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Factors Associated with Success in a Participative Decision Making Program for Supervisors, Managers, and Salaried Professionals

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FACTORS ASSOCIATED WITH SUCCESS IN A PARTICIPATIVE
DECISION MAKING PROGRAM FOR SUPERVISORS,
MANAGERS, AND SALARIED PROFESSIONALS

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FACTORS ASSOCIATED WITH SUCCESS IN A PARTICIPATIVE
DECISION MAKING PROGRAM FOR SUPERVISORS,
MANAGERS, AND SALARIED PROFESSIONALS

Eric Paul de Nijs, Ed.D.

Western Michigan University, 1992

This study was designed to investigate the factors associated with success in a participative decision making program, based on the quality circle concept, involving teams of first-line supervisors, managers, and salaried professionals. The teams were formed to initiate and implement cost saving projects. A total of 35 subjects from six teams participated in the study conducted in a food processing company located in the Midwest. Cross-functional teams representing the main functional areas of a company were ranked on the basis of their success, defined as the proportion of the savings goal the team attained. From this ranking, the top three teams and the bottom three teams were selected for inclusion in the study.

The study used post hoc methods of analyses and explored differences in the teams' responses to a survey regarding perceptions of team behaviors, and a survey and interview regarding the way in which the teams executed problem solving procedures for initiating, researching, and implementing cost savings projects. Statistical analyses

revealed several key differences were found between the top three and bottom three teams. There were six major conclusions drawn about factors associated with successful team performance. It was concluded that successful team performance was associated with: (a) a clear understanding among team members of team goals, (b) a clear understanding among team members of their roles on the team, (c) using a variety of problem solving tools and techniques to obtain a more thorough understanding of their projects, (d) team member perception of positive recognition from senior management, (e) making stakeholder participation a high priority among project activities, and (f) using a variety of means to overcome resistance. Recommendations were made for practice and further research.

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Eric Paul de Nijs

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CHAPTER I

INTRODUCTION

The recent emphases on quality and employee participation in the United States have been considered a reactive response to the gains made by Japanese companies in market share world wide. Marks (1986) arrived at this conclusion after studying the application of quality circles (QC) during the 1980s by some American companies. These companies hoped that by emulating some of the Japanese management practices, they could achieve the desired quality which lured many Americans to buy Japanese products. Some of the advances made by the Japanese have been attributed to their participative style of management including quality circles.

Juran (1988) observed that the original Japanese quality circle, created in 1962, was derived from a top management quality effort which eventually filtered to the hourly work force. The foundation for quality circles in Japan, however, was actually developed shortly after World War II. The need for improved quality to restore the war torn Japanese economy and from demands to improve communication services for Allied occupational forces in post war Japan resulted in a national effort to rebuild the Japanese

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business sector. Ishikawa (1985), one of the contributors to the work involved in restoring the economy during this time period, recalled that the methods of improvement included total quality management, statistical quality control, and other organizational development interventions (Ishikawa, 1985). The Union of Japanese Scientists and Engineers (JUSE) was formed to assist the Japanese Industrial Standards Committee in a national effort to improve the quality and reputation of Japanese products worldwide.

During the 1950s, JUSE and other Japanese organizations invited Americans Edwards Deming and Joseph Juran to speak to them about quality improvement. Deming and Juran were instrumental in introducing statistical process control and more effective managerial practices used by American industries during World War II. They emphasized to Japanese leaders the need for greater control in manufacturing processes both from technical and managerial perspectives. The Japanese embarked upon training and education programs for managers, engineers, and production foremen. These efforts included sending business leaders to other countries to learn about foreign businesses and their processes, translating foreign business literature into Japanese, arranging visits with foreign lecturers, training managers and supervisors in how to manage for quality, and the use of management teams to carry out numerous quality improvement projects (Juran, 1989).

However, the resulting quality effort which evolved from the implementation of American management theory and practice eventually failed to address the needs unique to Japanese business and culture. Many American management styles were neither accepted nor feasible in the Japanese culture (Garvin, 1988). Nevertheless, Japanese engineers, scientists, and business people were quick to accept and develop those elements of the theory and practice that worked for them. What evolved was a management philosophy and process which contributed to a larger more comprehensive effort to produce quality products for the organization's customer and an environment where employees had access to the people and resources they needed to make good decisions through various employee participation programs, including quality circles.

In contrast to the growth of the Japanese businesses, the growth and dominance of American industry in world markets prior to the 1980s could be attributed to the advances and superiority of American technology. However, Ferris and Wagner (1985) referenced productivity measures that indicated the United States was no longer considered the leader in productivity or growth. While many American companies are still considered leaders in innovation, many consumers consider Japanese companies and products to be superior mainly as a result of their product performance and concern for customer satisfaction. Many quality practi-

tioners attribute the Japanese success to effective marke-
ting strategies, efficient distribution systems, and a com-
mitment of total quality management including the use of
employee participation practices and the emphasis on im-
proved quality (Juran, 1988).

Some American companies, in an attempt to improve the
product quality, have begun to develop and implement some
of the Japanese employee participation practices. Not sur-
prisingly, some differences have appeared in the develop-
ment and implementation of these employee participation
practices in the United States.

One of the differences between quality circles in
Japan and those in the United States is that the quality
circle in Japan is an institutionalized process, not neces-
sarily voluntary (Cole, 1979). Pressure to participate in
quality circles is greater because many of the employment
practices in Japan are considered lifelong. The expectation
to participate is considered a responsibility, not an op-
portunity. Quality circles in the United States are often
couched in an attempt to introduce greater measures of par-
ticipative management (Ferris & Wagner, 1985), thus crea-
ting some resistance from certain personnel in an organiza-
tion, most notably from mid-level managers whose own realm
of power or influence could be diminished as result of
these interventions.

A second difference between the Japanese and American

use of quality circles is the context in which they are used. Quality circles in Japan are considered but a small portion of a greater quality effort directed toward the entire organization, not just one product line or department. The American practice of limiting quality circles to product lines or segments of a manufacturing department has been interpreted by Deming (1986) and Juran (1988) as using quality circles out of context.

Furthermore, top management support for quality improvement has not until recently been a priority for the American executive. Japanese business practices focus heavily on the long-term investment and consider quality circles as such (Ishikawa, 1985). Conversely, many American business practices focus on short-term investments with an eye on those decisions or activities which can realize a profit within a quarter or fiscal year. Since many businesses operate in somewhat volatile conditions, the impetus for improved quality requires consideration of factors which only management can control. Juran (1988) estimated that between 80%-90% of all quality problems are management related or controlled and have little to do with the capability of the production worker. Quality circles and quality improvement in general require a long term orientation with sizeable investments in training, time, personnel, and other organizational resources. In Japan, unlike many American companies, all levels of company personnel parti-

cipate in the quality improvement process including quality circles (Ishikawa, 1985).

Problem Statement

A quality circle is a form of participative decision making traditionally oriented toward teams of hourly workers. These teams report their research findings and recommendations to a quality council typically composed of upper management which reserves the authority for decision making. Thompson (1982), through the use of case studies on quality circles, found that quality circles have been attributed with greater productivity, improved product or service quality, fewer grievances, less absenteeism, and other desirable benefits. One of the factors considered instrumental in the success of American quality circles includes middle management support. Sheffield (1988), in a survey of 448 quality circle related papers appearing between 1982 and 1987, identified middle management support as one of eight factors which were considered necessary for successful implementation of quality circles.

Quality circles, however, frequently circumvent middle management participation. Ahlstrand (1989), in his survey of various organizations using quality circles, concluded that "management in a number of organizations had little understanding of the problems, needs, or contributions of their quality circle program" (p. 7). Crocker, Leung Sik,

and Charney (1984) observed that "for most American mana-
gers, the quality circle concept involves an extensive
delegation of authority to rank and file employees" (p.41).
Since members of the quality circle are allowed to choose
their problems, first line supervisors and middle managers
do not have an active role in the development of the pro-
blem statement or solution alternative.

Middle managers especially dislike the idea because
they fear a loss of job security. Middle managers' attempts
to cope with or resist the quality circle concept have led
some observers to identify them as barriers to implementa-
tion (Alie, 1986). The problem of middle management resis-
tance is indicative of a problem with many quality improve-
ment processes. Improving the quality of an organization's
products or services, most believe, requires a company wide
quality improvement effort. The effort would be company
wide because of the need to involve all disciplines in the
identification of the customer's need, the translation of
that customer's need into company specifications, the manu-
facture or development of the product or service, and the
presentation of the product or service to the customer.

Such an effort will require the cooperation of all people
at various levels, including middle managers, and all dis-
ciplines within an organization such as purchasing, mar-
keting, and manufacturing (Garvin, 1988). Thompson (1982)
referenced such a structure as an "integrated circle" (p.

144). However, this circle would only exist for a temporary basis, such as for the definition or resolution of a particularly complex problem. Ruffner and Etkin (1987) suggested that quality circles be created for the white collar worker to address organizational problems which will only be resolved by improving the systems and structures within an organization.

Juran (1988) has proposed temporary project teams composed of managers to address problems in a fashion similar to the quality circle but whose resolution requires a multi-disciplinary approach. First-line supervisors and middle managers are often responsible for the kinds of issues addressed by quality circles. Unfortunately, they often do not have the opportunity nor the structure to work with representatives from other disciplines as a cross-functional problem solving team.

The need identified in the literature for a program or structure which allows greater participation in organizational decision making by first line supervisors and middle managers provides the impetus for additional research. As greater numbers of organizations begin to implement participative decision making programs, additional knowledge is needed regarding how to maximize the potential contributions of all members in the organization, especially from those who have often been excluded in some popular programs such as the quality circle.

The purposes of this dissertation, based on the premise that team involvement of supervisors and managers is necessary for successful participative decision making, are two-fold: (1) What are the factors associated with success for cross-functional teams of supervisors, managers, and salaried professionals? and (2) How do the "better teams" differ from the "poorer" teams in the way they initiate, develop, and implement projects? The problem on which this research focused was the identification of those factors associated with success in a participative decision making program based on the quality circle concept but developed for supervisors, managers, and salaried professionals. Further research could investigate such issues as the role of supervisors and managers in a quality circle program, what kinds of organizational changes would be necessary to facilitate positive interaction between supervisors and managers and quality circles, or what kind of parallel structures could coexist with quality circles to achieve the cross-functional or multi-level participation required in a total company wide quality improvement effort.

Method of the Study

The researcher investigated an existing participative decision making program involving cross-functional problem solving teams to address those questions. The teams' primary focus was on the initiation, development, and imple-

mentation of cost saving projects. This program utilized the cross-functional approach to identify problems or opportunities experienced across department lines and to implement solution alternatives acceptable to each department or stakeholder.

