3. Group C: This group reflects heavy membership from the Manufacturing Division and from the lower levels of management: a description of a group of foremen. There is also representation from the Marketing Division. This group, as a whole, possesses what could be described as an average level of knowledge of the implementations of the Company, and, to some extent, this level is higher than that of Group F which appears to contain their superiors; in addition; Group C possesses a higher level of agreement than Group F.

4. Groups D and G: These groups display trends of a mild nature for a higher level of accurate information. They share, according to their responses, higher scores on the Knowledge of Implementations Scale. These two groups could be described as low echelon Marketing-Foremen Groups who appear to know "what is going

on." Group G also shares the highest level of agreements in Company B and is made up of people who have relatively long tenure.

5. Group E: Group E does not display any trends that seem worthy of description.

6. Group F: This group appears to be of prime interest. Of the 16 people within the group, seven are from the upper level of management; nine are from the Engineering Division; five are from Manufacturing; and of the 16, 13 are below the median on Knowledge of Implementations. Thus, this group of people is generally uninformed or inaccurate as to the operating policies and practices of the Company. Furthermore, this group is comprised mostly of Engineering and Manufacturing personnel, with a large proportion from the upper levels of management. These people, in the course of their normal routine, work together in the design and manufacture of the Company's products; however, they do not appear to share an accurate pool of knowledge. In addition, this group has a relatively low level of common knowledge.

The content of the groups from both companies displays some amount of similarity. Within both companies are groups reflective of people who could be described as possessing a higher level of accurate knowledge of company operations. In both companies, there are groups reflective of the upper levels of management; although in Company A they seem to be dispersed across divisions, indicative of a management team; whereas in Company B this group is heavily weighted with Engineering and Manufacturing personnel, reflecting the lack of

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communication and coordination at Company B. In addition, the "management group" at Company A possesses average knowledge, whereas at Company B this group is below average in Knowledge of Implementations and shares a relatively low level of commonality. These groups and levels of knowledge and agreement would follow from data presented in Appendix A, which outlines the extent of effectiveness of the companies. At Company B the management group appears to lack the necessary knowledge for effective operations; it is splintered from the rest of management, and although it forms a group, it does so at a low level of shared responses. These results are reflected in Appendix A. In both companies there are also groups which might be described as foremen groups, sharing a high level of agreements. A further similarity is the presence of groups in both companies that display as a common denominator either high or low accuracy on the Knowledge of Implementations Scale. At Company B there is also a trend for lower echelon Manufacturing and Marketing personnel to group together.

Although these similarities in content exist across Company A and Company B, they exist at different levels (structure of groups) of agreement and are arranged so as to reflect the differing degree of effectiveness of the companies. For example, in Company B the upper echelon of management partially forms one group that not only lacks knowledge, but also shares a smaller pool of common responses. In general, the patterns and groups at Company A present a much more homogeneous pattern.

Performance

Figure 3 presents the structure of the patterns formed by responses to the Performance Scale. The maximum number of agreements is 75, the total number of items in the scale. The table is organized and interpretable in the same manner as Figure 2 which dealt with structure of patterns for Implementations.

In Performance, as with Implementations, the main difference in the patterns formed by the two companies deals with the homogeneity of responses by personnel. Company A personnel form basic groups and structural patterns at higher levels than at Company B. Final resolution into a unitary structure occurs at 35 agreements at Company A, whereas at Company B the commonality of the firm does not develop until the level of 21 agreements. In addition, basic groups at Company A generally form at much higher levels, portraying the apparent homogeneity existing at Company A. By contrast, the structure and level of agreements at Company B presents a more diversified heterogeneity of response, possibly reflecting the relative lack of coordination and communication within the organization.

As found in the analysis of the Implementations patterns, at Company B there is an isolated group in the Performance patterns. The members of Group A do not associate, in their responses, with other personnel until the final resolution and could be considered to share their own conceptions of Company performance. There are seven members in the group with two of them also members of the isolated group formed in the Implementations' structure.

FIGURE 3

COMPANY A (N=38) AND COMPANY B (N=69) HIERARCHICAL SYNDROME
STRUCTURE FORMED BY RESPONSES ON PERFORMANCE SCALE

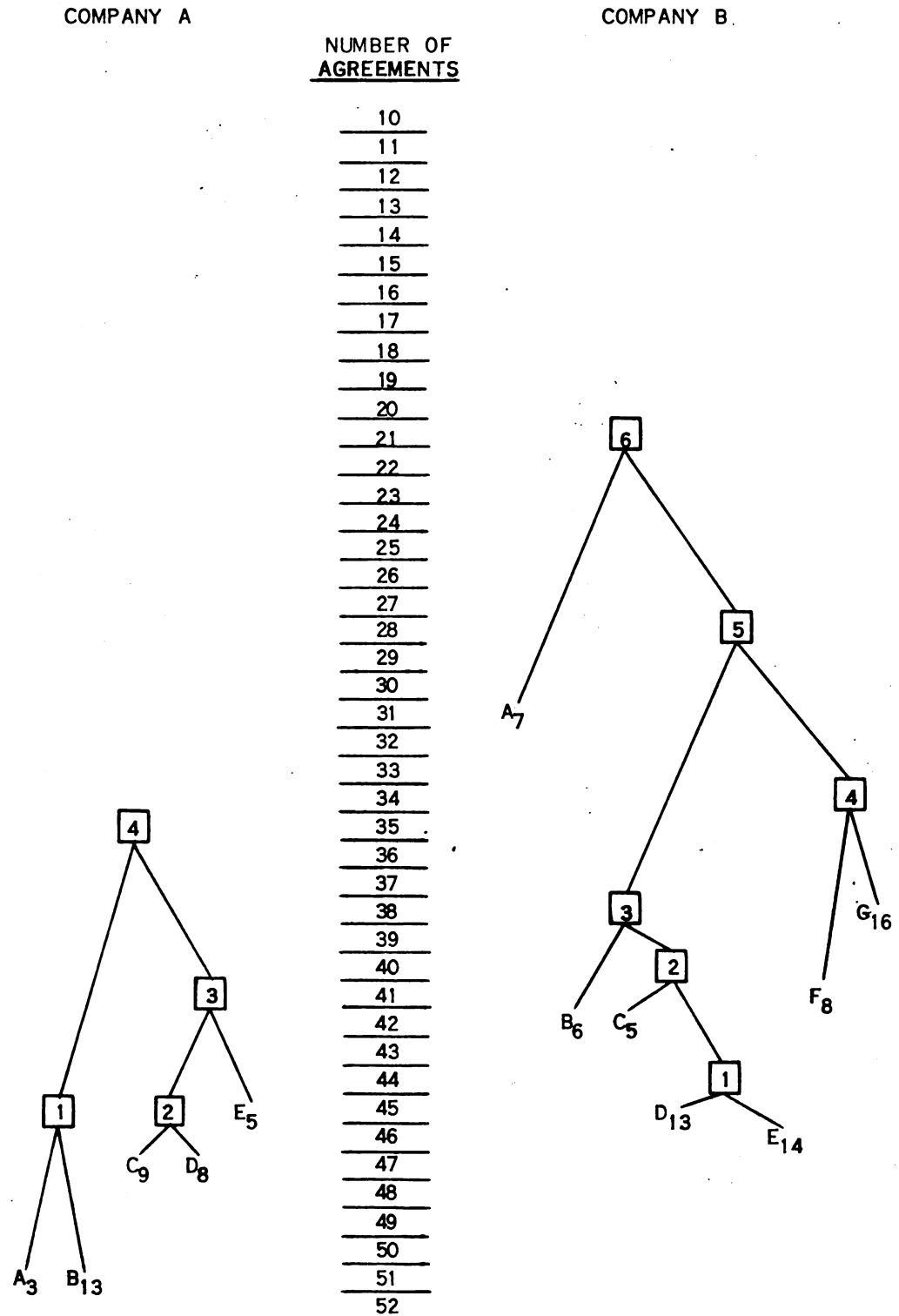


Table 7 presents a breakdown of the basic patterns by content areas of level, division, tenure, and split of subjects in the group in relationship to the median on the Performance Scale.

