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An Exploration of Employee Participation Using a Scaling Approach

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Organizations considering having their employees participate in workplace decision making are faced with significant decisions about the nature and extent of activities in such programs. In general, the managerial literature provides mixed reviews on the success of these types of programs. The present study examines, by means of Rasch model analysis, the experiences of a large sample of organizations undertaking a variety of participation-related activities. The results suggest that there is an underlying relationship among differing employee participation activities, and, consequently, attention must be given to the processes used to choose and implement those activities.

Today's business environment is notable because companies are doing more with less: Revenues are increasing as sizes of organizations are decreasing. Leading companies are developing organizations that are improving quality and creating greater value while reducing cycle time. One of the key elements of these corporate transformations has been the manner in which the people who work in the organizations are utilized. *Industry Week*, for example, notes in its listing of best plants, "Perhaps the most common characteristics of Best Plants winners and finalists is their emphasis on tapping employee brainpower in a team environment" (Sheridan, 1996, p. 17).

The value of having employees participate in implementing projects and programs has been emphasized in settings such as information systems (Jarvenpaa & Ives, 1991), manufacturing (Baker, McKay, Morden, Dunning, & Schuster, 1997; Safizadeh, 1991), total quality (Blest, Hunt, & Shadle, 1992), and small groups (Carroll, 1997), as well as internationally (Cahuc & Kramarz, 1997). Although organizations have attempted to use a wide range of employee skills and abilities, the practice and definition of employee participation varies widely.

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The emphasis on having employees participate more significantly in organizational activities beyond the traditional scope of their jobs is not, however, a new phenomenon. Historically, within the general management literature, there are three apparently distinct conceptualizations of participation. These are most commonly referred to as participative management, employee involvement, and employee empowerment. Early views typically described participation as parties influencing each other in making certain plans, policies, and decisions (French, Israel, & As, 1960), or as joint planning (Miles & Ritchie, 1971). More recent descriptions of participation also include the meaning of work, competence to perform activities, self-determination in work behaviors, and the impact or influence of participation on outcomes of work (Spreitzer, 1995, 1996; Thomas & Velthouse, 1990). Examination of this stream of research from the three perspectives on participation reveals little agreement as to the common elements of the participation process or the efficacy of participation itself.

As a result, conceptual confusion has resulted when interpreting the outcomes of organizational participation programs. Furthermore, it is often unclear whether or how particular programs in an organization relate to one another. This study addresses the following research question: Are the various views of workplace participation separate and distinct, or is there some common underlying dimension to the concept of participation? In addition, this article addresses some methodological issues that have hindered interpretation of previous results in this area.

THEORETICAL BACKGROUND

PARTICIPATIVE MANAGEMENT

Starting with the classic study of Coch and French (1948), the stream of research on employee participation within the workplace has fairly consistently reported beneficial outcomes. These outcomes seem to have been confirmed over time and in a variety of settings. Positive findings have been reported, for example, for groups of various sizes (French, Kay, & Meyer, 1966; Pennington, Haravey, & Bass, 1958), service organizations (Lawler & Hackman, 1969; Neider, 1980; Nutt, 1986, 1987), and manufacturing organizations (Frohman, 1984; Robinson, Oswald, Swinehart, & Thomas, 1991).

Participative management, sometimes referred to as participative decision making, is concerned with shared decision making in the work environment (Mitchell, 1973). Job enrichment or redesign, suggestion systems, and survey feedback are examples of activities that tend to be associated with

traditional types of participative management programs. The first comprehensive review of research on participative management was undertaken by Locke and Schweiger (1979), who examined more than 50 studies representing a variety of types of participative management. Their conclusions, in stark contrast to prevailing sentiment, suggested that participation did not relate to productivity, but that it did increase individual satisfaction, although not uniformly across the studies.

With the advent of more advanced analytic techniques, specifically meta-analysis, the body of knowledge relating to participative management was scrutinized in greater detail. Miller and Monge (1986), although providing some support for Locke and Schweiger (1979), concluded that both productivity and satisfaction were influenced by participative management. Less than 1 year later, however, Wagner and Gooding's (1987) meta-analysis revealed that the positive findings in many earlier studies were a function of measurement rather than the existence of an actual relationship.

In an attempt to resolve the divergent views on the efficacy of participative management, Cotton, Vollrath, Froggatt, Lengnick-Hall, and Jennings (1988) found that many of the differences in findings among studies could be resolved by observing that the effectiveness of participation was largely a function of the particular technique employed. Leana, Locke, and Schweiger (1990), however, rejected the conclusions of Cotton et al., noting that generalization was not possible due to the methodological problems within their study. Thus, over several decades, individual studies and literature reviews have provided contradictory information and little comfort to the manager in selecting when to use participative management or in determining whether there is any use in doing so.