This study investigated the factors associated with success in a participative decision making program designed for first-line supervisors, middle managers, and salaried professionals by: (a) exploring the differences in the team members' perception of group interaction between members from the three most successful teams and the three least successful teams and (b) exploring the differences in the way teams executed procedures for initiating, researching, and implementing cost saving projects.

The company where the research took place is a food processing division of a large international company located in the mid-west. The division employs over 2000 employees total across two sites.

Summary

The purpose of this study was to identify those factors associated with success in a participative decision making program for cross-functional problem solving teams of first-line supervisors, middle managers, and salaried professionals. The participative decision making program was adapted from the traditional quality circle concept,

but created specifically for first line supervisors, middle managers, and salaried professionals who would normally be excluded from the traditional quality circle model.

Organization of the Study

This dissertation contains five chapters. The introduction and purpose of the study were provided in Chapter I. A review of the related literature is given in Chapter II describing factors associated with success in quality circles and other participative decision making programs. In addition, the review highlights a problem solving model which supports the basis for the participative decision making program involved in this study. Finally, a brief discussion on success criteria establishes the basis for the success criterion used in the dissertation. The purpose of the literature review is to provide both a theoretical and practical basis for the participative decision making program involved in this study.

Chapter III contains information regarding the design and execution of the study. This chapter describes the development of the participative decision making program, the success criterion, the research instruments, collection of data, and the methods used to analyze the data.

Described in Chapter IV are the procedures used in the data analyses and the results of the study. Finally, a summary of the study, conclusions, and recommendations for

further research are provided in Chapter V.

CHAPTER II

LITERATURE REVIEW

Participative Decision Making

Introduction

The rising interest in participative decision making
has encouraged the development and use of teams in a
variety of settings and for a variety of purposes. The
types of teams include temporary and permanent teams, union
and nonunion teams, and hourly and managerial task forces.
In 31 case studies documenting the use of quality circles,
Crocker et al. (1984) found that organizations have uti-
lized the team approach to improve employee participation
in such organizational issues as waste reduction, cost
reductions, absenteeism, quality improvements, grievances,
and quality of work life concerns.

Under the umbrella of participative decision making,
Lawler (1986) and Aubrey and Felkins (1988) have identified
a number of different types of interventions including task
force and project teams, autonomous and self-managing work
teams, quality circles, and worker suggestions programs.
Task forces and project teams are common in many organiza-
tions. These groups are formed with various organizational

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members who come together to address a specific problem until the problem is resolved. The desired output is usually a recommendation or suggestion. The advantage to these kinds of groups includes the exchange of information between individuals or departments who may normally not come together. Problem solving and coordination of resources are essential for success.

Aubrey and Felkins (1988) and Lawler (1986), through their work and research with autonomous work groups, self-managing work teams, or self-directed work teams, stated the belief that participation with such groups can be extremely gratifying to the participants in that the participants assume responsibility for many facets of the production of the product or service. The team's execution of these responsibilities often parallels the tasks that traditional management functions have performed. Team activities have included goal setting, planning scheduling requirements, and evaluating the quality of the work.

Another kind of participation program for employees involves survey feedback. Companies have used surveys to solicit feedback or input and then use the data to assist management in responding to areas that need improvement.

One of the more popular forms of participative decision making in the United States during the 1980s was the quality circle (QC). The International Association of Quality Circles, composed of QC members, managers, and

consultants, reported an increase in membership from 100 in 1978 to more than 7,000 by 1985 (Marks, 1986). The problem identified in Chapter I highlights a potential conflict with supervisors and middle managers when they are not involved in the decision making process of quality circles. This problem provides the impetus for this research involving first-line supervisors, middle managers, and salaried professionals in a participative decision making program of their own. As more organizations become involved in participative decision making interventions, such as total company wide quality improvement, training profes- sionals need additional information regarding the factors that are associated with success for teams' of first-line supervisors, managers, and salaried professionals in a participative decision making program.

Method of Study

The purpose of this research was to identify those factors associated with success for teams in a participat- ive decision making program. Researchers can employ a number of different methods to assess group or team beha- viors. Levine and Moreland (1990) discussed three ways in which a team's behavior can be assessed: (1) simply obser- ving the team's behavior, (2) ask the team members to des- cribe team norms and typical behavior patterns, and (3) ask each team member about his or her fellow team member's

behavior and then analyze the responses by producing indices that describe characteristics of the team's behavior.

A fair amount of small group research has been conducted in laboratory settings and this practice has been called into question by some practitioners including Levine and Moreland (1990). They advocated a more practical orientation to studying small groups because there are numerous extraneous variables which can impact a team's behavior not found in a laboratory setting. Levine and Moreland believed that a more "practical orientation to small group research is weakening the reliance of many researchers on laboratory experimentation and fostering the use of field research, observational techniques, and archival analyses" (p. 621). In the spirit of this trend, this researcher elected to investigate the factors associated with success in a participative decision making program by studying an existing program. The researcher utilized a post hoc approach as the method of analyses for team members' perceptions regarding their team's performance and the procedures used in implementing project procedures.

Participative Decision Making Overview

Participative decision making (PDM) encourages decision making through a structure accessible by a defined group or team of people whose input either directly or

indirectly affects the outcome of a particular decision. Hackman and Morris (cited in Watson & Michaelson, 1988), in their work on groups, loosely defined group interaction as "the way group members pool their abilities in a collabora- tive context in order to reach the best decision" (p.495). Buller (1986) referenced PDM as team problem solving ap- proach utilizing a:

> planned series of meetings facilitated by a third party with a group of people having common organi- zational relationships and goals that are designed specifically to improve the team's task accomplish- ment by developing problem solving procedures and skills, and then solving major problems. (p. 149)

The group or team approach is deliberately emphasized in quality improvement processes because of its potential contribution to effective decision making, particularly with issues that involve more than just one department within an organization. For example, although the symptoms of a problem may surface in only one department, it may be possible that it originates in another, and perhaps even solved by yet another department.

The team approach differs from an individual approach in at least two important ways. First, by creating teams with members of divergent responsibilities, the team ap- proach offers a more complete representation of customer- supplier requirements within the organizational context. Team members are better able to articulate, address, and resolve potentially detrimental consequences of decisions prior to implementation, hence eliminating or alleviating

potentially harmful actions. Second, the quality of team decision making is likely to benefit from the collective competencies and experiences of the team members. In his research on quality processes, Garvin (1988) concluded that successful PDM requires the cooperation of multiple departments from all levels in an organization.

Factors Associated With Success

Program Structure

One of the more popular forms of PDM programs in the United States over the last 12 years has been the quality circle (QC). QCs have received mixed reactions in the literature. Adam (1991) conducted a study utilizing a quasi-experimental design involving seven groups at two companies. One company had two experimental groups and two control groups, while the other company had two experimental groups and one control group. One company was manufacturing company that included line workers. The other company involved white collar workers, engineers, and office personnel. His survey included among other things portions of Hackman and Oldham's Job Diagnostic Survey (cited in Adam, 1991). Items on the survey included questions regarding feelings about one's job, feeling towards the work group, overall satisfaction, and the member's impact on quality, supervision, and rewards. Assessment of circle performance was measured by employee attitudes, actual

performance, and facilitator perception. Adam reported no difference between the control and experimental groups on attitudes or quality measures, but did report a difference of greater cost savings for the experimental groups.

Dewar (1984) of the Quality Circle Institute defined quality circles as a small group of workers, traditionally production workers from the same work area and their supervisor, who meet on a regular basis to identify and solve problems. Generally, membership in the circle is voluntary and members are free to join or resign as they choose. Circle members are sometimes trained in problem solving, data collection, rudimentary statistical analysis, and charting (Dewar, 1984). Members of a quality circle collect and analyze data as they work, meet for about an hour per week as a team to report on their research, and prepare solution alternatives for a management steering committee (Dewar, 1984).

The steering committee is typically composed of representatives from upper management. The role of the steering committee is to review the research and solution alternatives offered by the quality circle and make a decision on a course of action ranging from full implementation of a solution alternative to rejecting all alternatives and remaining with the status quo. The purpose of the structure is to create an avenue for communication between quality circles and upper management. This structure provides a

formal means to monitor group performance, direct resources where needed, and encourage communication between upper management and lower levels of the organization.

Quality circles typically assume a proactive stance toward improvement since workers participate directly in the change process. The traditional structure, however, limits participation to the workers of a product or line and their supervisor. Representatives from such groups as engineering, research and development, or marketing are not included. Usually input is solicited via upper management or information is given to QCs through an intermediary. Cotton, Vollrath, Froggatt, Lengnick-Hall, and Jennings (1988) reviewed various studies on participative decision making to investigate whether types of PDM programs are associated with different outcomes. Their review of various studies led them to believe that successful "performance or productivity is associated with forms (of participation) that are direct, long term, and are of high access" (p. 17). The importance of the team structure is to allow those most involved in the problem to work together, pooling resources and abilities, in the process of solving problems.

In concept, direct forms of participation allow team members directly involved in the product or service to play an active role in the change process. This essentially encourages the development of cross-functional membership

on a team which can exercise self control. Juran (1989) considered workers as being in a state of self-control when they: (a) know what their current level of performance is, (b) know what the standard of performance is, and (c) are able to maintain or control the performance within a given standard.

In a study conducted by Locke, Sirota, and Wolfson (1976) involving a federal agency, workers were taught the concepts of work redesign, organized into groups, and allowed to participate directly in the formulation and presentation of proposed changes in work requirements to management. Three experimental groups were compared with three control groups. Absenteeism, turnover, time efficiency, complaints, and disciplinary actions showed beneficial effects from the intervention. The researchers were able to attribute the results to the following factors: (a) more efficient use of manpower as initiated by the teams; (b) elimination of some unnecessary work procedures; (c) more precise and timely feedback; and (d) competition among the employee groups.

Management Support

Management support is critical and is considered by the majority of researchers on QCs as one of the most important factors associated with success in QC projects (Garvin, 1988). Steel, Mento, Dilla, Ovalle, and Lloyd

(1985) stated that "genuine management support in the form of open and willing response (provision) of tangible resources for program maintenance is necessary for success" (p. 117).

In addition, management plays a crucial role for successful implementation of quality circle recommendations. Thompson (1982) stated:

> Management does not give away decision making authority or responsibility in a quality circle process. It allows employees to make responsible inputs. Ultimately, management (particularly upper management) retains the right of decision making through mechanisms of presentations to the steering committee. (p. 189)

As stated earlier by Dewar (1984) of the Quality Circle Institute, the steering committee is typically represented by upper management, not first-line supervisors or middle managers. Middle managers are typically left out of the "loop" in communication between quality circles and upper management. When QC members present their findings and recommendations to upper management, middle managers do not generally have a voice in the project. Hence, middle managers are sometimes suspicious and resistant to ideas generated by the quality circle.