TABLE 7
Content of Patterns Formed by Responses
to the Performance Scale

<u>Company A Personnel</u>														
<u>Group</u>	<u>No. of Agreements</u>	<u>Level</u>		<u>Division</u>				<u>Tenure</u>					<u>Mdn.</u>	
		<u>0</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>+ -</u>
A(n=3)	51	-	3	-	2	1	-	-	-	1	-	1	1	1 2
B(n=13)	50	2	11	3	6	1	3	2	2	3	4	-	2	10 3
C(n=9)	47	5	4	3	2	-	4	1	2	3	2	-	1	4 5
D(n=8)	47	1	7	4	1	3	-	2	2	4	-	-	-	4 4
E(n=5)	45	-	5	1	2	2	-	2	1	2	-	-	-	- 5
Total		8	30	11	13	7	7	7	7	13	6	1	4	19 19

<u>Company B Personnel</u>														
<u>Group</u>	<u>No. of Agreements</u>	<u>Level</u>		<u>Division</u>				<u>Tenure</u>					<u>Mdn.</u>	
		<u>0</u>	<u>1</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>0</u>	<u>1</u>	<u>2</u>	<u>3</u>	<u>4</u>	<u>5</u>	<u>+ -</u>
A(n=7)	31	2	5	3	2	2	-	1	2	1	1	1	1	1 6
B(n=6)	42	-	6	2	2	2	-	2	1	1	-	-	2	3 3
C(n=5)	42	2	3	1	1	2	1	-	1	2	1	-	1	3 2
D(n=13)	45	4	9	1	5	6	1	1	2	4	1	-	5	3 10
E(n=14)	46	3	11	2	5	6	1	1	1	1	4	2	5	7 7
F(n=8)	41	3	5	3	4	-	1	2	1	2	-	1	2	6 2
G(n=16)	38	4	12	5	8	2	1	1	3	1	3	4	4	14 2
Total		18	51	17	27	20	5	8	11	12	10	8	20	35 34

As with Implementations, the results of the breakdown by content of the groups do not provide any statistical evidence. Descriptions of the various groups will be presented, stressing the more important features.

Company A:

1. Group A: This is a relatively small group from the lower echelon of management. This group shares the largest pool of common responses within Company A; however, their responses do not indicate high accuracy on the Performance Scale.

2. Group B: This is mainly a group of lower echelon personnel, displaying a high level of accuracy on the Performance Scale. These people, as a group, know what the performance of the company has been and are in agreement at a fairly high level. It would appear that foremen would make up the greater part of this group.

3. Group C: The interesting feature of this group is the appearance of the management group again. Of the nine people in the group, five are top management. On level of agreements and scores on the Performance Scale, the group is average.

4. Group D: This group is mainly lower management personnel, with the group made up mostly of Engineering and Marketing personnel with relatively low tenure.

5. Group E: Group E is comprised entirely of lower management with all five of its members below the median on the Performance Scale. This group also shares the lowest level of common responses within Company A.

Company B:

1. Group A: The members of this group are isolationists in the structure, with a majority of the group being Engineering personnel. The level of agreements for this group is lower than that of any other group in Company B; in addition, this group has six of seven members below the median on the Performance Scales. This group would appear to have its own misconceptions of Company performance.

2. Group B: This group is comprised entirely of lower echelon personnel with a majority of the group having low tenure. Group members are dispersed evenly across divisions except for a lack of personnel from Personnel-Finance.

3. Group C: Group C is an average-dispersed group with no descriptive features of note.

4. Group D: This is a high group in level of agreements. The Manufacturing and Marketing Divisions furnish the majority of the members with representation from the upper and lower echelons of management. This group, with ten of its 13 members below the median, is the second lowest group within Company B on the Knowledge of Performance Scale. Coupled with the fact that they have a relatively high level of agreements is the belief that this group of Manufacturing-Marketing personnel seem to share a high level of commonality in inaccurate information.

5. Group E: This is a group similar to Group D in many respects. This group is the highest in Company B on level of agreements (one higher than Group D), and like Group D, it also has a majority

of its members coming from the Manufacturing and Marketing Divisions. However, the members of Group E are average on their responses to the Knowledge of Performance Scale and thus would share a high level of fairly accurate knowledge. The members of Group E have fairly long tenure with 11 of 14 members being in the three higher categories on tenure.

6. Groups F and G: These two groups present the most favorable split on knowledge of Company performance, with 20 out of a combined total of 24 above the median on the Knowledge of Performance Scale. In addition, both groups are heavily populated with personnel from the Engineering and Manufacturing Divisions. Group F members appear to have less tenure and, proportionately, a greater number of upper echelon management than Group G.

As with groups formed by responses to the Implementations Scale, the groups formed by responses to the Performance Scale show similarities across the two companies. Descriptive commonalities are the formations of groups which display a high or low level of agreements and groups which display high or low scores on the knowledge of Performance Scale. Division of membership is another characteristic common to some of the groups, with tenure being somewhat less distinctive than the other content areas. There are groups entirely representing, or with a majority of its members representing, the lower echelon of management; however, there is not a separate foremen group at Company B as at Company A.

Group B at Company A is a foremen's group of relatively long

tenure, with a high level of agreements on accurate knowledge. This grouping seems appropriate within the framework of high performance at Company A and the reliance placed on foremen. Company A also has a group which contains the management team. Interestingly, the low knowledge, low agreement group (E) does not contain any higher echelon management personnel.

At Company B a separate group of foremen or management team does not appear. There is a lower echelon group, but it is not distinctive of any particular division. Two groups, both with high levels of agreement, formed what could be described as Manufacturing-Marketing Groups; however, one (D) has a very unfavorable split on knowledge of Company performance, whereas the other (E) displays average knowledge. In addition, these two groups join structurally to form a higher order Manufacturing-Marketing pattern.

Groups F and G also form a structural pattern, although they join at a much lower level. These two groups, consisting mainly of Engineering-Marketing personnel, are distinguished by their high scores on the Knowledge of Performance Scale. One other group at Company B which presents interesting trends is Group A. Structurally, this is a group of isolationists, with little in common either within the group or with the rest of the organization. Also, this group is not well informed on Company performance. Membership comes from both levels of management, with majority representation from the Engineering Division. This group does not appear to be in a position to contribute meaningfully to the progress of the Company.

The Syndrome Analysis furnished indications that seem to be supportive of findings revealed by previous tests and the level of effectiveness displayed by the two companies. Structurally, the main differences between the two companies are different levels of agreement and the presence of an isolated group at Company B. Company A personnel appeared to be more homogeneous in their patterns and formed a unitary structure at a much higher level. These trends are in accord with results presented; for example, the SD's presented in Table 3 support this view of greater homogeneity at Company A. In addition, the results of the cross-company comparison on the scales used in the study and the general results in Appendix A are all supportive of this structural relationship. Company A personnel, judging communications to be more effective and reliable, psychological involvement and fairness of treatment to be higher, seem to possess commonality of knowledge at a higher level and possible related performance. In Company B it seems the opposite is true.

When the content of the groups is analyzed, differences again become apparent. The primary variables accounting for pattern content are high knowledge, low knowledge and level within the organization; tenure has less effect. The same factors are operative at Company B but are arranged so as to substantiate and reflect the differences found in Appendix A and in the cross-company comparisons on the scales used in the study. For example, at Company B a group of isolationists appears. These personnel seem not only to have their own conception of company policy and performance but also to share inaccurate conceptions. As did Company A patterns, patterns at

Company B also displayed the effect of such factors as high or low knowledge; however, level effects were less pronounced, with division and tenure more pronounced. At Company B there is not the strong foreman group nor an effective management team pattern. A management team composed mainly of Engineering and Manufacturing Division personnel formed, but this group was characterized by a low level of knowledge and a low level of agreement. These low levels are in accord with the poor coordination and communication that seem to exist at Company B. In Company A groups formed that were generally dispersed across divisions, indicative of a coordinated and cooperative venture, whereas in Company B divisional lines were displayed in the formation of groups. This formation of possible cliques is in line with the results presented earlier and is reflective of the uncoordinated manner in which Company B is operated.

Health of Subjects:

In Appendix A, item 19, it was indicated that personnel of Company B had suffered from more ailments of a possible psychosomatic origin. A comparison of the two companies was made, in addition to figures obtained from the American Medical Association. The AMA data for heart attacks were available for a comparable strata of DuPont management personnel (Weiss, 1963). DuPont management suffered from heart attacks at the rate of 2.4 per 1000 per year; Company A personnel at the rate of 1 per 38 per 3 years; and Company B personnel at the rate of 6 per 69 per 3 years. The Company A rate was not significantly different from the DuPont population ($p = .24$). The rate at Company B was significantly different ($p < .0001$).

During this same period, there was one case of ulcers at Company A and seven cases at Company B. Based on the United States Public Health Service (1960) report, the incidence of ulcers at both companies was not significantly different from the national average for men in general (20.9 ulcers per 1000 males annually).

On the basis of these data, Company B personnel appear prone to a higher level of heart attacks than Company A personnel. However, this difference could be attributed to the difference in age of subjects at the two companies. Company A personnel average 35.8 years of age, while Company B personnel average 46.3 years. U. S. National Health Survey figures indicate the age group of 44-54 has an incidence of heart conditions slightly more than double the incidence of the age group for Company A personnel. The lack of differences on ulcers may again be due to age, as Company A personnel are in the group with the highest incidence of ulcers.