EMPLOYEE INVOLVEMENT

Using a somewhat different perspective, Lawler (1986) addressed several major issues contributing to the confusion surrounding the concept of participative management. First, he observed that little could be said about *participative management* as an identifying term because so many different techniques have been classified under this rubric. As a consequence, the literature reviews that grouped the various techniques together were making the implicit assumption that all of the techniques were essentially equivalent. Second, the level of the organization was generally ignored. Departments, plants, divisions, and whole companies have been treated as similar for the purposes of analysis. Third, and perhaps most significantly, Lawler shifted the perspective of participation from what to how. Most of the empirical studies on participation focus on what techniques provide what results. By

introducing the concept of employee involvement, however, Lawler changed the view of participation from the traditional programmatic approach (what) to a process-oriented perspective (how).

Employee involvement, as conceptualized by Lawler, consists of four critical factors which were identified as *information sharing* (degree of downward and upward flow of information), *training* (expertise and knowledge of specific operations and the organization in general), *decision making* (types of decisions and the areas in which decisions are made), and *rewards* (types of rewards and compensation used within the organization). Thus, company programs that emphasize information sharing or training activities would tend to be associated with employee involvement. Furthermore, Lawler (1988) stated that there are distinct degrees or levels of employee involvement. Each level of employee involvement is distinguished by progressively increasing levels of the previously discussed critical factors throughout the organization. Viewing employee participation from an employee involvement perspective focuses attention on the role of the underlying factors in the overall employee participation process.

EMPLOYEE EMPOWERMENT

The most recent perspective on participation broadens earlier lines of inquiry and describes employee participation in terms of employee empowerment. Although there is no common definition, Conger and Kanungo (1988) suggested that employee empowerment can be characterized as “a sense of personal mastery or ‘can do’ attitude” (p. 476). Ford and Fottler (1992) commented further,

It is the issue of power that differentiates empowerment from earlier approaches to employee participation that tended to emphasize employee input but made no real change in the assignment of power and authority. . . . Empowerment enables individuals or teams to make responsible decisions about the jobs they do. (p. 22)

After examining a variety of research findings on participation, Thomas and Velthouse (1990) proposed an overall framework to conceptualize employee empowerment. Their model defined a multifaceted process consisting of environmental events (data on task behaviors), task assessments (impact, competence, meaningfulness, and choice), and behaviors. These primary factors are influenced by global assessments (generalized beliefs about task assessments), the individual interpretive process (attributing, evaluating, and envisioning), and empowering managerial interventions (changes in empowerment by changing environmental events). Techniques such as

self-managed work teams and minienterprise units tend to be associated with employee empowerment.

Focusing on employee empowerment from the psychological and social structural perspectives, Spreitzer (1995, 1996) provided empirical support for a multidimensional perspective on employee empowerment. Specifically, Spreitzer (1995) noted that empowerment is (a) an active orientation "in which the individual wishes to and feels able to shape his or her work role and context," (b) "a set of cognitions shaped by the work environment," and (c) "a continuous variable" (p. 1444). In addition, Spreitzer (1996) provided links to earlier management literature by extending the application of job enrichment (Hackman & Oldham, 1981) and by noting the impact of involvement variables (information and training and development) on her findings. Overall, employee empowerment research attempts to show linkages to, and to expand on, the earlier viewpoints of participative management and employee involvement.

HYPOTHESES

When viewed as a whole, the body of managerial literature on participation can only be described as consisting of diverse and multiple perspectives with sometimes inconsistent and contradictory findings. One apparently common thread flowing through all of the viewpoints (Dachler & Wilpert 1978; Lawler, 1986; Spreitzer, 1995; Thomas & Velthouse, 1990), however, is that a basic property of employee participation is that it is a process.

If we assume rational managerial and organizational behavior in using participation, a traditional presumption from both economic (Caves, 1980; Schoemaker, 1990; Williamson, 1981) and behavioral (Cyert & March, 1963; Cyert, Simon, & Trow, 1956; March & Simon, 1958; Morgan, 1986) perspectives, it would be expected that companies would undertake or continue actions that they are able to accomplish. Similarly, companies that select wrong or unsuccessful actions would modify or abandon those behaviors. That is, one would expect an organization's managerial strategies to modify the interventions that it uses to create participation to rationally reach its expected goals. Thus, at any given time, it is likely that those programs in existence are those that further organizational objectives. This being the case, an investigation of a group of organizations' existing employee participation programs can yield insights into the relationship among those specific programs.