In a study utilizing a nonequivalent control group design involving over 260 United States Air Force maintenance and medical support personnel, Steel et al. (1985) found senior management support an important factor in the success of two quality circle programs. Participants from

the quality circles which were most successful perceived greater upper management support than did the members of the other groups. Additionally, the same group which perceived greater upper management support also perceived considerably greater acceptance for their suggestions for change in the organization.

Juran (1988), reflecting on his work with quality improvement processes during the last 50 years, believed that senior management participation is crucial if the members are to believe that quality is of great importance. Quality improvement processes or participative decision making programs cannot survive without the commitment of senior management. Senior management support could be evidenced by incorporating program participation as a job requirement, addressing recommendations from teams on a timely basis, and providing sufficient resources to ensure proper implementation and maintenance of the program's procedures, policies, and structure.

Goal Identification

Another important factor for QC success and one of the first tasks for any group or team is goal identification. Traditionally, QC members have been free to work on the projects of their choice. The focus of the team may be to address product deficiencies, technological changes, work flow, or on interpersonal issues (Steel & Shane, 1986).

Whatever the focus may be, the team needs a goal which (a) is important to team members as a group and individually, (b) is realistic, and (c) can be addressed by the members of the team. This researcher speculates that teams which do not have a clear focus expend extra effort resolving conflict and role responsibilities.

In research involving a parts manufacturer, Ivancevich (1977) conducted an experiment to investigate the relationship among three different goal setting treatments and their effects on performance and job satisfaction. One group was allowed to set goals participatively, the second group was assigned a goal, and the last group was told to "do your best." Data were collected before the intervention and at 3-month intervals. The group that participated in the goal setting experienced fewer service complaints, less costly performance, and greater safety than the group that was simply told to do their best.

Cohesiveness

Cohesiveness has also been associated with success in quality circle programs. Keller (1986) conducted research on 32 project teams involving over 200 professionals employed at a large research and development company. He found that group cohesiveness was one of the strongest predictors of a team's performance for project quality and meeting team goals on budget and schedule. In the study

cited previously by Steel et al. (1985), they also found that members of a cohesive group were more likely to report satisfaction and produce greater results through the quality circle than members of groups which were less cohesive.

DeStephen and Hirokawa (1988) developed and tested an instrument for consensus which included a section on cohesiveness. The items used to define cohesiveness included responses to such questions as, "I like the members of my group," "We were a closely knit group," or "This group was a place where people could feel comfortable expressing themselves" (p.230). In an exercise involving a social problem solving experience administered to small groups of students enrolled in a small group communication course, DeStephen and Hirokawa found that the better performing groups reported greater measures of cohesiveness.

Communication

Communication was also found to be a contributor to the success of some quality circles. Elvins (1985) conducted research on communication in quality circles to determine in part how quality circles affected communication as perceived by QC members. The sample consisted of 102 quality circle members from five different types of organizations including high tech businesses and traditional manufacturing organizations. Her survey included the

communication portion of Likert's Profile of Organizational Characteristics and 10 additional open ended questions. Among the topics included in her research were items which inquired about the usual direction of information flow, communication adequacy and accuracy, and overall satisfaction with communication between levels in the organization. She found that QC participants reported positive effects on communication with superiors, subordinates, and to some degree peers since their involvement with quality circles.

Berman and Hellweg (1989) investigated the relationship between perceptions of supervisor communication competence and supervisor satisfaction as a result of quality circle participation. The sample included 104 quality circle participants from 12 groups at a large defense contractor on the west coast. They studied the differences between supervisors who had 6 months of experience with quality circles and those who just started. Among the items contained in their survey regarding supervisors were: being able to get right to the point, being able to express ideas clearly in both written and verbal form, being easy to understand, listening, and responding to messages quickly. They found that supervisors who had participated in quality circles for 6 months were perceived as being more competent with communication than those who just joined, and subordinates were more satisfied with those supervisors experienced in the QC program.

Influence

Team members' influence with peers, subordinates, and
other members of the organization has also been found to be
associated with QC success. QC members whose projects were
implemented and who had otherwise successful experiences
were more likely to regard QCs as a legitimate avenue for
involvement in real change not only within their team but
within the organization as well. In their research on QCs,
Steel and Shane (1986) stated that "proactive interventions
[such as QCs] usually afford employees considerably more
opportunity to influence the work setting, whereas reactive
measures are more likely to be imposed though a change made
by a third party" (p. 460).

Rafaeli (1985) conducted research on quality circles
in an electronics manufacturing company on the west coast.
He surveyed members and nonmembers of quality circles. The
items relating to influence included such questions as:
"How much influence do you have: (1) in raising problems
with the way your work is currently done; (2) in selecting
solutions to work related problems; and (3) over the
quality of the work you do" (p. 608). He found a positive
relationship between the amount of perceived influence with
an increase in the length of QC tenure.

In a study cited earlier involving 102 QC members from
five organizations, Elvins (1985) also investigated the
perceived affects of quality circles on the group member's

power/influence within the group and the organization. Roughly one half of the group members reported positive effects within the group, while a quarter of the group members reported positive effects on their personal influence with others outside the group.

Recognition

Another important consideration for successful quality circles is recognition. Recognition for team performance can be evidenced in at least two ways. The first deals with providing the team with the resources it needs to accomplish its objective. This kind of recognition is similar to that of support in that it emphasizes senior management's commitment to the team efforts and goal. One of the first American companies to use QCs was Lockheed, an aerospace manufacturing company. After much fanfare, the program eventually failed because in the words of a Lockheed training coordinator, "management really didn't support the idea of hourly workers making decisions beyond their job descriptions. When the program manager left the company, the program died" (cited in Geber, 1986, p. 58). From this case study, Geber (1986) observed that "sometimes management tries to take participative decision making concept and pay it only lip service and then expects changes which can only be achieved through a truly comprehensive organizational transformation" (p. 58).

The second way recognition is afforded the team is through feedback and tangible rewards given after achieving its goal. Bushe and Johnson (1989) conducted research in five different organizations to study the varying effects of contextual and internal group variables, including group composition on outcomes. The four measures included task accomplishment, cost, quality, and change acceptability. The study involved such diverse disciplines as engineering, banking, utilities, and research and development. Subjects chosen for the study had served on task groups within their respective organizations. The researchers created an instrument that explored contextual dimensions including resource mix, motivation, environmental support, and group process on four measures of group effectiveness. From this study, Bushe and Johnson concluded among other things that. team members can assess the relative importance of their task by the kind of attention given to it by senior management, including the presence or provision of including team membership in performance standards or rewards valued by participants.

In other supporting research, Kim and Hamner (1976) conducted a study with workers from a Midwestern telephone company. Four measures of performance were used as dependent measures of productivity. The three objective measures were costs (whether or not on budget), absenteeism, and safety (actual points for job accidents subtracted from

100). The fourth measure was the foreman's perception of service quality on vehicles, buildings, etc. Workers were divided into groups and received either extrinsic feedback, intrinsic feedback, extrinsic and intrinsic feedback in addition to goal setting, and instruction in goal setting only. They found that participative goal setting combined with extrinsic and intrinsic feedback was associated with improved cost performance and safety. On the subjective service measure, they also found that external feedback and praise is superior to goal setting alone.

Group Composition

An important factor in participative decision making is the composition of the group itself, particularly as members focus on those components of the task that are likely to increase the personal commitment of the group members and keep the members focused on the primary tasks. From the study cited previously, Bushe and Johnson (1989) also concluded:

> The group is a key determinant in the success of a team involved in PDM and is contextual in that a sponsoring manager can pay attention to choosing group members with a personal interest in the task, and can frame the task in ways likely to make it more or less personally relevant. (p. 478)

This can be achieved through clear goals and team members' roles, providing an appropriate group structure which supports task accomplishments, and recruiting the experts to serve on the team who would also have a vested

interest in the project.

In the study cited previously by Steele et al. (1985), another finding was unevenness in the support from middle management. This researcher theorizes that since middle managers have generally been circumvented in the process, the issue of representation plays a big role in organizational change. It makes sense to involve or at least solicit input from all members in the organization who contribute to the task performance or make inputs into the decision, especially from those who are closest to the work. Typically many of the changes proposed or addressed by quality circles are issues that supervisors and managers should have the authority to change or are issues that supervisors and managers have been trying to change but for one reason or another could not convince upper management of the need.

Gladstein (1984) conducted a study involving 100 sales teams in the communications industry and investigated such things as group effectiveness, group process, group task, group structure, group composition, and organizational inputs. Among some of the aspects of group composition that Gladstein believed to affect process and effectiveness were the skills needed to perform the task and group heterogeneity that assured positive interaction. In the case of this researcher's study, more often than not, middle managers are aware of what changes are necessary, who should be

consulted in the process, and how the change would be best introduced. An organized approach for PDM by a group of supervisors and middle managers could empower them just as the quality council empowered QC members to initiate change.

Group composition is important too because it safeguards against what Juran (1988) refers to as suboptimization. Suboptimization is that phenomenon which allows an improvement in a part of a system but actually results in a greater disservice for the whole. For example, a packaging engineer might be able to generate a cost savings by changing the dimensions or style of a box. However, without the input from marketing, some customers might withhold orders because the new box size would require the purchase of larger quantities or the customer's warehouse might not be able to stack a larger sized pallet. Suboptimization is less likely to occur when the expertise and requirements of individuals or departments are considered in the greater group context.

In the study cited previously, Bushe and Johnson (1989) referred to composition as "resource mix" and defined it as the "resources brought to the group by its members including content knowledge, social skills, linkage to the organization" (p. 465). Among some of the questions used to investigate resource mix were: Did members have the skill and knowledge to accomplish the task? Did

members have interpersonal skills necessary for effective group work? Did members have contacts to various parts of the organization which were necessary for task success? The results indicated that the quality of group outputs was affected by developing the right mix of people for the group.

The implication of the aforementioned research is particularly significant for studies researching PDM for supervisors and managers in a cross-functional setting. Traditional quality circles have typically limited their membership to those who work in the same area and report to the same supervisor. Without the involvement and commitment from other departments, the effectiveness of quality circles will be limited to those problems which can be addressed in a "micro" setting, that is, problems which can generally be contained within a limited sphere of responsibility. Teams which have access to other departments or functions within the organization and can capitalize on cross-functional opportunities and informal networks for information are likely to be more effective than groups who do not have this capability. Cross-functional membership on teams for supervisors and managers would readily facilitate the kind of information and structure required for projects at the macro or organizational level.

Task Clarity

Task clarity involves the problem statement and its meaning to team members. Task clarity includes the standards of team performance and the team members' understanding of what their role is in the task. Walton (cited in Goodman, 1986) theorized that:

> It is sometimes argued that stating objectives clearly risks lowering the motivation of group members because they will react negatively to being told what to do. We believe the opposite: an engaging, authoritative statement of purpose orients and empowers teams (p. 82).