This data is, however, indicative of the effectiveness of the two companies in the rate of dissipation of resources. It is readily apparent from data presented in Appendix A that Company B has dissipated economic assets; for example, its credit rating. Not so apparent is any dissipation of its human assets. As indicated above, the personnel at Company B have suffered from a significantly higher level of heart attacks than have Company A personnel. This is another area where Company B might be ineffective since it fails to meet its objectives and to safeguard its assets. The data was too incomplete and the samples too small to develop further conclusions, in addition to limitations imposed by age factors which could have accounted for the results.

DISCUSSION

The results indicated that, as hypothesized, Company A personnel displayed a higher level of knowledge of their operating environment. This knowledge enables the personnel of the organization to monitor the Company's progress and to adjust and adapt as necessary so that utilization of more effective strategies may be maintained. Results were also supportive of the hypotheses on the secondary variables. In conjunction with factors in Appendix A, results on the secondary variables of adequacy and accuracy of communications, participation-cohesion, and equity indicate that Company A considers the preservation of both economic and psychological factors as propitious to its continuing effectiveness.

These four secondary variables were measured as judged by the personnel of Company A and Company B. Data in Appendix A substantiates these findings. Another rationale for these scales can be found in the literature and results on the assumption that behavior is determined to a large extent not by actual stimuli, but how these stimuli are judged. Thus, Leavitt (1958) states that the most important determinant in behavior is how the individual judges the stimuli in his environment. Company A personnel, with favorable judgements, are possibly affected in a manner to encourage high levels of knowledge and effectiveness. Haire (1956) proposes much the same thing. He states that individual behavior is not



related as much to the environmental stimuli as it is to how the environment is judged and organized by the individual. Responses to the secondary variables, then, would tend to furnish indications for the differing levels of knowledge displayed by the subjects.

Validity and Generality of the Method

The experimental problem was to measure the knowledge of implementations of the personnel in an organization and, more importantly, to relate this measure empirically to organizational effectiveness. The approach developed in this study was based on the concept of environmental discrepancy considering the organization as a whole. The design of measuring instruments required that the researchers become intimately acquainted with the objectives, implementations, and performance of the companies. This background was required not only to design scales but to develop the differing levels of effectiveness for the experimental validation. These levels are described in Appendix A. The development of Appendix A, as justification for the selection of the two companies as contrast of effectiveness, led to the second consideration: developing scales that might reflect this evidence presented in Appendix A.

The results as presented appear to justify the development of this method. Subjects were tested on material that was familiar to them, that dealt with policies with which they worked everyday, and that did not contain external items imposed upon them by the researcher. In essence, the companies themselves provided the information for building the scales. This information was obtained and

checked as "company" implementations and did not reflect the varying biases and prejudices that might have been found by taking a survey of the personnel involved. In a different manner, it could be said that the items used in the scales were merely reflections of information available to personnel in either company. In this respect, the definition of the environment that was to be measured did not impose artificial restrictions or manipulations and was as objectively derived as possible. The researcher did not provide the answers for items, but instead the answers were provided somewhere within the files of the organization.

The question arises as to whether the sample of items used was representative of the entire range of the population of items that could have been used. Within the experimental context, this question is not as relevant as it typically would be. The experimenter did not intend that the scale would be exhaustive or random to cover the entire population. Instead, the intent was to provide a representative cross-section of the information gained from the files of the organizations. A further restriction was that the items should be representative of the content of information found regarding various divisional functions. In this respect, the number of items included in the scales were equally divided among the five functional divisions. Thus, a random sample of items was not made for the Implementations Scale: Instead, fifty items were utilized that were representative of the areas covered. This method of scale formation seemed to provide the most accurate and complete definition of the environment of the organization. Feedback from personnel who participated in the study

substantiates the extent of the researcher's knowledge and the completeness of the scales. The results of the investigation also tend to furnish validation for this method of translating the concept of the environment into operational data and of testing in a practical situation its usefulness as a consideration of organizational effectiveness.

The generality of this method is also something that must be considered. Generality would extend in two directions, vertical and horizontal. That is, would the method be applicable in all types of industrial situations, encompassing horizontal continuums of size and industry? Is it limited in its application, or would the method be relevant for a small work group within an organization, and would it apply equally well to a giant industrial corporation? Since the industrial situation is but a small part of the larger social system, then vertical applicability must be considered. Within this context, would the method apply as well to small social groups as to a larger social system encompassing a country, for example?

Discussed within this framework, the method should be examined in two different lights, those of structure and content. The structure or type of method would seem to be general to the individual, to the organization, or to a larger social system. The method itself has evolved from the concept of reality, which had its original application with the individual. The study has extended this concept to the industrial organization, and it seems possible that the concept and method would be valid for other types of social

systems or organizations. Thus, structure would extend both vertically and horizontally.

Content presents a different problem. Vertical applications would seem to require greater changes in content than horizontal applications. Content would be a consideration when applying this concept of reality and the method evolved from it to organizations that are basically different. In addition to being a consideration in a vertical extension, content would be relevant in horizontal extensions as the size and nature of the industry in question changed. However, the method possesses an inherent generality of application for the individual, for small organizations, for industrial organizations, as well as for larger social systems. Although the present study demonstrated the method's practicality in the industrial situation, further research would be needed to validate this claim for its usefulness in other situations and areas. The fact that every individual and every organization has an environment which they must know in order to be effective lends support to a conclusion that this approach apparently has validity and generality.

The work of W. I Thomas (1927) precedes this study and provides additional insights into the generality of the method. Definition of the situation was the method adopted by Thomas for social science research under field conditions. He considered the method as similar to methods employed by the physical sciences and believed it was as close to experimentation that the social scientist could achieve. While the environmental situation and objectives of the present study are different from the work of Thomas, the method

of developing observational and evaluative criteria from objective environmental stimuli remains the same. Thomas also maintained the concept and method was as applicable to the group as to the individual. Consideration of the above leads to the conclusion that the present study is unique primarily in method, locale, and explicit utilization and generalization of the work of Thomas.

The Environment and Organizational Effectiveness

Thus far the discussion has been concerned with results of the study and validity and generality of the experimental method. The data indicates that it is possible to differentiate companies with differing levels of effectiveness through the knowledge of environmental factors demonstrated by its personnel. The data further substantiates and differentiates Company A as a Company portraying the profile and patterns of an effective organization, whereas the performance of personnel at Company B substantiates its picture as an ineffective organization. In its operations, Company A seems to fit the definition of effectiveness offered earlier: it is the organization whose members are aware of the items used and they are able to adapt to this knowledge and utilize it to define and attain the organization's goals in the face of competition and a limited supply of assets.

This general description and definition led to the second area that has been discussed, that of the validity and generality of the method. However, the ultimate concern is the relationship of the

present study to the appropriate background of psychological literature. What conclusions can be drawn regarding the method used and organizational effectiveness?

Various authors have dealt with the present issue on an individual level. Of paramount importance to this are the criteria of adequate self-knowledge, objective self-appraisal, the ability to adapt to change. An individual lacking these vital capabilities is apt to be classified as ineffective.