In the present study, we will examine how the various participation techniques interrelate within the business environment. Given the previous discussion, the following hypotheses were developed:

Hypothesis 1: Although participation techniques associated with participative management, employee involvement, and employee empowerment approaches appear to represent differing views of participation, they share a single, common line of inquiry. That is, all of the various approaches to participation are related and share a common underlying dimension that represents different aspects of a more general process that can be referred to as employee participation.

Hypothesis 2: Organizations and techniques related to the various employee participation approaches can be conjointly ordered. That is, organizations can be distinguished based on the degree to which they use employee participation techniques, and employee participation techniques can be distinguished by the extent to which organizations have adopted them.

In addition, as part of the present analysis of employee participation, two basic methodological issues, generally not well defined in the existing literature, will also be addressed. First, the extent of application from an overall organizational perspective (number of people involved) will be addressed (Lawler, 1986). One criticism has been that studies have utilized many different units of measure: teams, departments, plants, and even whole companies. In the present study, organizational level is held constant—the U.S. corporate entity—with the level of participation being identified within each company. That is, the degree of employee participation is utilized as part of the analysis. Second, the issue of the impact of multiple programs (Cotton et al., 1988) will be taken into account. Another criticism has been that studies have poorly defined how many participation programs were occurring contemporaneously. In the present study, we will address all programs and levels of participation within each program within each organization.

DATA

The data used in this study were collected as part of a larger study on private sector organizational employee participation efforts. The data were obtained from a survey of the CEOs of the 1,000 largest manufacturing and service companies (Dodaro, 1988). The respondents were assured of complete confidentiality. The questionnaires were distributed by and returned directly to the U.S. General Accounting Office. The purpose of the survey was to obtain information on the factors used in the design, implementation, and operation of employee participation programs and activities in American

corporations. For the purpose of the survey, participation was defined as the "process that provides employees with the opportunity to make decisions affecting their work and work environment" (U.S. Government Accounting Office, n.d., p. 1).

In this study, the employee participation variables listed in Table 1 were examined. Each responding organization provided information on the extent of individual participation for each of the variables. Specifically, the category intervals indicating the percentage of individuals within the company participating in each of the employee participation activities was reported. Although some of the techniques for gaining participation listed in Table 1 are often associated with each of the three previously discussed historical perspectives, it should be noted that there is no clear or exclusive categorization used by researchers in the field.

The CEOs or their identified representatives within the companies provided a total of 326 usable responses (a 32.6% response rate). No statistically significant difference was observed between responding and nonresponding companies based on the sizes (number of employees and sales) of the organizations.

METHOD OF ANALYSIS

Whereas traditional studies have evaluated the strength of relationships in the application of employee participation techniques, psychometric measurement provides an alternative method for data analysis. Specifically, item response theory (IRT), sometimes referred to as latent trait theory, can also be used to describe basic relationships defining employee participation.

In general, two key characteristics of IRT models make this method of analysis particularly useful: (a) Individuals can be compared even when the individuals have not undertaken the same items, and (2) The parameters for a large number of items can be estimated even when not every individual has undertaken each item.

As IRT techniques have been traditionally used, the specific goal of the models has focused on describing the latent trait that governs how a person will respond to items on a test or survey based on that individual's knowledge or experience. Using the assumption of rational behavior discussed previously, the companies in this study can be viewed in much the same fashion as the test takers in traditional IRT applications. That is, organizational actions can be considered to be reflective of differing levels of experience or expertise. Hence, the data represent a variety of successful and unsuccessful organizational experiences, each representing a particular level of development

TABLE 1
Study Variables: Types of Employee Participation

<i>Name of Variable</i>
Advance information on new technologies
All-salaried pay systems ^a
Business plans/goals
Career counseling
Company's overall operating results
Competitors' relative performance
Cross-training
Employee stock ownership ^a
Employee input into hiring
Employee participation groups other than quality circles
Employee pay information ^a
Employment security ^a
Flexible, cafeteria-style benefits ^a
Flexitime
Functional business skills training (accounting, finance, etc.)
Gainsharing
Group decision making skills training ^a
Individual incentives
Job enrichment or redesign
Knowledge-skill-based pay
Leadership skills training
Merit pay ^a
Minienterprise units
Multiple career tracks
Profit sharing ^a
Quality circles
Quality/statistical analysis skills training
Realistic job preview
Self-managing work teams
Suggestion system
Survey feedback
Team-building skills training ^a
Union-management quality of work life committees
Unit's overall operating results

a. Variables not included in the final model.

and understanding of employee participation with respect to the organizations' specific operating environments. Consequently, it is expected that an organization, like an individual, can be described by characteristics defining its behavior.