The processes used to identify tasks vary from team to team and from project to project. However, Greenbaum, Kaplan, and Metlay (1988) cited 16 evaluations of quality circle programs which appeared in journals or were presented at conferences between 1981 and 1986 which they analyzed for their research. They observed that many of the processes teams use include the identification of the problem, problem solving procedures and techniques, consensus building, identifying key personnel with the knowledge and skills required for problem solving, and team building including interaction between team members and other members of the organization.

The tasks associated with PDM are common to a basic model of problem solving which involves research of the problem's symptoms, identifying causes, developing solution alternatives, and implementing the chosen solution

(Zenger & Miller, 1988). Simon (1979) also allowed the possibility for opportunities in the identification of the problem as he defined problem solving as being "given an initial state description and a desired end state, the problem is to find a process description that operates on the initial state to produce the desired end one" (p. 182). Hence, there are situations that allow problem solvers to address improvements in a process or product which is working the way it was originally intended but with some change could reduce the cost or improve the quality of the product or service over current levels.

The first stage of Zenger and Miller's (1988) problem solving model requires the team to formulate a problem statement and collect data. In this stage, team members identify and collect baseline data including preparing histograms, Pareto charts, or flow diagrams. Stage 2 of the problem solving model involves determining the cause(s). This may require experimentation to test theories, replicate effects, or otherwise conduct activities designed to prove the primary cause(s) of the problem. The third stage of this model involves creating a variety of different alternatives and identifying the strengths and weaknesses of each alternative. Presentations are prepared for stakeholders. Stakeholders are those people who would be affected by the proposed change initiated by the team. Finally, Stage 4 involves choosing

an alternative and ensuring successful implementation and administration of the change. The usefulness of this model is based on the premise that employees know their job best and that pooling information from different perspectives will result in more efficient decision making.

In research which utilized a similar model but in a six stage approach, Firestien (1990) found in an experimental study that groups who used the problem solving strategy were more effective than groups who did not use the strategy. Using university students in intact classes, Firestien trained roughly one half of the students in a six stage Creative Problem Solving (CPS) model based on works by Parnes, Noller, and Biondi; and Iskesen and Treffiner (both cited in Firestien, 1990). The steps included the following:

1. Mess finding: isolating a concern or problem on which to work.

2. Data finding: generating and selecting the most important relevant data.

3. Problem finding: preparing a statement that captures the essence of the situation.

4. Idea finding: generating and selecting the best alternative(s) for solving the problem.

5. Solution finding: using the criteria to screen, select, and support ideas selected in the idea finding.

6. Acceptance finding: generating ways to implement the solution and to develop a plan.

Students were randomly assigned to either an experimental or control group and given an assignment to solve a problem. Each group had the same problem. Each group was video taped and then rated by observers to evaluate communication behaviors. Among the communication behaviors evaluated were: (a) the amount of participation, (b) the evenness of participation, and (c) the quantity of ideas generated. The groups training in CPS outperformed the control groups on each of these behaviors.

These basic problem solving models are flexible enough that a team could achieve success in a variety of ways. This functional approach emphasizes not so much what a group should do as much as it is to focus on what actually gets done. Katz and Kahn (cited in Goodman, 1986) refered to this principle as "equifinality". Equifinality encourages the perspective that "groups can reach the same end goal but begin with various initial conditions and use a variety of approaches" (p. 80). The key to the concept is to allow teams to develop their own strategies, networks, and resources as they carry out their tasks. There is not a single approach that will work equally as well for each team. "Groups develop and enact their own versions of reality ... and then act in

accord with the environment they help create" (Katz & Kahn, cited in Goodman, 1986, p. 80).

Organizational Support

Organizational support refers to the degree to which members think that the group's task is valued by other members of the organization. The perceived value of the group may be evidenced through recognition by peers and superiors, organizational responsiveness to the group, and the perceived legitimacy group members believe they have to execute their team's mission or goal. Shea and Guzzo (cited in Goodman, 1986) refered to this legitimacy as "potency" and defined it as the "collective belief that the group can be effective ... to the extent that the organization makes available resources necessary for the team's success" (p. 55). Bushe and Johnson (1989) also investigated the level of organizational support through a scale which contained items such as the extent to which participants thought their efforts would be recognized and valued by peers or supervisors; the extent to which the organization responded to requests for information, resources, or action; and the extent to which the group thought it could influence the organization. They found that organizational support had high correlations with group leadership, perceptions of task feasibility, and perceptions of personal importance of

the task to team members.

Success Criteria for Participative
Decision Making Programs

One of the initial tasks in the development of a PDM program is defining what constitutes success. While much of the emphasis for PDM can be directed toward quality or productivity, criteria for successful PDM could include interpersonal relationship considerations. A team's definition of success will shape the way in which it operates.

In the research cited earlier, Greenbaum, Metlay, and Kaplan (1988) developed an evaluation model based on quality circle research for the purpose of evaluating the effectiveness of problem solving behavior. Success criteria addressed a wide array of components including inputs, process, outputs, and feedback. Inputs addressed task requirements, team member competencies, team structure, resources, and organizational support. Process components addressed problem solving procedures, training needs, and group interaction skills. Outputs included performance rates, team members' satisfaction, and improved popularity with team interventions. The feedback components contained such things as information about the team progress, attitude indices, and other results of the team's efforts.

In other research that involved nine studies of team

interventions using objective performance criteria as opposed to perceptual criteria, Buller (1986) cited the following as success measures: productivity, profits, organizational effectiveness (no units of measurements specified), sales, market share, sales forecast errors, return on investment, hiring rates, and grades.

Ideally, to demonstrate the return on investment on training and other resource allocation, success in PDM should be linked to some measure of potential productivity improvement. In his discussion on quality improvement projects which also utilized the team concept, Garvin (1988) linked success to quality costs which are composed of four broad categories: prevention, appraisal, internal failure, and external failure. He defined these costs in the following manner:

> Prevention costs include expenditures on supplier education, on the job training, product redesign, and other efforts to keep mistakes from happening in the first place; appraisal costs include expenditures on inspection, testing, and other activities designed to ferret out mistakes once they have occurred; internal failure costs include expenditures on rework, scrap, and other errors found within the factory; and external failure costs include expenditures on warranty claims, product liability suits, and other problems that arise after a product has reached the customer. (p. 79)

Shea and Guzzo (cited in Goodman, 1986) argued for a flexible definition of success based on the extent to which the team fulfills its charter. The stated:

> If a group's charter was to improve productivity, then effectiveness would be gauged by the merits of the decisions the group made. Effectiveness regard-

ing a positive social experience would only be considered if the team's charter included 'productivity and a satisfying social experience'. (p. 50)

Cost reductions resulting from changes in improved productivity, supplier relationships, or quality improvement have also served as a success criterion for PDM teams (Garvin, 1988). In another study using cost reductions as a success criterion, Eldridge and Szypot (cited in Guzzo & Bundy, 1983) conducted research on an intervention that involved feedback, goal setting, and supervisory praise for production workers. The productivity criteria were (a) percentage yield increase and (b) units per labor hour. This intervention produced savings in reduced waste valued at over $105,000 in the first year and an increase in units per labor hour from 26 at the baseline level to 35 units at post intervention levels. Although cost reductions have been used as a success criterion, teams must be given the directive that the reduction cannot compromise the integrity of the organization's product or service.

Summary

The impetus for this study resulted from the limited research available on participative decision making for supervisors, managers, and salaried professionals. The research problems addressed in this study were: (a) What were the factors associated with success for teams of

cross-functional teams of supervisors, managers, and salaried professionals? (b) How did the "better" teams differ from the "poorer" teams in the they way initiated, developed, and implemented cost savings projects? Since the quality circle concept served as the basis for the program involved in this study, the review of literature included research on quality circles as well as other types of PDM programs. Additionally, a discussion on success criteria to compare and contrast groups involved in participative decision making was also presented.

The factors associated with success in PDM programs include program structure (Adam, 1991; Cotton et al. 1988; Dewar, 1984; Locke, Sirota, & Wolfson, 1976), senior management support (Dewar, 1984; Garvin, 1988; Juran, 1988; Steel et al., 1985; Thompson, 1982); goal identification (Ivancevich, 1977; Steel & Shane, 1986); cohesiveness (DeStephen & Hirokawa, 1988; Keller, 1986; Steel et al., 1985), communication (Berman & Hellweg, 1986; Elvins, 1985), influence (Elvins, 1985; Rafaeli, 1985; Steel & Shane, 1985); recognition (Cooperrider & Plath cited in Bushe & Johnson, 1989; Geber, 1986; Kim & Hamner, 1976), group composition (Bushe & Johnson, 1989; Gladstein, 1984), task clarity (Firestien, 1990; Walton, cited in Goodman, 1986; Simon, 1979; Zenger & Miller, 1988), and organizational support (Bushe & Johnson, 1989; Shea & Guzzo, cited in Goodman, 1986).

Many organizations have developed various defini-
tions for success criteria including improvements in
productivity, profits, sales, and return on investment
(Buller, 1986; Garvin, 1988; Greenbaum, et al., 1984).
Shea and Guzzo (cited in Goodman, 1986) argued for a
flexible definition of success based on the content of
the team's mission or charter.

CHAPTER III

PROCEDURES AND METHODS

An ex post facto methodology was used in this disser-
tation to investigate an existing participative decision
making (PDM) program for teams of supervisors, managers,
and salaried professionals whose primary focus was the
initiation and implementation of cost savings projects. The
factors associated with success were investigated in this
study by analyzing the differences between the top three
and bottom three performing teams and their responses to:
(a) a survey measuring team members' perceptions regarding
group performance and (b) a survey and interview regarding
the way in which the teams executed procedures for initiat-
ing, researching, and implementing cost savings projects.

The Participative Decision Making Program

The PDM program involved in this research was designed
for a midwestern food processing company with approximately
1,400 employees. The original program was developed at a
sister division company which is also a food processing
company. The program and its structure are briefly de-
scribed in this section.

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Program

The PDM program in this study, adapted from the traditional quality circle, was designed to involve first-line supervisors, managers, and salaried professionals on cross-functional problem solving teams. Team members initiated and implemented cost saving projects in areas for which they had the responsibility or opportunity to do so. A directive from the company's corporate office to initiate a cost savings program provided the impetus for this program. A cost savings coordinator was subsequently hired to develop the program, organize teams, train team members, monitor performance, and serve as a liaison between the teams and the company office, notably with cost accounting personnel.