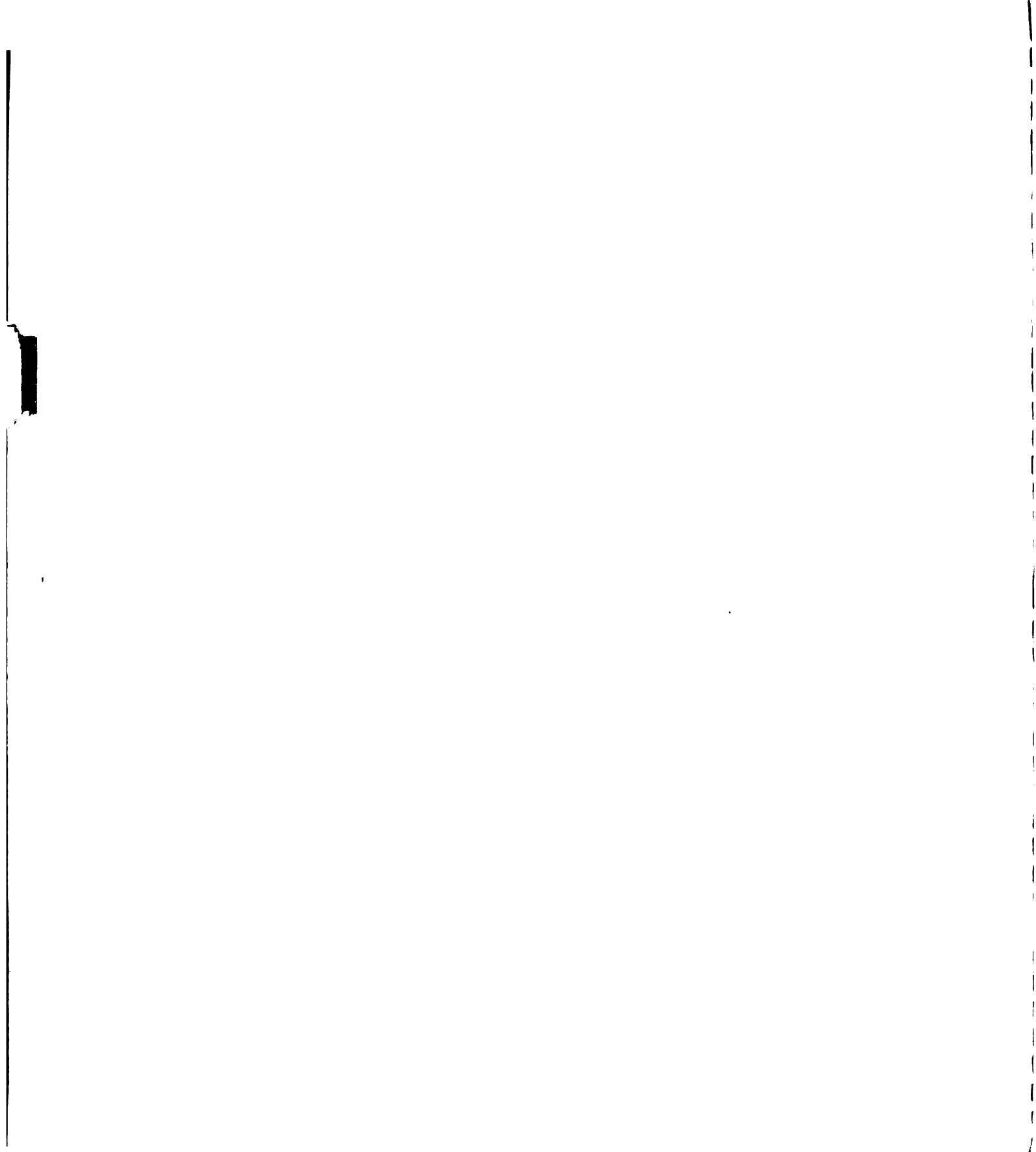
Organization theorists have also utilized, at least implicitly, the concept of the environmental stimulus situation. The "revisionist" theories propose that cognizance of the total situation is needed; Jenkins (1962), Mann (1962), and Likert (1961) stress the necessity of feedback for knowledge and effective performance; Georgopoulos and Tannenbaum (1957) and others talk about requisite knowledge of goals, implementations, and performance to judge effectiveness; and Eddy (1962) mentions strategies of control that must be adapted to fit the situation.

A common thread existing through these discussions is the theme of knowledge of relevant environmental factors. For example: Jenkins, Mann, and Likert would stress the discrepancy between performance and knowledge of performance in order to guide adaptive behavior; Georgopoulos and Tannenbaum work with the discrepancy between objectives and performance as the criterion for effectiveness; and Eddy and Argyris (1959) would talk of the discrepancy in knowledge of the relevant factors in the environment that could lead to inappropriate strategies of control.

On the basis of the results in the present study knowledge of environmental factors, or low discrepancy, may be a necessary antecedent to effective performance. This assumption does not propose a functional relationship, but a necessary condition. If the members of an industrial organization display a high degree of discrepancy regarding knowledge of their environment, including objectives, implementations, and performance, then the proper decisions and behavior will not be present and the limited supply of assets will tend to be dissipated. Low discrepancy is essential to the formulation and implementation of strategies, based on accurate knowledge of the environment and aimed to meet organization objectives.

The authors cited have emphasized communications, participation, cohesion, and equity as important factors of effectiveness. In the present study these variables were examined and found to be related to the knowledge displayed by members of an organization. Adequate and accurate communications, a sense of personal involvement and of belonging to a cohesive work group, and judged fair treatment can be functionally related to knowledge. If members of an organization are actively informed and efforts are made to create achievement of parallel goals, then a higher level of knowledge might be induced which can lead to greater organizational effectiveness.

Adequate and accurate communications are necessary to coordinate action and for availability of information. However, information must be utilized in a manner conducive to effectiveness. Various authors maintain that individual participation and cohesion tend to



motivate individuals to greater utilization and awareness of information as well as generation of additional information for feedback of performance (Haire, 1956; Likert, 1961; Mann, 1962). Coch and French (1948) and Jacobsen (1951) demonstrated in research that people tend to support what they help to create or are allowed to participate in and display some influence. As mentioned previously, Likert proposes that these variables tend to lead to better decisions, based on more accurate information and greater motivation to implement these decisions.

Seashore (1954), Gilmer (1961), and McGregor (1960) maintain that another factor should be present to provide impetus for organizational effectiveness. These authors state that to gain positive benefits from adequate and accurate communications and participation-cohesion, the basic conditions of equity and respect must be provided. Then, the "greater gains of participation and cohesion will be enhanced" (Seashore).

It would seem that these variables create conditions conducive to knowledge; these conditions include setting obtainable objectives, devising appropriate implementations, evaluating performance, and feedback into the system for proper revisions.

This concept of organizational effectiveness, then, considers the impact of the total organization, with appropriate techniques of control dictated by the existing environmental boundaries, much as they are dictated with the individual. Although there are apparently effective organizations that do not consider the total situation, it is this author's premise that these organizations suffer

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to some extent and are marginally effective with a potential beyond their present performance. This failure could cause ineffectiveness in the organization, with either physical or human assets, or both, dissipated at an unknown rate.

Implications and Suggestions for Further Research

The implications of the present study raise interesting questions for further research. The method employed, as gauged by the results, may be useful. The topics presented below reflect primary extensions of this research and the need for further verification of its validity, generality, and practicality.

1. Of extreme importance is the sensitivity of the method and the resulting measuring instruments. In the present study two organizations at opposite ends of a continuum of organizational effectiveness were investigated. These organizations were chosen to test the validity and practicality of the concept of environment and the method designed for measurement based on this concept. The next logical step, then, would be a similar study with two organizations more alike in respect to a continuum of effectiveness. Such a study, if positive results were obtained, would enhance the theoretical and professional value of the method. This additional information and increased validity could be a beginning for development of a theoretical structure. This structure should also specify the professional limitations and benefits. In addition, this further research could then proceed logically to a test of the practicality of the method in a training situation.

2. It would seem that with knowledge as a major variable, training would be a prime variable for further research. Two ways of approaching training can be illustrated. First, as Whyte (1959) states, too many training courses are predicated on the assumption that there is a standard training program. Might it not be better to analyze the situation - as done in the present study - and then design the training program to emphasize weaknesses discovered in the knowledge or discrepancies displayed by personnel? Secondly, a training program of longitudinal scope with pre- and post-measurements of organizational effectiveness could be utilized. This training program would be beneficial because it would use organizational effectiveness as the criterion of the training rather than using the more common practice of testing the participants. It also would be interesting to relate concomitant changes in both subjects' knowledge scores and organizational effectiveness. Thus, training could be designed to utilize best the situation and could be aimed at both organizational and individual performance.

3. The experimental framework could be extended to other organizations to empirically test generality. This extension would encompass experimentation along the vertical and horizontal continuums discussed previously. The obvious extensions would be larger industrial organizations and socially oriented organizations.

4. To duplicate the comprehensiveness of the preparation of the questionnaires in a large organization would be almost prohibitive. Investigation concerning the possibilities of utilizing a random search of files could prove fruitful to future research and

scale development. Even more important would be the development of standard scales applicable to many organizations. The assumption in this instance is that the common scale could be devised but a file search would still have to be conducted as the situation dictates the answer to any given item. This procedure would use a general scale with specific answers furnished by the files of the organization. Hopefully, the repetition across various types of communications would allow a random search for answers, or perhaps the scale itself could provide direction for seeking the answer.

Naturally there are other questions of interest. For example: How much of a change in the knowledge of the environment possessed by personnel is necessary for organizational change? How much knowledge is required to move from ineffective to effective?

SUMMARY

Two organizations, with differing levels of effectiveness were chosen for study. Effectiveness was defined through the degree of accomplishment of 19 common organizational objectives. Company A was the effective organization; Company B was its contrast. Through a study of the organizations a three-part scale was designed to measure Knowledge of Objectives, Knowledge of Implementations, and Knowledge of Performance; the three components of the organizational environment. Subjects were all management personnel from foremen to president, inclusive. The following results were obtained:

Personnel of Company A demonstrated a significantly higher level of knowledge of environmental factors than did Company B personnel.