In this article, we will focus the analysis on only one IRT model, the Rasch model, which is distinguished from other IRT models by one central feature:

its fundamental statistical character (Andersen, 1973; Fischer, 1973; Rasch, 1960/1980; Wright, 1977). The distinguishing statistical characteristic of the Rasch model is that person and item parameters are algebraically separable and give rise to sufficient statistics (Andersen, 1977; Masters & Wright, 1984; Rasch, 1972). In addition, the Rasch model has been one of the most widely accessible and well articulated of the item response models (Rasch, 1960/1980; Wright & Masters, 1982; Wright & Stone, 1979).

THE RASCH MODEL

The Rasch model tests a specific way in which two different entities interact. In this particular instance, we will look at how organizations can be represented by their use of employee participation techniques. Specifically, we are going to determine how well organizations can be positioned on a single scale based on their use of specific employee participation techniques.

The fundamental idea of the Rasch model in the present study is that a participation activity (δ) and a company's use of a participation activity (β) can be located on the same underlying latent variable. The two preceding parameters are referred to as the difficulty and ability components in the traditional measurement literature, where the Rasch model has been most widely applied. Just as items on a traditional test come in a variety of difficulties, so do the activities described as employee participation. Specifically, the Rasch difficulty parameter (δ) is used to locate these participation activities along a continuum of degree of employee participation. Similarly, the Rasch ability parameter (β) conjointly locates a company (based on its use of participation activities) along the same underlying continuum.

Hence, the probability of any particular company endorsing any particular practice, within stochastic certainty, is estimable. If a company with a high degree of employee participation encounters a technique that is positioned at a lower level on the scale, $(\beta - \delta) > 0$, then it would be expected that the company would have a high probability of using that technique ($p > .5$). Similarly, if a company with a low degree of employee participation encounters a technique that is positioned at a higher level on the scale, one would expect that the probability of endorsing or utilizing that activity would be small ($p < .5$).

Let p represent the probability of endorsing an item (utilizing a particular participatory activity). Then $1 - p$ would represent the probability of not endorsing the item (not using a particular participatory activity). One formulation that is often used for expressing such probability data is the odds ratio: the ratio of endorsements to nonendorsements, that is, $p / (1 - p)$. It would be convenient to express the odds as some function of the differences between a

respondent's judgment and the item's position. To make the odds a little more manageable, the natural logarithm of the odds, a logit, can be set equal to the difference between an item's position and a respondent's judgment, as expressed in Equation 1.

$$\log [p / (1 - p)] = \beta - \delta \quad (1)$$

By raising both sides to a power of the natural constant e , the odds are expressed as a very simple function of $\beta - \delta$, as shown in Equation 2.

$$p / (1 - p) = \exp (\beta - \delta) \quad (2)$$

Additional algebraic simplification provides the relationship shown in Equation 3, which also expresses the probability of endorsing an item as a simple function. Equation 3 also depicts the most common form of the Rasch model.

$$p = \exp (\beta - \delta) / [1 + \exp (\beta - \delta)] \quad (3)$$

SEPARABILITY THEOREM

Rasch has shown further that Equation 3 is the only logistic model that leads to algebraically independent estimates for β and δ (Rasch, 1960/1980; Wright & Masters, 1982; Wright & Stone, 1979). The proof of this separability of parameter estimates gives rise to two important aspects of the model: invariance and simple sufficient statistics.

First, item calibrations are invariant across individuals, and individual measurements are invariant across items. When the Rasch model fits the data, it doesn't matter what sample of individuals was used for the model calibration, and it doesn't matter which subset of items is used to make a measure. When bias is present, either the items will not fit or the persons being measured will not fit. Thus, as long as the model continues to fit the data, significant bias is not present, and the results derived from the Rasch model can be used to readily describe groups that were not part of the original development process.

Second, a simple count of employee participation item endorsements for a company contains all the information necessary to estimate the level of employee participation of a company (β); similarly, a count of companies that use a particular technique is all that is necessary to estimate technique difficulty (δ). That is, these counts are sufficient statistics for estimation of both β and δ . As a consequence, residuals are independent and may be used to test the validity of each parameter of the model (Rasch, 1960/1980; Wright &

Masters, 1982; Wright & Stone, 1979). Thus, the practical significance of the Rasch model is that it provides solutions that are estimable and testable on the same set of data.

RESULTS

ESTIMATION

Item responses were gathered on either a 5-point scale or a 7-point scale. The anchors for the 7-point scale items were *none* (0%), *almost none* (1%-20%), *some* (21%-40%), *about half* (41%-60%), *most* (61%-80%), *almost all* (81%-99%), and *all* (100%). The 5-point anchors were identical except that the end anchors were collapsed to *none or almost none* (0%-20%) and *all or almost all* (81%-100%).