Teams

The manager of manufacturing services and the manufacturing services training coordinator analyzed the company's structure and identified the supervisors, managers, and salaried support staff who provided the expertise or served as a key decision makers in an area, and created teams for those functional areas. Nine teams were developed for this program from the main functional areas of the company: (1) kill, evisceration, cut, and bone; (2) stuffing, ovens, and beef; (3) slicing and packing; (4) convenience foods/frank plant; (5) material control/ distribution; (6) farms; (7)

office A (retail/sales); (8) office B (human resources/info services); and (9) office C (accounting/administration). Each team was composed of between 5 and 11 members depending on the magnitude of the functional area (i.e., size or number of operations) for a total of 72 team members. There were over 250 eligible employees who could have participated in the program.

All eligible employees attended a 45 minute presentation describing the program. Potential team members were invited to participate in the program 2 weeks prior to the start of a team. The expected term of service on a team was at least 1 year.

Participants were given two days of training which included the Zenger & Miller (Zenger & Miller, 1988) "Front-Line" leadership training on problem solving; selected tools and techniques of problem solving including cause and effect diagram, Pareto charts, flow charting; and procedures for initiating and implementing cost savings projects.

Team Savings Goal

The manager of manufacturing services and the manufacturing services training coordinator developed a cost savings goal for each team. Since some areas had greater opportunity for savings than others, the cost savings goal for each team was based on an approximate equal proportion

of the costs associated with each area. The costs associated with each area included one or more of the following categories: meat, ingredients, packaging, labor/benefits, overhead, and scrap. Cost savings were defined as a lower cost for the same or like product or service than what was previously paid.

Since these costs varied for each area, the savings goal for each team also varied accordingly. For example, since the majority of the costs involved meat, each of the manufacturing teams had larger cost savings goals than the office teams. The goal was also adjusted or pro-rated based on the teams starting date.

Savings were generated from such changes as supplier substitutions, process elimination or simplification, labor reductions, yield improvements, or waste reductions. The resulting changes in a product or service were required to reflect consideration of customer needs, both internal or external, and company quality standards. Cost savings which led to suboptimization were not permitted. Cost savings from new project start up costs were also not permitted. The savings which were verified had to have an historical basis for comparison. All cost savings were documented and submitted to the manufacturing services training coordinator who worked with the cost department for verification. Documentation included but was not limited to bill of materials, product specifications, capital expenditure

requests, invoices, material control inventory records, or other pertinent records. Only those projects verified and approved by the cost department were accepted in the final cost savings total.

Methods and Procedures

The methods and procedures used in the research are described in this section. The topics include the success criterion, sample selection, and procedures for data collection and analyses.

Success Criterion

The criterion used to judge the success of each team was the proportion of savings goal attained at the end of the 15 month anniversary of the program.

Sample

The sample for this study was comprised of the "top three" and "bottom three" teams on the ranking of the success criterion (proportion of team's savings goal attained) at the program's 15 month anniversary. Thus, the three teams achieving the highest proportion of their cost savings goal and the three teams with the lowest proportion of their cost savings goal were selected for this study. Refer to Table 1 for a list of the teams and their respective cost savings goal and goal attainment.

Table 1

Team Savings Goal, Goal Attained, and Start Date

Team	% Goal attained	Savings goal	Goal attained	Start date
A	78	750,000	584,633	6/89
B	65	250,000	161,413	6/89
C	105	93,300	104,962	7/89
D	2	233,300	3,808	8/89
E	98	700,000	682,845	8/89
F	17	650,000	125,630	9/89
G	77	86,600	67,142	9/89
H	0	86,600	0	9/89
I	12	80,000	9,284	10/89

Measurement of Potential Factors Associated With Success

The two categories of success factors investigated in this study were: (1) team perception regarding group interaction and (2) project procedures. Within each category are various characteristics, behaviors, or procedures which were thought to be associated with success as evidenced by research presented in the literature review.

Category 1--Team Members' Perception Regarding
Their Group's Interaction

The Team Practices Inventory (TPI) (Pfaff, 1987) was a
commercially available instrument used in a variety of
settings. The (TPI) was administered by the researcher
during the 15th month of the program's existence. The TPI
measures group or team behavior on the following 14 fac-
tors: goal clarity, role clarity, structure, energy/accomp-
lishment, competence, commitment, influence, cooperation,
support, trust, communication, standards, recognition, and
leadership. The survey is comprised of a total of 62 beha-
vioral based items and takes 12-15 minutes to complete. The
item responses on the survey are structured on a 7-point
Likert scale (see Appendix A for a copy of the survey).
Internal reliability using alpha coefficients for the
factors ranges from .80 to .93 except for external support
and recognition which had a coefficient of .69.

Administration Procedure

This researcher arranged to use a regularly scheduled
team meeting for each team's members to complete a survey
during the program's 15-month anniversary. The researcher
attended the meeting and instructed team members that the
survey would be used to collect information regarding their
experience in the PDM program. Team members were further
instructed by the researcher that: (a) the information

would be kept anonymous, (b) they were under no obligation to complete the survey, and (c) to please not share their responses or the content of the survey with other teams until all teams had completed the survey. The researcher asked for whoever would be the last to complete the survey to gather the surveys and return them to the researcher. The researcher responded to questions and then left the meeting. The researcher recorded the names of absent members and approached them on an individual basis to complete the survey and return it to the researcher. The researcher recorded that the survey instrument was completed on the list of absent members but did not identify in any way the respondent's name on the survey. All of the teams were surveyed within a 2-week time period. All of the program participants who were selected to take the survey completed the survey.

Analysis of the Team Practices Inventory

A mean score for each factor was calculated for each team and then a mean score was calculated for each group; one group including the top three teams and the other group including the bottom three teams. To determine what differences if any existed between the responses from the two groups, t-tests for independent means were calculated. An alpha of .10 was used to make the decision to reject the null hypothesis of no difference between two means.

Category 2--Project Procedures

The teams involved in the PDM program were instructed in a prescribed approach that they were to use when implementing cost saving projects. The components were similar to those contained in the creative problem solving process described by Firestien (1990). The problem solving model in the PDM program included project (problem) identification, determining the causes, generating and implementing solution alternatives, working with stakeholders, and team meetings. Based on this prescribed approach, the researcher developed a survey and interview instrument to identify and describe the procedures the teams followed to initiate and implement their projects. Based on this model of the problem solving processes and the one suggested by Firestien, the researcher created a survey which addressed the following 10 topic areas: (1) how the team identified potential projects, (2) how the team selected projects, (3) procedures used in collecting the data, (4) problem solving tools and techniques used in the problem solving process, (5) sources of solution alternatives, (6) selecting solution alternatives, (7) roadblocks to implementing solution alternatives, (8) overcoming roadblocks to solution alternatives, (9) obtaining stakeholder input, and (10) team meetings.

Using the areas listed above as a general outline, the researcher generated items for each area by listing the

most logical or obvious responses a participant could give. Responses to the survey are based on a Likert scale format (4 = almost always, 3 = frequently, 2 = occasionally, 1 = infrequently, 0 = hardly ever). Like the TPI, the scoring procedure first calculated a mean score for each team. Then mean scores for the top three teams and the bottom three teams were determined by calculating a group mean from the team means.

The survey instrument was subsequently field tested one month prior to full administration by three team members of different teams. The researcher contacted these team members by telephone and explained the purpose of the field test and asked them to critique and complete the survey. These team members were used because of their accessibility to the researcher during the time the surveys were being developed. These three team members completed the survey and evaluated the content, format, procedures, and wording. The survey was then revised prior to full scale use. Although the surveys used during the field test were not included as a part of the final sample, two of the respondents were part of the sample which was randomly selected to participate in the survey and interview.

Questions developed for the interview paralleled the survey instrument and were intended to further explain and illustrate the survey responses (see Appendix B for a copy of the survey and Appendix C for a copy of the interview

instrument).

Survey Administration

Those teams that participated in the Team Practices Inventory were also selected to participate in the project procedures survey and interview. All of the participants from teams with 7 or fewer members, and a random sample of half the participants from teams with 8 or more members were selected were to participate in the survey and interviews. Only two members from the teams with 7 or fewer members were not able to participate in the project procedures survey.

The researcher sent each participant a copy of the survey and interview a survey along with a cover memo requesting their participation and an explanation that an interview would follow. If there were any questions, team members were asked to call the researcher for clarification. Team members were assured in the cover memo that their responses would remain anonymous. All of the surveys were sent out by the researcher on the same day.

Interview Administration

Two days after sending the survey, the researcher then scheduled an hour long appointment with each team member asking that they bring the completed survey with them to the interview. At the start of each interview, the re-

searcher thanked the member for participating and assured the member of anonymity. The researcher also explained that the purpose of the interview was to gather data regarding their experience in the PDM program. The researcher took notes during the course of the interview to record team members' responses. All of the interviews were completed within a 3-week time period. Interviews were conducted in conference rooms available at the company.

<u>Survey Analysis</u>

The surveys were collected by the researcher at the time of each interview. Scores were entered in a Lotus program and then transferred to an SPSS/PC+ (SPSS, 1988) file. For the items contained in the "When it came time to pick a project" section, zeroes were translated to a score of 4. This was necessary to reflect low importance on a scale which used 1 as most important. Scores for each item were analyzed using the Kruskal-Wallis test in SPSS/PC+ (SPSS, 1988, p. C-103) to determine if there were any differences between the top and bottom three ranked teams. Rules for completeness were not an issue since all participants answered each question.

<u>Interview Analysis</u>

Questions used in the interview paralleled the survey in that both the survey and the interview sought informa-

tion regarding how the teams selected projects, collected supporting data, generated solution alternatives, dealt with stakeholder issues, and how team members interacted with each other. Responses to the interview questions were used to further explain and illustrate survey responses by providing anecdotal information regarding the team members' experiences in the PDM program. Explanations and illustrations were provided for those categories which contained items with differences in the responses between the two groups. Members' responses to interview questions were summarized for sections of the survey where differences were found using an alpha of .10 to test the null hypothesis. The goal of this activity was to identify and describe similarities and differences between the top and bottom three producing teams in their approach to initiating, researching, and implementing cost savings projects. Again, the interviews were not conducted to obtain information for each item on the survey, but rather to obtain information regarding the general categories of project (problem) identification, data gathering, generating and implementing solution alternatives, working with stakeholders, and team meetings.

All of the responses were grouped for the top three and bottom three teams per content area. Like comments were also grouped if they were similar in content. For example, if one respondent said, "we tried to get the stakeholder

involved at the start of the project" and another said "we tried to get the stakeholder to join us up front," those responses would have been summarized in the following fashion: two of the respondents reported trying to get the stakeholders involved at the beginning of the project.

CHAPTER IV

FINDINGS

This study was designed to investigate the factors associated with success in an existing participative decision making program involving first-line supervisors, managers, and salaried professionals. Success was defined as the proportion of the cost savings goal the team attained. The research focused on the top three and bottom three producing teams and explored the differences in (a) the team members' perceptions regarding group performance and (b) the way teams executed procedures for initiating, researching, and implementing cost savings projects.