As knowledge was presumed to be a descriptive, rather than a functional variable, four "Human Relations" variables that might have some influence on knowledge were investigated with the following results:

1. Personnel of Company A judged the adequacy of their communications to be significantly higher than did Company B personnel.

2. Personnel of Company A judged the accuracy of their communications to be significantly higher than did Company B personnel.

3. Personnel of Company A judged their treatment to be significantly more equitable than did Company B personnel.

4. Personnel of Company A judged their degree of participation-cohesion to be significantly higher than did Company B personnel.

A Hierarchical Syndrome Analysis was performed on the data and the patterns tended to substantiate the results above. Company A patterns reflected the criteria of effectiveness and portrayed a profile of a coordinated organization achieving their objectives. On the other hand, patterns of the personnel at Company B demonstrated a heterogeneity of knowledge, with a lower level of agreements and coordination.

These results support the assumption that knowledge of the environmental stimuli will be at a higher level for personnel of an effective organization. The secondary variables indicated factors that could have accounted for this higher level of knowledge and consequent organizational effectiveness. At the conclusion suggestions also were offered concerning some avenues for possible future research utilizing this method.

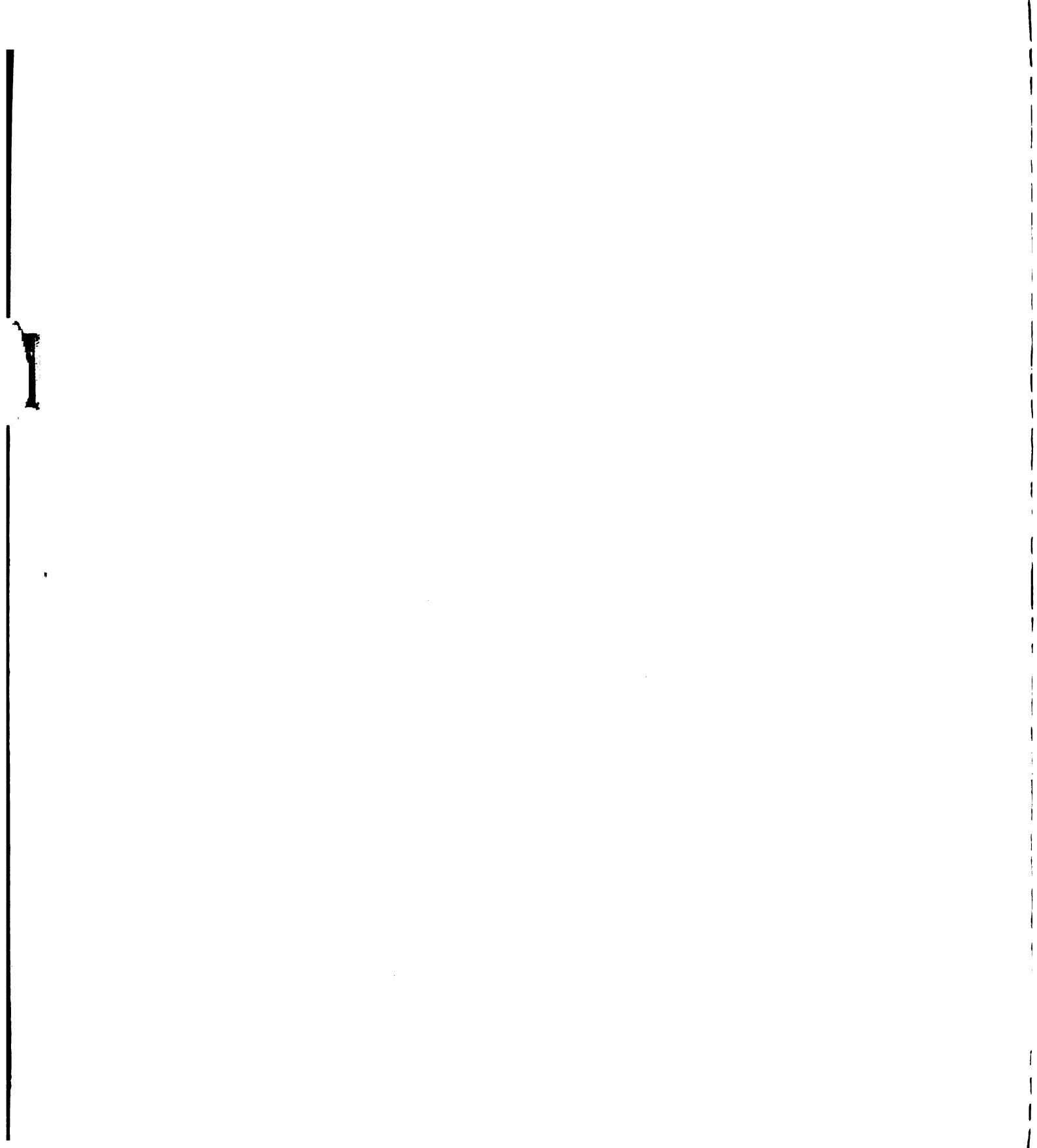
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APPENDIX A



MUTUAL GOALS OF COMPANY A AND COMPANY B
LISTING THE EFFECTIVENESS OF GOAL ATTAINMENT BY EACH

1. Specified Level of Profit and Rate of Growth

Company A: 25% of previous net worth, both for the level of profit and the rate of growth, has been met or exceeded since it was established as a goal in 1961. This is a higher rate of growth than was experienced by the general economy. Of the earnings, 40% go for dividends and 60% are reinvested.

Company B: 4% of gross sales with a 15% increase in sales per year. Neither has ever been met since they were first set as goals in 1958. (1956 was a banner year for the company with sales of \$12.8 million. Profit in 1956 was 3.1% of sales.) Sales have been erratic. There is no consistent pattern of increase or decrease, except for the last two years, in which sales decreased. In 1963, with sales of \$10.3 million, the company suffered a net loss of \$467,000. Over a nine year period (1954-1962), sales have averaged \$9.7 million and profit, 1.7% of gross sales.

2. Dividends to Stockholders

Company A: Dollar amount unknown since it is privately held. See above for per cent of return on investment.

Company B: Generally erratic, ranging from nothing to \$.80 per share. The nine year average is \$.38.

3. Expansion from Internally Generated Capital, i.e., from Profits

Company A: Yes, 60% of profit is reinvested each year.

Company B: No. The company has borrowed to the limit to meet payroll.

4. Accurate Budgeting and Cost Control

Company A: Yes. Profits and costs are planned. Specified level of profit must be met before bonus is paid employees.

Company B: No. Budgets are not met and management cannot give reasons why. Maintained multiple budgets that allowed sales to be made at a lower price than manufacturing costs. In the past, bonus has been paid while company was actually losing money.

5. Accurate Costing for Efficient Spread of Manpower

Company A: Time studies and manning are generally accurate.

Company B: Time studies are inaccurate. Exact manning requirements are not met. Company once had 120 excess direct workers -- 70, a paper mistake, and 50, a true excess unrecognized until an outside management consultant pointed it out. At one time, the union filed a grievance for over-manning, of which management was unaware.

6. High Quality Production, Low Scrap, and Waste

Company A: Quality control is good. Returns and allowances for poor quality average about 1% of sales.

Company B: High scrap costs, poor quality. Rework costs are high. At times, to meet production quotas, "seconds" are knowingly produced and then run through the line again as rework.

7. Quality Engineering on New Products

Company A: Yes. Technical problems are generally solved before a product is introduced to the production line.

Company B: No. As an example, 269 engineering changes were required on one product during a two-week production period.

8. Meeting Predicted Development Times on New Products

Company A: Generally accurate.

Company B: Late in the majority of cases by as much as four years.

9. Confidence of Customers

Company A: Yes. The company works very closely with its customers. Since the inventory control program was installed, the relationship between manufacturer and customer is even closer.

Company B: No. There was a big loss of customer confidence in recent months. Products sold under the company brand-name are a drug on the market, forcing discontinuation of several lines.

10. Finding and Opening New Markets for Products

Company A: Yes. The company is competitive and has penetrated new markets through an aggressive expansion program. The foreign market for the company is just beginning to open up.

Company B: No. The company is not competitive, and its reputation for poor quality of its brand-name products has led to a drastic slump in sales for them. Consequently, to survive, the company depends heavily on contract production for other manufacturers, which is much less profitable than its own brand-name production.

11. Meetings Held as Scheduled

Company A: Yes.

Company B: No.