To simplify the data analysis, each item was dichotomized in a consistent manner where *none* or *almost none* responses were considered nonparticipatory involvement or represented only limited or pilot efforts represented by that item (scored as 0). Companies with *some* or more employee representation in any participation effort were deemed to reflect actions that involved a larger scale implementation rather than individual or isolated initiatives. Item responses of *some* or more use of that item represented a modest or greater commitment to that practice and were scored as 1. An examination of the response pattern of companies showed that the *none* and *almost none* categories captured about half of the companies on many items, and that collapsing the categories of *some* or more than some captured the other half of companies on most items. When examining the response distributions for these recoded items, we found that the median item nonendorsement proportion was .55.

Rasch model parameters were estimated for each organization and each participatory technique (Wright & Linacre, 1992). Thirty-four initial items describing various forms of employee participation were selected to define the latent variable of employee participation. Twenty-five items ultimately were retained to describe the construct. Nine items were found not to fit the Rasch model and were removed from the analysis. It should be noted that although these nine items did not define the construct of employee participation per se, they assisted in discriminating its boundaries.

The overall adequacy of the model can be described by how well it can separate items and how well those items separate or differentiate among companies. The separation efficiency can be expressed as a reliability index that ranges from 0 to 1 (Wright & Stone, 1988). The reliability with which the

final group of participatory practices (items) was able to separate companies (respondents) was 0.83. The focus of this study, however, was not to measure organizations but to study the characteristics of the items that define employee participation. In the Rasch model, not only are items used to separate companies, but companies can be used to separate items. From this view, the reliability of item separation is 0.99. From either viewpoint, the reliability of the model developed is quite high.

INTERPRETATION

Table 2 provides the Rasch estimate of the item's location (MEASURE) on the underlying participation variable. The measure describes how much participation each activity represents and is the primary information of interest in this analysis. Two features assess the quality of the measure. The standard error (ERROR) describes how much uncertainty exists in the measure. In other words, it gauges how precise the measure is.

In addition, statistics describing the extent of conjoint ordering of companies and participation activities are presented. These statistics describe how well the data fit the model and evaluate whether the companies or techniques are part of this scale. Two fit statistics are provided, and each evaluates a different character of possible misfit. Both of these statistics are presented in their ratio form (MNSQ) and standardized form (INFIT, OUTFIT). MNSQ describes the ratio of actual misfit to expected misfit. The standardized form can be interpreted in a similar manner to the *t* statistic or the *z* statistic. It approximates a significance test for the misfit ratios. OUTFIT is an approximately normally distributed index based on a sum of squared residuals and is particularly sensitive to outlying values (responses located away from the center). Its expected value is zero; negative OUTFITs indicate a response pattern that is more stable and generally well fitting than would be expected, whereas positive OUTFITs indicate a more random pattern of responses than would be expected from the model. INFIT, also approximately normally distributed with an expectation of zero and a standard deviation of one, provides an alternative fit assessment that is more sensitive to inlying observations and is relatively insensitive to the effects of outliers. If one conceptualizes a variable, a particular respondent would be expected to have a zone of endorsement at one end of the scale, a zone of rejection at the other end, and a zone of transition in the middle. INFIT is particularly sensitive to the pattern of responses in the zone of transition, whereas OUTFIT detects aberrant responses in the endorsement and rejection zones.

The point-biserial correlation (PTBIS) of each item with the total scale score indicates how well an item predicts the total number of items endorsed.