This chapter was organized to reflect these components. The findings of the team satisfaction survey are described in the section entitled Team Members' Perception Regarding Group Performance. The findings of the survey and interviews regarding procedures used for initiating, researching, and implementing cost savings projects are described in the section entitled Analysis of Project Procedures. The headings and sub-headings of this section parallel the sections and subsections of the survey.

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Team Members' Perceptions Regarding
Their Group's Interaction

The Team Practices Inventory (TPI) was used to solicit team members' perception regarding their group's performance in the PDM program. The TPI measured team behavior on 14 factors. A copy of the survey can be found in Appendix A. The mean scores and standard deviations for each factor of the TPI for the top three successful and bottom three least successful teams are contained in Table 2. Each group had three observations as each team was considered an observation. A mean score was calculated for each team and then a group mean was calculated from these mean team scores. Since the focus of this research was on the team level, there are a total of four degrees of freedom in the analysis. The mean scores for each group were compared on each of the 14 factors using a one-tailed t test with an alpha of .10.

From the results in Table 2, one can conclude that the means from the top three teams were greater than the means from the bottom three teams for goal clarity, role clarity, and recognition. The mean score for the top three teams for goal clarity was 5.36, while the mean score for the bottom three teams was 4.39. The derived probability of .03 was evidence to suggest that there was a difference in the mean scores between the top three and bottom three teams. Some of the items included in goal clarity are: "The group's

Table 2

Comparison of Team Practices Inventory Scores Between the
Top Three and Bottom Three Teams

| | Teams | | | | df | t value | Prob |
| | top 3 | | bottom 3 | | | | |
	mean	SD	mean	SD			
Goal Clarity	5.36	.281	4.39	.521	4	2.82	.033*
Role Clarity	5.07	.325	4.18	.653	4	2.10	.064*
Structure	4.99	.570	4.13	.909	4	1.39	.125
Energy/Accmp	4.96	.650	4.08	.862	4	1.41	.118
Competence	5.29	.385	4.74	.727	4	1.17	.162
Commitment	4.96	.857	4.04	1.105	4	1.14	.160
Influence	5.09	.291	5.08	.532	4	.03	.976
Cooperation	4.84	.707	3.82	1.042	4	1.42	.122
Support	5.23	.452	5.07	1.015	4	.25	.410
Trust	4.84	.777	4.52	1.006	4	.43	.345
Communication	5.05	.450	4.55	.835	4	.93	.210
Standards	4.78	.744	4.25	1.037	4	.73	.509
Recognition	5.02	.172	3.83	1.080	4	1.90	.096*
Leadership	5.93	.499	5.47	.931	4	.76	.256

Note. A copy of the survey can be found in Appendix A
* Significant ≤ .10

overall objective is clear to me," "group members know what
they are trying to accomplish," and "the direction of the
group is clear."

The mean score for the top three teams for role
clarity was 5.07, while the mean score for the bottom three

teams was 4.18. The derived probability of .06 for role clarity was evidence to suggest that there was a difference in the mean scores between the top three and bottom three teams. Some of the items contained in role clarity are: "I am sure of my responsibilities in the group," and "individuals know how their role in the group fits with everyone else's."

The mean score for the top three teams for recognition was 5.02 while the mean score for the bottom three teams was 3.83. The derived probability of .096 for the recognition factor was evidence to suggest that there was a statistically significant difference in the means between the top three and bottom three teams. Some of the items included in the recognition factor are: "The group gets support for what it does from outside the group," "the group is given the resources to do the job," and "group members benefit from achieving group goals."

In summary, it appears that as a group, members from the top three teams perceived greater goal clarity, role clarity, and greater recognition for their efforts than the members from the bottom three teams.

Analysis of Project Procedures

The researcher developed a survey, titled Project Procedures Survey, and conducted a follow-up interview to investigate the way in which teams initiated, researched,

and implemented cost saving projects. Select interview responses were presented in an attempt to further explain and illustrate those survey items which were found to have differences using the Kruskal-Wallis (K-W) (SPSS, 1988, p. B-186) test with an alpha level of .10. All of the tables used in the Analysis of Project Procedures section involve differences in rank scores. The interview responses were not necessarily item specific, hence some of the illustrations were limited.

The K-W tests whether k independent samples defined by a grouping variable are from the same population. Cases from the k groups are ranked in a single series, and the mean rank for group is computed. Kruskal-Wallis has approximately a chi-square distribution (SPSS, 1988, p. B-186). In other words, the null hypothesis for the K-W is that there is no difference in the scores of the two samples. For the purposes of this research, typically, the higher the rank the greater the usage for an item on the survey.

The organization of the remainder of this chapter with headings and subheadings reflect the main section and subsections of the project procedures survey. A copy of the survey instrument and interview are contained in Appendix B and Appendix C, respectively.

Project Selection

In the early stages of a project, teams need to iden-
tify a project which could come from a variety of sources
and select a project on which to work. The following two
sections compare the two groups in how they identified
projects and what criteria they used to select a project.

Project Sources

Project ideas could come from a variety of sources and
teams were encouraged by the training coordinator to consi-
der all sources. Table 3 lists the results from the analy-
sis regarding how the teams identified potential projects.
As indicated by the results, the responses from the top
three teams differed from the responses to the bottom three
teams only with respect to the item entitled crisis/chronic
problems. The mean rank for the top three teams was 5.00,
while the mean rank for the bottom three teams was 2.00.
The mean rank for the top three teams indicated a somewhat
greater propensity for identifying projects based on cri-
sis/chronic problems from their work than did the bottom
three teams.

Similar to the survey findings, the team members'
responses to the interviews revealed no major differences
between the groups in the sections contained in generating

Table 3

Comparison Between the Top Three and Bottom Three Teams
in How They Identified Projects

	Mean Rank	Corrected	for Ties	
Item	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
Informal Meetings	3.00	4.00	.42	.51
Formal Team Mtgs	3.00	4.00	.42	.51
Standards of Perf	3.00	4.00	.42	.51
Superiors	3.67	3.33	.05	.82
Peers	3.33	3.67	.05	.82
Subordinates	3.33	3.67	.04	.82
Corporate	4.17	2.83	.80	.36
Industry Practice	4.17	2.83	.80	.36
Govt Regulations	4.17	2.83	.80	.36
Internal Customer	3.50	3.50	.00	1.00
External Customer	4.33	2.67	1.67	.19
Suppliers	3.00	4.00	.42	.51
Crisis/Chron Prob	5.00	2.00	3.97	.04*

Note. A description of each item can be found in Appendix
B, section 1 a.
* Significant $\leq$ .10.

project ideas and sources for project ideas (sections 1 a
and b). Nine of fifteen members from the top three teams
and four of thirteen from the bottom three teams reported
experiences such as, "I looked for chronic problems in my

area", or "the job was the best source for project ideas...I just looked for the chronic problems". One respondent from the bottom three teams said, "We were interested in knowing what top management wanted...but we could never find out."

Picking the Projects

After teams identified potential projects, they had to pick a project on which to work based on some criteria the members deemed important. Table 4 lists the results of the differences in the teams' ranking for the criteria they used for choosing their projects. No differences were found between the teams' responses to any of the items in this section of the survey.

Supporting Data and Documentation

Teams were required to provide documentation demonstrating that their changes were, in fact, cost effective. Sometimes the data were readily available and other times they were not. Additionally teams were encouraged to use the problem solving tools and techniques taught to them during the original training session to help them gain a clearer focus of the problem. The two groups are compared in the next two sections on data collection and the use of problem solving tools and techniques.

Table 4

Comparison in Project Selection Criteria Between
the Top Three and Bottom Three Teams

	Mean Rank		Corrected for Ties	
Item	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
Company Priority	4.00	3.00	.42	.51
Customer Request	3.17	3.83	.20	.65
Ease of Resolution	3.67	3.33	.05	.81
Return on Investment	3.50	3.50	.00	1.00
Chronic Problem	3.33	3.67	.04	.82
Stakeholder Part	4.17	2.83	.78	.37

Note. A description of each item can be found in Appendix
B, section 1 b.

Collecting the Supporting Data/Documentation

Teams were responsible for providing supporting data
or documentation to demonstrate that the changes they im-
plemented were stable, acceptable, and verifiable. Teams
were encouraged to use existing data to support their pro-
jects. Sometimes teams experienced difficultly obtaining
data because of the level of data they needed. If the ap-
propriate data did not exist, teams needed to collect the
data that would support their projects. If the appropriate
data could not be collected, projects were dropped in many

instances. Table 5 lists the results of the differences in the teams" experiences as they related to collecting supporting data or documentation. No differences were found in the teams' responses to items regarding data collection.

There were some interesting responses from the interviews. When asked what happened to the project when baseline data weren't available, 5 of the 15 members from the top three teams reported such things as: "If baseline data wasn't (sic) available we would go ahead with the project anyway"; "without data our projects sat in the muck...we then negotiated a different way to collect data"; "we worked on projects until we got some acceptable

Table 5

Comparison Between the Top Three and Bottom Three Teams
Regarding Their Experience in Collecting
Supporting Data or Documentation

Item	Mean Rank		Corrected for Ties	
	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
ID existing data	4.00	3.00	.48	.48
Obtain existing data	3.67	3.33	.04	.82
Creating baseline data	4.33	2.67	1.22	.26
Impact of data avail	4.00	3.00	.42	.51
Learning about data requirements	4.17	2.83	.78	.37

Note. A description of each item can be found in Appendix B, section 2 a.

resolution to them"; "wasn't too difficult ... looked or talked with people until we found what we were looking for"; and "we became a lot more selective about the projects we chose." Persistence was a reoccurring theme in the interviews.

Members from the bottom three teams reported some difficulty in obtaining data. Five members made comments like: "We had difficulty in getting true figures. Sometimes the data just wasn't (sic) available and other times the digging just got to be too overwhelming"; "sometimes the stakeholders did not want to give us the data we needed"; and "some people weren't faithful in writing (creating) baseline data."

Problem Solving Tools and Techniques

Teams were trained in various problem solving tools and techniques to help them diagnose their projects. Table 6 contains the results of the differences in the group's use of the tools and techniques in the program. The bottom three teams reported greater usage of the brainstorming technique, while the top three teams reported greater usage of the flowchart, Pareto chart, and histogram. The brainstorming technique encourages a set time of "free-wheeling" where participants simply offer ideas and are encouraged to build upon the ideas offered by other participants. No criticism or evaluation is permitted at this time. A flowchart

is as the name implies, a diagram of the "flow" or sequence of a particular process. This tool requires some knowledge of the process both in terms of sequence and function. The Pareto chart and histogram are very similar in that data are collected to determine the frequency of a particular event. The Pareto chart goes one step further than the histogram in that the categories are presented in descending order with a cumulative curve above the

TABLE 6

Comparison Between the Top Three and Bottom Three Teams in Their Use of Problem Solving Tools and Techniques

	Mean Rank	Corrected for Ties		
Item	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
Brainstorming	2.00	5.00	3.97	.04*
Flowcharting	4.67	2.33	2.63	.10*
Fishbone Diagram	4.33	2.67	1.19	.27
Backward Fishbone	3.83	3.17	.20	.65
Pareto Chart	5.00	2.00	3.97	.04*
Histogram	5.00	2.00	3.85	.04*
Force Field Analysis	4.17	2.83	.78	.37

Note. A description of each item can be found in Appendix B, section 2 b
* Significant $\leq$ .10.

categories to demonstrate the relative frequency of each category.