12. Staff Meets to Plan as a Team

Company A: Yes. Regular and frequent meetings are held.

Company B: No. Although established as a goal and cited frequently by top management, staff meetings are not held. Heads of staff work as individuals, sometimes holding their own informal meetings to coordinate programs without top management's knowledge.

13. Feedback of Company Plans and Other Information

Company A: Generally good. Employees are kept fairly well-informed by minutes of meetings and company newsletters.

Company B: There is virtually none. Published minutes of meetings which are held do not reflect the true nature of discussions. Verbal communication downward is poor, at best, and the company paper has been discontinued.

14. Steady Employment Through All Cycles of the Business Year

(Both companies experience sharp increases and decreases in product demand during the year.)

Company A: In 1961, an inventory control program was installed to level out production. As a result, layoffs have been virtually eliminated; in fact, the work force has grown at a steady rate (from 102 employees in March, 1961 to 157 in December, 1963). This stable work force has resulted in great savings in company contribution for unemployment compensation.

Company B: Work force highly variable. Even with stated goal of steady, continuous employment, the work force during 1963 went from 300 to 500 to 200 to 120.

15. Paying Equitable Wages to Employees

Company A: Yes.

Company B: Yes. The company pays the highest wages in its industry, which seems unrealistic in view of its situation.

16. High Continuous Bonus Under the Scanlon Plan

(Both companies have installed the Scanlon Plan, which is explained elsewhere in this report. Under this Plan, all employees, from the president to the janitor, receive a share of the reduction in production costs from month to month.)

Company A: Bonuses were earned in 12 months during the last

year. The average bonus was approximately 17% of wages.

Company B: Approximately a 5% bonus was earned in one month during 1963.

17. Effective Use of Suggestion System

(Under the Scanlon Plan, a committee structure is established to solicit and review employee cost-reduction suggestions.)

Company A: The suggestion system is relatively effective. At times, non-savings suggestions are made, but generally they are the exception. During 1963 there were 151 suggestions.

Company B: The suggestion system works poorly. Few good cost-reduction suggestions reach the committee, which meets infrequently. Many "suggestions" are more in the nature of grievances.

18. Low Grievances

Company A: Although not unionized, there is a formal channel for airing grievances. Even so, this channel is used on very rare occasions. The personnel manager did not have accurate figures, but estimated that there were only 15 to 20 grievances per year. During 1963 all grievances were handled informally to the satisfaction of both employees and management.

Company B: During 1963, over 140 grievances were filed. The majority of these were withdrawn by the union because management "gave in to demands." These grievances dealt mainly with changing standards and the consequent reshuffling of manpower.

19. The Company as a Psychologically Sound Environment

(As reported by the American Medical Association, the national annual rates for cardiac attacks among management personnel is 2.4 per 1000. The annual incidence of ulcers and other gastrointestinal illness is 20.9 per 1000 among men in general (1964).

- Company A: During the past three years, there was one case of ulcers and one mild cardiac attack. Both employees are working today. The management team numbers some 40 employees.
- Company B: During the past three years, there have been 7 ulcers, two of which were quite serious, and 6 cardiac illnesses, 3 of which were fatal. In addition, there were 7 cases of alcoholism. The management team numbers about 75 at any given time.

APPENDIX B

Industrial Research Committee
Michigan State University
East Lansing, Michigan
September 25, 1963

Dear _____ Employee:

The Industrial Research Committee at Michigan State University has undertaken a special program of research to determine conditions in which people work to achieve an effective organization. _____ has been selected as one of several companies to be studied. You are being asked to fill out a simple questionnaire as one part of this study. We cannot emphasize too strongly how important your cooperation is to assure results of maximum value to your company.

Mr. _____ has extended his assistance and support to our study. In view of the current* situation at _____, Mr. _____ requested that the questionnaire be completed outside of working hours. We are asking that you take this envelope with you this evening so that you can fill out the questionnaire at home. Kindly bring the questionnaire sealed in the envelope with you to work tomorrow morning.

The value of this study depends upon the sincerity and care with which you answer the questions. We are sure you appreciate the fact that there should be no discussion of your answers with other employees before you return the completed form.

The answers that you give will be made available only to the research team of the Industrial Research Committee. No one connected in any way with _____ will see or use any of the individual questionnaires or be able in any way to find out what kind of answer you have given. Your information will be held in the strictest confidence and the results of the study will be tabulated on a group basis only.

We realize that this is somewhat of an imposition, but it is only by such timely studies that valuable insights can be obtained. We sincerely appreciate your cooperation.

Sincerely,

/s/David S. Silkiner
David S. Silkiner, Chairman
Industrial Research Committee

* At Company B the word "critical" was inserted at this point.

INDUSTRIAL RESEARCH COMMITTEE QUESTIONNAIRE

PLEASE COMPLETE THE FOLLOWING INFORMATION:

NAME _____

LENGTH OF TIME WITH COMPANY _____ POSITION _____

DEPARTMENT _____ HOW MANY PEOPLE DO YOU SUPERVISE? _____

GENERAL QUESTIONNAIRE INSTRUCTIONS: This questionnaire is designed to help you tell us what you know about the company quickly and easily. To complete the questionnaire, read each statement and then decide which of 3 answers best fits the statement. The 3 choices or answers are:

TRUE: The statement describes your company accurately.

FALSE: The statement does not describe your company accurately.

DON'T KNOW: You have absolutely no knowledge of whether the statement describes your company.

Read each statement carefully. You will agree with some statements and disagree with others. Some you may be undecided about. If you are undecided, make the best choice you can between TRUE OR FALSE. You are urged not to use the DON'T KNOW answer unless you truly have no information or knowledge about a statement. Work as fast as you can and be sure to mark all statements. Please be sure to complete all 3 parts of the questionnaire.

NOTE: Words in parenthesis refer to Company B terminology.

INSTRUCTIONS FOR PART I: Every company has objectives or goals. This section of the questionnaire is designed to measure your knowledge of the company's objectives. During this part of the questionnaire, please keep in mind that we are talking about goals of the company, not accomplishments of the company. Is it TRUE or FALSE that the company has as its goals those objectives indicated in the statements? An example is given below:

T F DK The company aims to participate in the community blood drive.

If you considered this statement TRUE, simply circle T. If FALSE, circle F. If you have absolutely no knowledge about the subject, circle DK or DON'T KNOW. You are urged to use the TRUE and FALSE answers whenever possible. WORK AS FAST AS YOU CAN. BE SURE TO MARK ALL STATEMENTS. REMEMBER WE ARE ASKING ABOUT OBJECTIVES OR GOALS OF THE COMPANY.

1. T F DK This company aims to have time studies in calculating all wage allowances.
2. T F DK This company aims to plan profit monthly in advance rather than determine profit monthly after the fact.
3. T F DK One of the goals of this company is to grant automatic wage increases.
4. T F DK One objective of this company is to have all people in the factory act as inspectors.
5. T F DK In its sales program this company aims to meet the customer's schedule.
6. T F DK This company aims to increase production efficiency so as to reduce the size of the work force.
7. T F DK This company aims to reduce negative variance in its monthly performance.
8. T F DK This company intends to increase sales and assure growth by concentrating on its present distribution channels.
9. T F DK This company aims to use universities and private research firms to work on the technical problems of its new products whenever possible.

10. T F DK The purpose of this company's "profit planning" ("budget conditions") is to provide for different proportions of profit at different levels of sales volume.
11. T F DK One of the goals of hourly and salaried employees is to work out engineering problems on the production line.
12. T F DK This company does not pride itself on maintaining a safe and clean plant.
13. T F DK By adding "new blood" from the outside whenever possible, this company is aiming to build and strengthen its management team.
14. T F DK This company is aiming to have a few specialized products to make the company more competitive.
15. T F DK One of the goals of this company is to maintain accurate job evaluations.
16. T F DK One of the goals of the time study engineer is to provide data for the balanced allocation of workers to the production departments.
17. T F DK One of the goals of this company is to boost its public exposure by advertising its products in a number of popular national magazines.
18. T F DK This company aims to have steady production.
19. T F DK One of the goals of this company is to obtain for its stockholders a fair return on their investments.
20. T F DK This company aims to broaden its product line.
21. T F DK In terms of dollars to be saved, this company has a definite goal for the reduction of production costs.
22. T F DK One of the major goals of this company is to reduce the raw material turnover rate.
23. T F DK This company aims to eliminate from its payroll employees who receive low merit ratings.
24. T F DK One of the aims of this company is to base its plant and overall expansion primarily on internal generation of capital from earnings.