TABLE 2
Effort Statistics: Measure Order

<i>Name</i>	<i>MEASURE</i>	<i>ERROR</i>	<i>MNSQ</i>	<i>INFIT</i>	<i>MNSQ</i>	<i>OUTFIT</i>	<i>PTBIS</i>
Minienterprise	3.55	0.29	0.99	0.0	0.56	-0.5	0.24
Gain sharing	3.21	0.25	1.05	0.3	1.72	1.2	0.16
Self-managing							
work teams	3.06	0.24	0.95	-0.2	0.49	-1.0	0.31
Quality of work life	2.97	0.25	0.99	0.0	1.49	1.0	0.20
Skill-based pay	2.23	0.18	1.19	1.6	2.08	2.5	0.12
Employee input							
in hiring	1.63	0.16	1.04	0.5	1.10	0.5	0.29
Job enrichment	1.36	0.15	0.82	-2.4	0.64	-1.8	0.49
Quality circles	1.07	0.14	1.06	0.9	1.37	1.8	0.28
Flexitime	0.93	0.14	1.07	1.1	1.22	1.3	0.31
Incentive pay	0.56	0.14	1.14	2.2	1.57	3.4	0.27
Participation groups	0.48	0.14	0.89	-1.9	0.89	-0.8	0.47
Quality training	0.30	0.13	0.96	-0.7	0.97	-0.2	0.43
Multiple career tracks	0.15	0.13	0.98	-0.4	0.94	-0.4	0.42
Survey feedback	-0.19	0.13	1.11	2.0	1.16	1.4	0.33
Business skills							
training	-0.37	0.13	0.99	-0.2	0.93	-0.6	0.42
Career counseling	-0.86	0.14	0.90	-1.6	0.89	-0.9	0.47
Leadership training	-0.94	0.14	0.92	-1.3	0.90	-0.7	0.46
Cross training	-1.07	0.14	1.04	0.7	1.02	0.2	0.38
Suggestions							
systems	-1.08	0.14	1.05	0.8	1.00	0.0	0.36
Competitor							
information	-1.16	0.14	0.93	-1.1	0.92	-0.5	0.44
Realistic job							
preview	-1.87	0.16	1.07	0.8	0.97	-0.1	0.35
New technology							
information	-2.49	0.18	0.86	-1.2	0.78	-0.8	0.42
Planning							
information	-3.43	0.24	0.69	-2.0	0.31	-2.0	0.44
Unit result							
information	-3.79	0.27	1.09	0.5	0.83	-0.1	0.25
Company result							
information	-4.23	0.31	0.96	-0.1	0.43	-0.8	0.29

NOTE: MNSQ = Mean-square fit statistics with expected value of 1. INFIT = Information-weighted fit statistic standardized to approximate mean of 0 and variance of 1. OUTFIT = Outlier-sensitive fit statistic standardized to approximate mean of 0 and variance of 1. PTBIS = Point-biserial correlation between the item and the total score.

For this particular measure, the sign, rather than the magnitude of the correlation, is what is relevant for the analysis. All signs should be positive. The Rasch model, unlike classical item analysis, is relatively uninfluenced by the

fact that items near either end of the defined variable suffer from restriction of range.

DISCUSSION

The Rasch model contains certain inherent qualities that are analytically appealing. One quality of the model is that it allows the accurate testing and estimating of solutions on the current set of data. The results show the data to reliably fit the Rasch model, thus providing an accurate representation of the interrelationships defining employee participation. Another quality of the model is that it can be used to describe groups that were not part of the original development process. Thus, the findings can be used to describe the level of participation in other large organizations that were not part of the original data set but were from the same population.

In this particular study, the fact that the items could be reliably scaled as indicated by the separation statistics (the reliability index) verifies Hypothesis 1. That is, the various types of participation techniques share a common underlying scale that can be collectively referred to as employee participation. Furthermore, the conjoint ordering of techniques and companies that was postulated in Hypothesis 2 is verified by the fit statistics (INFIT and OUTFIT) that are presented in Table 2. That is, a basic ordering process among techniques exists in employee participation.

To illustrate the meaning of conjoint ordering among the employee participation items and companies presented in the preceding discussion, a location map is shown in Figure 1. The location map uses the measure statistics provided in Table 2 to visually illustrate (a) the histogram of company location on the latent variable, and (b) the interrelationships among the items defining employee participation.

The histogram describes the extent to which companies are engaging in employee participation activities. The position of a company on the measure (vertical axis measured in logits) defines the expectation that the organization will engage in a particular employee participation activity. For example, the companies measured at -1.0 logits will be expected to engage in suggestion systems and cross training about 50% of the time. These same companies would be expected to utilize business planning information about 92% of the time. In a similar fashion, one would expect these same organizations to have multiple career tracks infrequently (about 24% of the time) and to engage in self-managing work teams rarely (about 1.7% of the time). Comparisons of these probabilities may be evaluated for any company and activity with Equation 3.