Differences were found between the two groups in their use of the brainstorming technique. The mean rank for the top three teams was 2.00, while the mean rank for the bottom three teams was 5.00. Responses to the interview questions revealed that team members from the bottom three teams did not use the other tools and techniques as compared to members from the top three teams. While 5 of 13 team members from the bottom three teams said that they did not use many of the tools and techniques, those that did said they used primarily brainstorming.

Differences were also found between the two groups in their use of the histogram, flow-chart, and Pareto Chart. The mean rank for flowchart usage was 4.67 for the top three teams and 2.33 for the bottom three teams. The mean rank for the histogram usage for the top three teams was 5.00, while the mean rank for the bottom three teams was 2.00. The mean rank for the Pareto chart usage was 5.00 for the top three teams, while the mean rank for the bottom three teams was 2.00.

Members from the top three teams reported a mixed reaction to the problem solving tools and techniques. Five members reported typically using them at the beginning of the project, two members reported using them when trying to verify causes, and two members stated, "We didn't use the tools and techniques too much," or "we seemed to use the concepts more subconsciously." One other member said, "we didn't want to make the project too complex."

Developing Solution Alternatives

Teams were encouraged to consider all possible sources and selection criteria for solution alternatives. In addition, teams had to address potential resistance from various stakeholder group when they implemented their solutions. The following four sections compares the two groups in the way they generated and implemented solution alternatives.

From Where Solution Alternatives Might Come

When it came time to develop solutions, teams were encouraged to consult with anyone who might have the knowledge or expertise to assist in solving the problem. Table 7 compare the differences between the two groups regarding what sources each group consulted with when developing solution alternatives. No differences were found in the responses between the two groups.

When It Came Time To Pick A Solution

Teams often had a number of solution alternatives from which to pick. The criteria for selecting one alternative over another might therefore also vary between the two groups. Listed in Table 8 are the results from the analysis performed to determine if there were any differences between the two groups. No differences were found between the two groups.

Table 7

Comparison Between the Top Three and Bottom Three Teams
Regarding Their Sources of Solution Alternatives

	Mean Rank	Corrected for Ties		
Item	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
Informal Meetings	3.33	3.67	.04	.82
Formal Team Mtgs	3.83	3.17	.19	.65
Standards of Perf	2.67	4.33	1.19	.27
Superiors	3.83	3.17	.19	.65
Peers	4.33	2.67	1.19	.27
Subordinates	4.00	3.00	.42	.51
Corporate	3.67	3.33	.04	.82
Industry Practice	3.83	3.17	.19	.65
Govt Regulations	4.00	3.00	.45	.50
Internal Customer	3.67	3.33	.05	.82
External Customer	4.67	2.33	2.40	.12
Suppliers	4.33	2.67	1.19	.27

Note. A description of each items can be found in Appendix
B, section 3 a

Table 8

Comparison Between the Top Three and Bottom Three
Teams in Their Selection of Criteria for
Solution Alternatives

Item	Mean Rank		Corrected for Ties	
	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
Company Priority	3.00	4.00	.44	.50
Customer Request	4.33	2.67	1.67	.19
Ease of Implementation	4.17	2.83	.78	.37
Return on Investment	3.00	4.00	.42	.51
Chronic Problems	4.33	2.67	1.19	.27
Stakeholder Part	3.67	3.33	.04	.82

Note. A description of each item can be found in Appendix
B, section 3 b.

Roadblocks to Solution Implementation

At one time or another, teams encountered "roadblocks"
or resistance to their solutions. Highlighted in Table 9
are the differences in resistance the two groups experi-
enced when implementing their solutions. One area of dif-
ference between the two groups involved the stakeholder's
standard of performance (SOP). The bottom three teams re-
ported greater difficulty with stakeholder's SOP than did
the top three teams. The mean rank for the top three teams
was 2.33, while the mean rank for the bottom three teams

was 4.67.

Another difference in resistance experienced by the two groups was with corporate. The mean rank for the top three teams was 2.00, while the mean rank for the bottom three teams was 5.00. Although the bottom three teams reported somewhat greater resistance from corporate to their solutions than the top three teams, the reader should take note that the mean score for the bottom three teams was .933 (hardly ever), while the top three teams had a mean of .439 (never), indicating that resistance from corporate was minimal or non-existent for both groups.

Finally, with regards to resistance with the prevailing culture, the top three teams reported that their solutions ran contrary to the prevailing culture or company values more often than the bottom three teams. The mean rank for the top three teams was 5.00 while the mean rank for the bottom three teams was 2.00.

Members from the top three teams in their interviews reported some difficulty with suppliers, limited technology, time constraints, "turf" battles, and capital expenditures to implement solution. There was the sense that competing priorities for resources was the biggest obstacle. Echoing that idea, another member said in reference to roadblocks, "capital expenditures and unwilling stakeholders. Sometimes it takes money to save money ... something our organization seemed to have a hard

Table 9

Comparison Between the Top Three and Bottom Three Teams in
The Resistance They Faced to Solution Implementation

	Mean Rank	Corrected for Ties		
Item	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
Project Teams	3.00	4.00	.42	.51
Standards of Perf	2.33	4.67	2.63	.10*
Superiors	2.33	4.67	2.33	.12
Peers	3.50	3.50	.00	1.00
Subordinates	3.50	3.50	.00	1.00
Corporate	2.00	5.00	3.97	.04*
Technology	4.50	2.50	1.76	.18
Govt Regulations	4.33	2.67	1.22	.26
Internal Customers	3.50	3.50	.00	1.00
External Customers	4.33	2.67	1.19	.27
Suppliers	4.33	2.67	1.22	.26
Company Priority	3.33	3.67	.05	.81
Difficult Implement	3.33	3.67	.04	.82
Company Culture	5.00	2.00	3.97	.04*

Note. A description of each item can be found in Appendix
B, section 3 c
* Significant $\leq$ .10.

time understanding." One member summarized it by stating,
"getting consensus, making time, and getting people to-
gether...all three worked for or against you."

Members from the bottom three teams also reported similar difficulties, but in addition one member added that there was a "lack of communication between our team members. It seemed that team members didn't always cooperate to the fullest extent." Two members reported that they could not get the authority to make the changes their team sought, nor could they get the support from the "right people who could get our projects through." Additionally, another member from a bottom three team said, "ultimately, it seemed like senior management was more concerned with preserving the status quo than making real change happen."

The perceptions about senior management support and also involvement from stakeholders suggest that perhaps the top three teams were more adept in addressing senior management's priorities and or placing greater emphasis on them. It raises the question whether the top three teams viewed or treated senior management as stakeholders more often than did the bottom three teams. This finding will be discussed in the next chapter. Nevertheless, the comments about support from senior management reinforces an importance difference found with the TPI survey in which the top three teams reported greater recognition than did members from the bottom three teams.

Means to Overcome Roadblocks

Teams often developed different strategies to overcome

roadblocks and create support for their projects. The differences in the strategies used to overcome these roadblocks are listed in Table 10. The top three teams reported greater use than did the bottom three teams of solutions which: (a) had customer approval, (b) could be easily implemented, or (c) were already being used in the industry. Pertaining to solutions which had customer approval, the mean rank for the top three teams was 5.00 while the mean rank for the bottom three teams was 2.00. Pertaining to solutions which could be easily implemented, the mean rank for the top three teams was 5.00, while the mean rank for the bottom three teams was 2.00. The third difference between these two groups in methods used to overcome roadblocks was in solutions which could be considered a practice in the industry. The mean rank for the top three teams was 4.67, while the mean rank for the bottom three teams was 2.33.

A reoccurring comment or theme from members of the top three teams was evidenced in this quotation, "The main thing is to keep moving or looking. Keep pursuing alternatives. Eventually persistence wins out." Another member with a variation on this theme said, "strengthen your ability to manipulate your sphere of influence. If you need to, back off from the resistance and find a new angle or approach to the project or the people."

Other comments from the top three teams seemed to

Table 10

Comparison in the Strategies the Top Three and Bottom
Three Used to Overcome Roadblocks

| Item | Mean Rank Corrected for Ties | | | |
	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
Project Teams	3.83	3.17	.19	.65
Standard of Perform	4.33	2.67	1.19	.27
Stakeholders	4.17	2.83	.78	.37
Technology	4.17	2.83	.78	.37
Quality	3.33	3.67	.04	.82
Suppliers	4.00	3.00	.42	.51
Company Priority	4.33	2.67	1.22	.26
Customer Request	5.00	2.00	3.85	.04*
Ease of Implement	5.00	2.00	3.85	.04*
Industry Practice	4.67	2.33	2.63	.10*

Note. A description of each item can be found in Appendix
B, section 3 d.
* Significant $\leq$ .10.

stress timing and lobbying. One member said, "I did a lot
of lobbying for my projects. It was important to pay atten-
tion to what the priorities of senior management were." If
nothing else worked, "find an ally with a big club. Some-
times you just need the muscle to get it [the project]
through."

Some members from the bottom three teams also saw the

need to lobby and be persistent but apparently to no avail. One respondent said, "We tried to encounter resistance with persistence and better salesmanship but as our project list would indicate, we dropped a lot of projects." Another respondent from the same team said, "Obviously we didn't overcome the obstacles. A lot of members seemed to work their own agendas too closely." Members from another bottom three team said this in reference to overcoming resistance, "We bitched. Eventually we stopped trying. I know that's not right but you get tired of bashing your head in."

<div align="center">Stakeholder Input</div>

One of the more important facets of PDM and change in general is the inclusion of stakeholder groups. The two aspects of stakeholder involvement in this study were timing of stakeholders and the type of involvement. The following two sections compare the two groups in the timing and type of stakeholder participation each group sought.

Timing of Stakeholder Participation

Team members were encouraged to seek stakeholder participation and support while working on projects. Team members were instructed to use their discretion as to when they would invite stakeholder participation. Tables 11 and 12 contain the results from the analyses conducted to determine if there were any differences between the two

groups as to when they solicited stakeholder participation and the type of participation each group desired.