- 25. T F DK This company aims to have its sales force to help customers better control their inventory.
- 26. T F DK This company aims to develop new products of acceptable quality at low cost, with less emphasis put on long-range durability.
- 27. T F DK This company is willing to develop new products at a loss in order to keep its customers interested.
- 28. T F DK This company aims to maintain a profitable operation and therefore holds its division heads responsible for contributing to profit.
- 29. T F DK Looking toward the future, this company intends to follow the lead of its competitors and appeal to the same segments of the market for its sales.
- 30. T F DK To assist in scheduling, this company aims to establish machinery maintenance standards.
- 31. T F DK One goal of the engineering division is to meet the demands of the marketing division for new products.
- 32. T F DK This company aims to have salesmen capable of handling its entire product line.
- 33. T F DK One objective of the engineering division is to build in critical test points in manufacturing to facilitate inspection.
- 34. T F DK In its sales program, this company aims to appeal to a limited specialized market for the sale of its products.
- 35. T F DK The engineering division aims to assist the customer in his engineering work whenever requested.
- 36. T F DK This company is not concerned with having everyone in the company be a company man.
- 37. T F DK One of the objectives of this company is to have employees' wages increase at the same rate as the company's rate of growth.
- 38. T F DK This company aims to maintain a supervisory force that gets out production at all costs.
- 39. T F DK One objective of the purchasing department is to determine whether it is more profitable for this company to manufacture a part itself or to purchase it from a vendor.

- 40. T F DK Production rates and standards should be right to provide the workers with an incentive.
- 41. T F DK This company is not concerned with providing steady employment.
- 42. T F DK Although prices have been reduced and wages have increased, the company aims to remain profitable through increased efficiency.
- 43. T F DK One of the goals of this company is to grant automatic wage increases.
- 44. T F DK This company aims to reward the outstanding employee.
- 45. T F DK This company aims to keep overtime to a minimum.
- 46. T F DK In order to insure that customers are satisfied, this company intends to stand behind its products.
- 47. T F DK This company aims to keep its objectives prominent in everyone's mind at all times.
- 48. T F DK One goal of this company is to have its salesmen think in terms of profit to be made on sales rather than volume.
- 49. T F DK This company intends to aim for leadership by superiority of its products rather than by the size of its markets.
- 50. T F DK This company believes that the most important means of satisfying its employees is by paying high wages.
- 51. T F DK This company aims to reduce negative variance in its monthly performance.
- 52. T F DK This company aims to broaden its product line.
- 53. T F DK This company does not pride itself on maintaining a safe and clean plant.

PART II

INSTRUCTIONS FOR PART II: Your company also has methods or programs for reaching its goals. This section of the questionnaire is designed to measure your knowledge of the company's methods of attaining its goals. During this part of the test, please keep in mind we are talking about ways and means of doing things, not the end results or what goals were attained. Is it TRUE or FALSE that the company tries to do things indicated in the statements? An example is given below:

T F DK As a policy, employees may have time off to donate blood.

If you considered this statement TRUE, simply circle T. If FALSE, circle F. If you have absolutely no knowledge about the subject, circle DK or DON'T KNOW. You are urged to use the TRUE and FALSE answers whenever possible. WORK AS FAST AS YOU CAN. BE SURE TO MARK ALL STATEMENTS. REMEMBER WE ARE ASKING ABOUT WAYS OF DOING THINGS, WAYS OF OPERATING THE COMPANY.

1. T F DK This company offers a product warranty backed by a nationwide service organization.
2. T F DK A clean and safe working place is considered unimportant for production.
3. T F DK The Security Plan (Participation Plan) provides for frequent changes in the labor allowance.
4. T F DK The Security Plan (Participation Plan) is a method to implement teamwork between management and workers.
5. T F DK The Security Plan (Participation Plan) provides special allowances for overtime wages in the labor bill.
6. T F DK The company has no testing program to measure skills of the employees to help them become more proficient.
7. T F DK The employees' committee (union committee) meets to make suggestions for production.
8. T F DK An aid to future development, this company maintains an active market research program.
9. T F DK The company believes that at times it is justified to make sales below costs.
10. T F DK This company uses guidance and counseling to help employees attain personal career objectives.

11. T F DK The sales department has worked out a method with some customers whereby "seconds" or products of marginal quality are shipped, subject to customer satisfaction, at a reduced price.
12. T F DK The company has a program for better forecasting of sales that helps customers control their inventory.
13. T F DK Training programs are not used to enable the company to hire new workers without a loss of efficiency in production.
14. T F DK It is seldom necessary to experiment on the production line with new or old products.
15. T F DK Accurate scheduling, planned set-ups, efficient material control and handling assures efficient and even production.
16. T F DK Defective merchandise is not produced, even to attain production requirements.
17. T F DK The product line shows the results of diversification so that the company is not dependent upon any one customer.
18. T F DK Broadening of the product line into areas in direct competition with large firms in the industry creates more profit.
19. T F DK The bonus is based only on payroll savings.
20. T F DK The engineering department maintains a system of planning to enable better prediction of development times.
21. T F DK The company maintains a sound competitive position by accurate pricing and cost control.
22. T F DK A man who is successful in an operating or productive position is qualified for promotion to a supervisory position.
23. T F DK If the budgeted labor bill is \$15,000.00 and the actual labor bill is \$13,000.00, then a bonus of \$2,000.00 is available for immediate distribution.
24. T F DK As soon as it becomes apparent that development projects are not economically feasible, they are to be dropped.

- 25. T F DK If a new product has problems when put into production that cause workers to lose bonus, then the company assumes responsibility and makes special allowances.
- 26. T F DK The engineering department devotes considerable time to basic research.
- 27. T F DK Typically, complete facts are used to implement budgeting and pricing.
- 28. T F DK Engineering designs products so that manufacturing can produce them efficiently.
- 29. T F DK The Production Committee can put suggestions into effect, but must gain approval of a member of the Screening Committee.
- 30. T F DK To provide necessary information to the appropriate departments, time study rates are correctly and currently maintained.
- 31. T F DK Seniority has its benefits through the method of bumping during layoffs, if the person has had past experience on the job.
- 32. T F DK At times to meet production standards, it is advantageous to produce seconds.
- 33. T F DK Supervisors are encouraged to spend time in self-analysis to analyze why he does certain things, enabling him to improve his department.
- 34. T F DK Engineering specifications and production methods are planned in advance, thus eliminating the need for frequent changes.
- 35. T F DK For prompt shipment of finished goods to customers, accurate sales forecasting of product mix is maintained.
- 36. T F DK Bidding and bumping are methods of insuring that each man has the job he likes and is most able to do.
- 37. T F DK Decisions for products and marketing are based primarily on the amount of volume that can be attained.
- 38. T F DK The company does not encourage participation by the workers.

- 39. T F DK The company works closely with customers to service their needs.
- 40. T F DK Following company policy, the engineering department introduces new products as quickly as possible, and lets quality work itself out on the production line.
- 41. T F DK The company has a program of matching funds for certain contributions or charities.
- 42. T F DK The company maintains two sets of budgets to control for pricing and production.
- 43. T F DK Plant production schedules are controlled by sales.
- 44. T F DK The engineering department does not maintain studies of process and methods engineering.
- 45. T F DK If an operation is not running correctly, the worker should stop the operation until it is fixed.
- 46. T F DK A big factor in the increased business with large customers is the accurate forecasting of sales and consequent inventory control program.
- 47. T F DK The company takes a cut in sales price at times if necessary to keep the business, relying on the ingenuity and know-how of the employees to find a way to improve efficiency.
- 48. T F DK A safety committee makes regular inspections of the plant for hazards.
- 49. T F DK It is not necessary for engineering specifications and production methods to be planned in advance because frequent changes are required to maintain quality.
- 50. T F DK The purchasing department works closely with suppliers to enable the company to carry a reduced inventory of raw materials.
- 51. T F DK The bonus is based only on payroll savings.
- 52. T F DK The company works closely with customers to service their needs.
- 53. T F DK The company believes that, at times, it is justified to make sales below costs.

PART III

INSTRUCTIONS FOR PART III: Your company also has performance information which tells whether or not goals have been reached. This section of the questionnaire is designed to measure your knowledge of the performance of the company. During this part of the questionnaire, please keep in mind that we are talking about WHAT ACTUALLY HAPPENED. Is it TRUE or FALSE that the company accomplished certain things? An example is given below:

T F DK There was 100% contribution by employees to the blood drive.

If you considered this statement TRUE, simply circle T. If FALSE, circle F. If you have absolutely no knowledge about this subject, circle DK or DON'T KNOW. Again, you are urged to use the TRUE and FALSE answers whenever possible. WORK AS FAST AS YOU CAN. BE SURE TO MARK ALL STATEMENTS. REMEMBER, WE ARE ASKING ABOUT WHAT ACTUALLY HAPPENED, WHAT GOALS WERE OR WERE NOT ATTAINED.