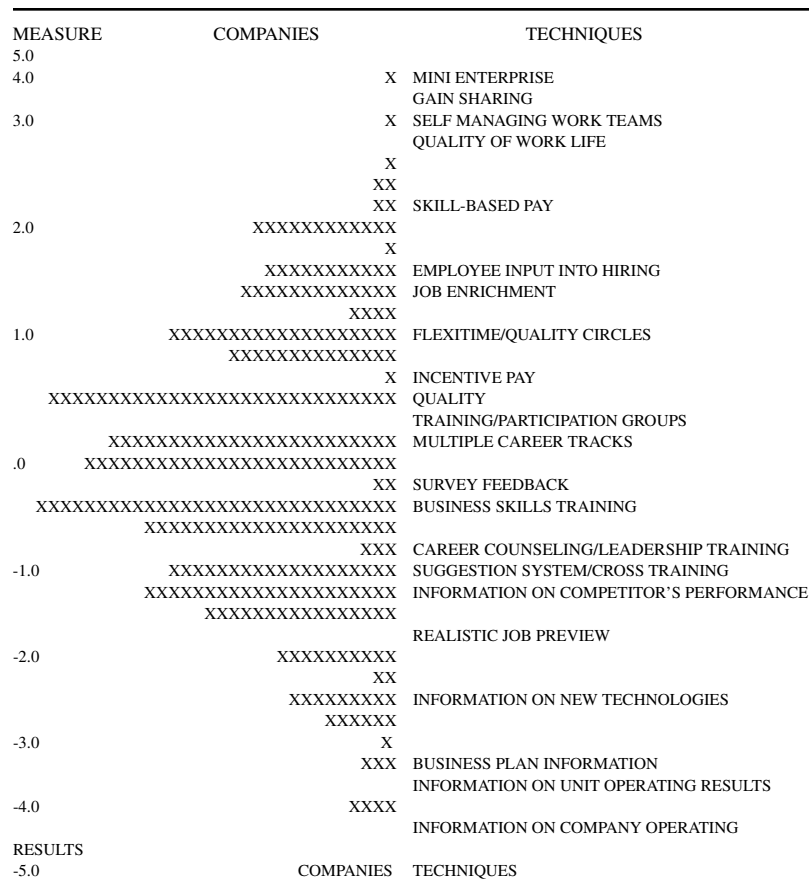


Figure 1: Distribution Map of Companies and Employee Participation Techniques on the Latent Variable

AN EXPLORATION OF MISFITS

Several specific items failed to fit the model. It is interesting to note that six of the nine items failing to fit the model were reward or reward-related items. Two reasons may explain at least some of this result. First, certain rewards are used so widely that little discrimination occurs. For example, one study reports that merit pay was used by 96% of all *Fortune* 500 manufacturing companies (Lawler, 1992). Thus, successful and unsuccessful companies employ merit pay equally. Second, the lack of fit also implies that employee participation activities are independent of at least some of the compensation methods identified, and that employee participation is not necessarily a function of monetary outcomes.

In addition, two training items, problem-solving training and team-building training, did not fit. Both of these items seem to be representative of interpersonal skills or human relations, whereas all of the other training items appear to be related to training in actual functional or operational activities of a business. Although process-oriented training may be important for effective organizational functioning, it does not appear to be related to employee participation. Only training items related to the operation of the particular business itself seem to have a relationship to employee participation.

The last item, employment security, was a decision-making item that failed to remain in the final model. The most likely reason for this occurrence is that relatively few companies use this item, thereby leading to a lack of discrimination among companies.

AREAS FOR FURTHER RESEARCH

When rational behavior is assumed as a basic element in the managerial decision-making process, one speculation is that the use of increasingly sophisticated employee participation techniques may involve developmental processes based on the company and its individual experiences. Areas for additional research would involve identifying the factors that are responsible for the underlying ordering process. Explanations of how the development occurs may involve, for example, autogenesis (Drazin & Sandelands, 1992), adaptation and decision making (Nutt, 1984, 1992), information processing (Smith, Grimm, Gannon, & Chen, 1991), or some type of learning process (Lant & Mezias, 1992).

There are several observations not part of the original hypotheses that are worthy of note. These observations are related to how the scaling took place. Two aspects of the results seem to be important: (a) the relationship of variables most often associated with employee involvement variables to those most often associated with participative management and employee empowerment, and (b) the relationship among the variables most often associated with employee involvement.

Although there is a degree of overlap, the employee involvement variables, in general, tended to occur before participative management and employee empowerment variables on the location map. This relationship suggests that at least some of the critical factors suggested by Lawler (1986) may be necessary precursors for the successful application of other employee participation techniques. The preceding observation argues for a reexamination of earlier studies of employee participation in an attempt to identify those critical factors that were or were not present in the instances when certain employee participation techniques failed.

Furthermore, although Lawler (1986) notes that the critical factors are important, he provides no guidance for assessing their rank or relative importance. As presented in Figure 1, some critical factors were observed to cluster together, implying that an ordering was occurring among the employee-involvement-related variables. Information-related variables, for example, tended to occur before training variables. Other variables, such as rewards, in general did not fit the model well. Consequently, these results provide support for Lawler's (1986, 1988) overall conceptualization of employee involvement. However, the present study also suggests that all variables commonly associated with employee involvement variables are not equal. That is, different kinds of employee involvement may serve different functions within the overall employee participation process. Further research should focus on assessing the relative strength of each critical factor and the position of the critical factors in the developmental process.