1. T F DK The company does not compete successfully with other firms in the industry.
2. T F DK The company maintains its wages so that bonus earnings are not substituted for wages.
3. T F DK Quality and costs have been sacrificed to meet production schedules.
4. T F DK Financial soundness made possible capital expansion in buildings and equipment.
5. T F DK The company, due to diversification, does not depend upon any large customers.
6. T F DK The engineering department has not assumed responsibility for quality.
7. T F DK The company builds inventory to maintain even and efficient production.
8. T F DK The marketing division does not work with customers to provide assistance in inventory control.
9. T F DK It is frequently necessary to introduce engineering changes for products already on the production line.
10. T F DK Sales volume for this year showed a decrease over the previous year.

11. T F DK Budgets and profit planning control costs.
12. T F DK Earning a bonus assures every employee that he has done his job.
13. T F DK Marketing has developed the sales of specialty items to broaden the market penetration of the company.
14. T F DK Seniority is used as the primary basis for allocating job openings.
15. T F DK Every time that bonus is paid, the company makes money.
16. T F DK When defective merchandise or rejects are coming off the production line, production is stopped and the situation corrected.
17. T F DK Engineering product-planning decides what new products are to be made.
18. T F DK Variance is a critical problem to the company as standards are not usually maintained.
19. T F DK Material and labor standards have failed to maintain minimum variance.
20. T F DK The engineering department has a reputation as a leader in technological developments.
21. T F DK The average bonus last year was 4.91%.
22. T F DK Past performance is used as a criterion for transfer to a different job.
23. T F DK New products consistently go into production behind schedule.
24. T F DK The marketing division has concentrated on increasing profitability in its sales efforts.
25. T F DK The employees' committee prefers to have production scheduled without relying on overtime.
26. T F DK The only place where employees of this company learn of monthly production and sales is in the Security Plan (Participation Plan) statements.
27. T F DK The Security Plan (Participation Plan) lets a man use his knowledge on the job.

- 28. T F DK The Security Plan (Participation Plan) functions to get the entire organization operating together as a team.
- 29. T F DK Production committee meetings are held weekly.
- 30. T F DK Management does not use employee suggestions or recognize complaints.
- 31. T F DK The Security Plan (Participation Plan) functions to make every individual in the firm a participant and a decision maker.
- 32. T F DK The company's competitive position makes possible the continued job security of its employees.
- 33. T F DK Sales reports from customers on complaints are reliable and helpful.
- 34. T F DK Reports from management are regular, and in general, employees throughout the firm know what the "score" is.
- 35. T F DK The company recognizes employees for a job well done and for a good suggestion.
- 36. T F DK Employees' committee minutes give an accurate report of the discussions of the meetings.
- 37. T F DK The company pays wages and fringe benefits that are lower than the average wage in the industry.
- 38. T F DK Memoranda to employees from the Personnel Office are sometimes incomplete and inaccurate.
- 39. T F DK Responsibility and authority for making decisions do not exist at the proper level.
- 40. T F DK The engineering division makes frequent reports on the progress of new product developments.
- 41. T F DK Most of the information coming from the Engineering Office does not agree with information from the Finance Department.
- 42. T F DK The president of the company is involved in only the policy level decisions.
- 43. T F DK Employees express their ideas before the entire department.

- 44. T F DK To insure accurate information is communicated, employees receive a copy of the monthly financial statement.
- 45. T F DK Most of the information coming from the Manufacturing Department does not agree with information from the Sales Office.
- 46. T F DK The higher levels of management get involved in most all decisions.
- 47. T F DK Often employees are not told of the company plans.
- 48. T F DK Division heads meet frequently with their entire staffs to explain company plans and policies.
- 49. T F DK The management team initiates and puts into effect policies for the planning of production.
- 50. T F DK Management as a team plots the course of the Company's future.
- 51. T F DK A bonus was not earned every month this past year.
- 52. T F DK Most of the information coming from the Sales Office does not agree with information from Cost Accounting.
- 53. T F DK Most of the information coming from the Accounting Office does not agree with information from Engineering.
- 54. T F DK Merit wage increases are automatic.
- 55. T F DK The company uses a program of testing and training to fit the man to the job.
- 56. T F DK Reports from the Engineering Office are usually incomplete and too late.
- 57. T F DK Hardly anyone in this company is well-informed about company policies and plans.
- 58. T F DK Sales forecasts may generally be relied on for accurate planning.
- 59. T F DK Few of the employees in any department call each other by their first names.
- 60. T F DK There are small groups of close friends within departments.

61. T F DK The monthly bonus calculations are incorrect and may not be relied on.
62. T F DK Most of the information coming from the Personnel Office does not agree with information from the Production Department.
63. T F DK This company's budgets are firm and realistic.
64. T F DK Sometimes it is the unofficial sources that have the most accurate information.
66. T F DK Bonus earnings provide an opportunity for the employees to share in the profits of the company.
67. T F DK If an employee is not sure of a company policy, there is a record where he can find the information.
68. T F DK This company's wage and salary system is fair and equitable.
69. T F DK Production Committee minutes give an accurate report of the discussions of the meetings.
70. T F DK The company does not have a program to help employees attain personal career objectives.
71. T F DK The department heads meet as a group with the president to chart the course of the company.
72. T F DK Engineering specifications for production and inspection are often unreliable.
73. T F DK Everyone in the company is free to make a suggestion.
74. T F DK Production forecast reports are generally accurate.
75. T F DK Accurate labor standards are used to maintain competitive costs.
76. T F DK Budgets and profit planning control costs.
77. T F DK The average bonus last year was 4.91%.
78. T F DK Management does not use employee suggestions or recognize complaints.
79. T F DK Merit wage increases are automatic.

Thank you for your cooperation.

APPENDIX C

Performance Sub-scales

Equity

The company's competitive position makes possible the continued job security of its employees.

The company recognizes employees for a job well done and for a good suggestion.

The company pays wages and fringe benefits that are lower than the average wage in the industry.

A bonus was not earned every month this past year.

Merit wage increases are automatic.

The company uses a program of testing and training to fit the man to the job.

Bonus earnings provide an opportunity for the employees to share in the profits of the company.

This company's wage and salary system is fair and equitable.

The company does not have a program to help employees attain personal career objectives.

Accurate labor standards are used to maintain competitive costs.

Participation-Cohesion

The Participation Plan functions to get the entire organization operating together as a team.

The Participation Plan lets a man use his knowledge on the job.

Production committee meetings are held weekly.

The Participation Plan functions to make every individual in the firm a participant and a decision maker.

Responsibility and authority for making decisions do not exist at the proper level.

The president of the company is involved in only the policy level decisions.

Participation-Cohesion continued

Employees express their ideas before the entire department.

The higher levels of management get involved in most all decisions.

The management team initiates and puts into effect policies for the planning of production.

Management as a team plots the course of the company's future.

Few of the employees in any department call each other by their first names.

There are small groups of close friends within departments.

Department heads do not hold regular staff meetings.

The department heads meet as a group with the president to chart the course of the company.

Everyone in the company is free to make a suggestion.

Realism

Sales reports from customers on complaints are reliable and helpful.

Union committee minutes give an accurate report of the discussions of the meetings.

Memoranda to employees from the personnel office are sometimes incomplete and inaccurate.

Most of the information coming from the engineering office does not agree with information from the finance department.

Most of the information coming from the manufacturing department does not agree with information from the sales office.

Most of the information coming from the sales office does not agree with information from cost accounting.

Most of the information coming from the accounting office does not agree with information from engineering.

Reports from the engineering office are usually incomplete and too late.

Sales forecasts may generally be relied on for accurate planning.

Realism continued

The monthly bonus calculations are incorrect and may not be relied on.

Most of the information coming from the personnel office does not agree with information from the production department.

This company's budgets are firm and realistic.

Production committee minutes give an accurate report of the discussions of the meetings.

Engineering specifications for production and inspection are often unreliable.

Production forecasts reports are generally accurate.

Adequacy

The only place where employees of this company learn of monthly production and sales is in the Participation Plan statements.

Management does not use employee suggestions or recognize complaints.

Reports from management are regular, and, in general, employees throughout the firm know what the "score" is.

The engineering division makes frequent reports on the progress of new product developments.

To insure accurate information is communicated, employees receive a copy of the monthly financial statement.

Often employees are not told of the company plans.

Division heads meet frequently with their staffs to explain company plans and policies.

Hardly anyone in this company is well informed about company policies and plans.

Sometimes it is the unofficial sources that have the more accurate information.

If an employee is not sure of a company policy, there is a record where he can find the information.

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