Finally, it is also important to consider what was not measured or included. For example, when items are not uniformly distributed on the underlying scale, the resulting gaps between successive items may signify undefined activities or events. Several gaps did occur, as can be seen from the location map in Figure 1. Future research should address the meaning of these gaps. For example, do they signify as yet unidentified employee participation activities related to employee involvement, or, alternatively, do they perhaps imply that some type of transitional phase shift is occurring?

IMPLICATIONS FOR MANAGERIAL DECISION MAKING

The results of this study have significant implications for the process of managing organizations. Employee participation continues to be the subject of widespread interest in contemporary organizations. Of particular note, for example, is its relevance to the concept of total quality management (TQM), which is being widely embraced for its potential to increase operating effectiveness and as a source of competitive advantage (Belohlav, 1993).

Employee participation is generally considered to be an integral aspect of a successful TQM process. According to Shiba, Graham, and Walden (1993), "Today everyone in the company must be mobilized to improve the way they do their jobs and satisfy customers. To mobilize everyone to achieve these goals, companies must change the way they think about and organize work" (p. 249). From their analysis of the development of TQM in the United States, Shiba et al. conclude that participation is, in fact, one of the four critical elements required to successfully implement TQM. A better understanding of employee participation enhances the application of TQM methods.

What do the findings imply for the practice of management? Many research studies, as well as actual managerial decisions, have emphasized employee participation from a programmatic perspective, that is, observing a participative technique as an end unto itself. This study has shown that all employee participation techniques are not necessarily equal. That is, there may be a developmental process involved in how employee participation techniques are selected and implemented. Although understanding the differences among employee participation techniques themselves is important, it is not enough for the successful implementation of participation within an organization. Indeed, employee participation is a process that allows and enables individuals throughout the organization to have the opportunity to plan, make, and modify decisions affecting their work environment and their organization as a whole.

As the Rasch model analysis in this study has shown, an inappropriate selection of specific programs can dramatically influence the degree of success of the employee participation process within an organization. Thus, the implementation and success of commonly used and well-researched employee participation techniques, such as job enrichment and job redesign, are likely to involve far greater levels of complexity than one might assume from the prevailing sentiment in management literature. Even survey feedback, considered by some as the simplest of the employee participation techniques, is likely to require the existence of certain basic activities to be effective.

In conclusion, the results of this study provide greater definition to the concept and process of employee participation. In particular, the results suggest that successful employee participation relates not so much to the uncomplicated implementation of a technique, as is suggested by Conger and Kanungo (1988), but rather to the creation of an environment and the use of techniques within that environment, as suggested by Thomas and Velthouse (1990). It is expected that additional gains in the effectiveness of employee participation programs will be realized as future research addresses and clarifies elements comprising the underlying process. For now, a preliminary ruler has been constructed to measure the extent of employee participation. Even when companies use somewhat different employee participation activities, they can be compared on a common quantitative scale.

APPENDIX

Definitions of Employee Participation Techniques

Survey feedback: Use of employee attitude survey results, not simply as an employee opinion poll, but rather as part of a larger problem-solving process in which survey data are used to encourage, structure, and measure the effectiveness of employee participation.

Job enrichment or redesign: Design of work that is intended to increase worker performance and job satisfaction by increasing skill variety, autonomy, significance and identity of the task, and performance feedback.

Quality circles: Structured types of employee participation groups in which groups of volunteers from a particular work area meet regularly to identify and suggest solutions to work-related problems. The goals of quality circles are improved quality and productivity. There are no direct rewards for circle activity. Group problem-solving training is provided, and the groups' only power is to suggest changes to management.

Employee participation groups other than quality circles: Any employee participation groups, such as task teams or employee work councils, that do not fall within the definitions of either self-managing work teams or quality circles.

Union-management quality of work life (QWL) committees: Joint union-management committees, usually existing at multiple organizational levels, alongside the established union and management relationships and collective bargaining committees. QWL committees are usually prohibited from directly addressing contractual issues such as pay and are charged with developing changes that improve both organizational performance and employee quality of work life.

Minienterprise units: Relatively small, self-contained organizational units (perhaps smaller than the plant level) that produce their own products or services and operate in a decentralized, partly autonomous fashion as small businesses.

Self-managing work teams: Also termed *autonomous work groups*, *semiautonomous work groups*, *self-regulating work teams*, or simply *work teams*. The work group (in some cases acting without a supervisor) is responsible for a whole product or service and makes decisions about task assignments and work methods. The team may be responsible for its own support services, such as maintenance, purchasing, and quality control, and may perform certain personnel functions, such as hiring and firing team members and determining pay increases.

SOURCE: U.S. General Accounting Office (n.d.).

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