There was a difference between the two groups pertaining to the timing of stakeholder input. The comparison between the two groups is listed in Table 11. The mean rank for obtaining stakeholder participation at the beginning of the project for the top three teams was 5.00, while the mean rank for the bottom three teams was 2.00.

There was also a difference between the two groups regarding stakeholder input after the teams identified what they wanted changed. The mean rank for the top three teams was 5.00, while the mean rank for the bottom three teams was 2.00. The question arises whether the importance of stakeholder participation was in the priority the group assigned to stakeholder participation rather than the timing itself.

Responses to the interview questions were very similar for both groups. About an equal number from each group made statements like: We tried to involve them (stakeholders) as soon as possible and "we tried to get them involved up front so stakeholders were familiar with the project.

There were a few responses to the interview questions from the bottom three teams which indicated some differences. Those responses revealed a tendency to contact stakeholders after some progress was already made. For instance, one respondent said, "I contacted stakeholders after the

Table 11

Comparison Between the Top Three and Bottom Three Teams
in Their Timing of Stakeholder Participation

	Mean Rank	Corrected for Ties		
Item	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
Before developing problem statement	5.00	2.00	3.85	.04*
After identifying desired change	5.00	2.00	3.85	.04*
Before generating solution altern	4.17	2.83	.78	.37
After choosing an alternative	3.17	3.83	.19	.65

Note. A description of each item can be found in Appendix
B, section 4 a
* Significant at .10.

data was (sic) collected and after I had a potential

solution alternative." Two other respondents said something

similar to that. Similarly, another respondent said, "we

typically used them in a consulting fashion, more like an

update. We actually didn't get them involved in too many of

our projects." Another respondent said, "I got stakeholders

to verify the numbers [savings] after the project was done

... because I picked the projects where I had the most

control." It is interesting to note that this finding may

help explain the difference identified between the two

teams with regards to resistance from stakeholders. As

stated earlier, the bottom three teams reported greater resistance from stakeholders than did the top three teams.

Type of Stakeholder Participation

Team members used their discretion regarding the type of participation sought from stakeholders. Participation could range from full participation to only as needed. No differences were found in the responses between the two groups. Table 12 contains the results from that analysis.

Table 12

Comparison Between the Top Three and Bottom Three Teams
in The Type of Stakeholder Participation They Sought

Item	Mean Rank		Corrected for Ties	
	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
Full Participation	4.33	2.67	1.19	.27
Part time	2.83	4.17	.78	.37
Only as needed	3.00	4.00	.44	.50

Note. A description of each item can be found in Appendix B, section 4 b

Team Meetings

The purpose and frequency of team meetings were determined by the group. Sometimes project teams met every week and sometimes they met every other week. Some teams

used meetings only to report on progress, while other teams used their meetings to conduct actual project work. Table 13 lists the results of the responses to meeting usage. No differences were found in the responses between the two groups.

Table 13

Comparison Between the Top Three and Bottom Three Teams
in the Frequency and Use of Team Meetings

	Mean Rank		Corrected for Ties	
Item	Top 3 Teams	Bottom 3 Teams	Chi Square	Prob.
Frequency of meetings	3.33	3.67	.06	.79
Meeting function	3.17	3.83	.19	.65
Receipt of mtg summary	4.00	3.00	.42	.51

Note. A description of each item can be found in Appendix B, section 5 a, b, c.

Summary

The Team Practices Inventory (TPI, Pfaff, 1987) which was used to measure team members' perceptions regarding their group's performance revealed differences for the following three factors: goal clarity, role clarity, and recognition. Team members from the top three teams reported greater goal and role clarity and perceived greater recognition than did members from the bottom three teams.

The Project Procedures Survey also revealed differences between the top three and bottom three teams. The top three teams reported using crisis/chronic problems from their jobs as sources for projects more often than did members from the bottom three teams.

Although differences were not found regarding the collection of supporting data/documentation, the responses to the interview questions revealed a tendency on the part of members from the top three teams to proceed with a change even if cost savings could not be substantiated.

The top three teams also differed from the bottom three teams with respect to the use of problem solving tools and techniques. Differences were found between the top three and bottom three teams and their use of the brainstorming technique, the flowchart, Pareto chart, and histogram. Members from the bottom three teams reported greater usage of the brainstorming technique, while the top three teams reported greater usage of the flowchart, Pareto chart, and the histogram. The top three teams' usage of these tools indicates a more in-depth analysis of the project and may have contributed to more successful solution implementation strategies.

Differences were also observed between the two groups with regards to roadblocks to solution implementation. The bottom three teams reported greater difficulty with the stakeholders' standards of performance and with corporate

than did the top three teams. The top three teams, however, reported greater difficulty with the prevailing culture than did the bottom three teams.

The methods used to overcome resistance also revealed differences between the two groups. The top three teams were more apt to use solution alternatives which they could leverage by: (a) appealing to customer requirements, (b) easy implementation, or (c) citing current use by others in the industry.

Finally, the top three teams were more apt to include stakeholders earlier in the project than the bottom three teams. The top three teams were more likely to include stakeholders from the very beginning of the project and after the team identified what they wanted changed. This finding may help to explain the earlier finding where the bottom three teams reported greater difficulty in over-coming resistance from stakeholders than the top three teams.

CHAPTER V

CONCLUSIONS AND RECOMMENDATIONS

Introduction

Presented in this chapter are a summary and inter-
pretation of the conclusions regarding the research con-
ducted and recommendations for future study.

Summary of Conclusions

The purpose of this research which investigated a par-
ticipative decision making program for supervisors, mana-
gers, and salaried professionals was twofold: (1) What are
the factors associated with team success? (2) How do the
"better teams" differ from the "poorer teams" in the way
they initiate, develop, and implement projects? The major
conclusions drawn from this study were that successful team
performance was associated with: (a) a clear understanding
among team members of team goals, (b) a clear understanding
among team members of their roles on the team, (c) using a
variety of problem solving tools and techniques to obtain
a more thorough understanding of their projects, (d) team
perception of positive recognition from senior management,
(e) making stakeholder participation a high priority among

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their project activities, and (f) using a variety of means
to overcome resistance.

The Importance of Goal and Role Clarity

The Team Practices Inventory (TPI) survey assessed
team members' perceptions regarding their groups' per-
formance. The analysis revealed some key differences
between the top three and bottom three teams for goal and
role clarity. The response means to each of these factors
was higher for the top three teams. In light of the way in
which the success criterion (proportion of cost savings
attained) was achieved, that is, through problem solving,
the differences in the team's responses to these three
factors seem to reinforce some basic problem solving
principles.

The mean scores on items regarding goal and role
clarity indicated that team members from the more succes-
sful teams perceived greater goal and role clarity than
members of the bottom three teams. Goal and role clarity
may contribute to a successful experience in part because
the team's efforts and energies are directed toward a de-
fined cause while simultaneously minimizing the amount of
effort which needs to be spent on peripheral issues or on
confusion or conflict resolution over goals and roles. This
finding supports research from Steel et al. (1985), and
Walton (cited in Goodman, 1986) who also found that suc-

cessful teams reported greater satisfaction with goal and role clarity.

The Importance of Using Problem Solving Tools and Techniques

One possible factor contributing to the differences in goal and role clarity scores might be found in the teams' differential use of problem solving tools and techniques. The Project Procedures Survey revealed that the bottom three teams made more use of brainstorming technique than did the top three teams. The top three teams, however, reported greater use of the flowchart, Pareto chart, and histogram. These tools required brainstorming but, in addition, are more analytical and use information that the teams can gather only through further research.

The knowledge required to create a flowchart, Pareto Chart, or histogram involves the identification of symptoms, data collection, and analysis. The process of identifying the desired data, developing a means to collect data, and finally coding and analyzing the data may help clarify the symptoms and or causes of a particular problem which would also lead to more clarity about goals.

This further research or additional understanding of the problem gained through the completion of a flowchart, Pareto chart, or histogram may help shed some more light on the teams' responses to the items on the TPI. Items on the goal clarity factor include, "the group's overall objective

is clear to me," "group members know what they are trying to accomplish as a group," and "the direction of the group is clear." Similarly, items regarding role clarity include, "I am sure of my responsibilities in the group," "individuals know how their role in the group fits with everyone else's," and "each member knows what he/she is expected to do in the group." Compared to brainstorming, which only requires simple identification of symptoms or problems, the information required to prepare a flowchart, Pareto chart, or histogram involves a more comprehensive understanding of the various symptoms or factors involved in a problem. It could be that the process of using the tools and techniques was sufficient for team members to identify feasible projects, understand their role in the problem or solution, and identify key steps to solution implementation.

This finding is consistent with the Firestien (1990) research which found that groups that used a problem solving strategy were more effective than groups which did not. The top three groups were perhaps more adept in the stages Firestien referred to as "mess finding" and "data finding." Although the means for both groups reflect minimal usage of the tools and techniques, it may be that even the smallest usage of the tools and techniques was sufficient to gain (a) a better understanding of the problem or (b) information necessary to take the next step in the

project. The findings of this research and the literature cited previously reinforce the idea that team members should be proficient in the use of problem solving tools and techniques to demonstrate need and a cause and effect relationship. This finding ultimately leads to the issues of validity and reliability, the foundation to good research for developing sound theories and practices regardless of the type of organization or industry. It is this researcher's opinion that training in research and development or experimental design will play a more dominant role in training in the future.

Another interesting point about goal and role clarity was that the top three teams reported finding more projects from their work assignments due to crises or chronic problems than did members from the bottom three teams pertaining to the procedures used in initiating, researching, and implementing cost savings projects. In light of the fact that the teams were created to reflect commonality among the members with regards to their responsibilities, it could be that the more successful teams were better able to identify projects which addressed a greater proportion of the team members. Admittedly, it could be that some areas were more prone to problems of a crisis or chronic nature. Nevertheless, the findings were also consistent with Steel and Shane (1986) who found that goal iden-tification was important to the success of quality circles. They found

that teams needed a goal which was (1) important to team members, (2) realistic, and (3) could be addressed by the team members. Teams which did not have such goals spent more time resolving conflict and role responsibilities.

The Importance of Recognition

The finding involving goal and role clarity is also interesting in light of the results from the TPI regarding the recognition factor. The top three teams perceived greater recognition for their efforts than the bottom three teams. In addition to items addressing the receipt of tangible rewards or other desirable benefits for goal attainment, this factor included these two items, "the group is given the resources to do the job" and "the group gets support for what it does from outside the group." Thus, in support of clear goals are the recognition and resources needed to achieve those goals.

Additionally, it is interesting to note that the analysis of Project Procedures Survey also revealed a slight difference in the responses between the top three teams and the bottom three teams with regards to resistance from corporate. The bottom three teams reported experiencing somewhat greater resistance from corporate than did the top three teams. The reader however, should take note that the mean score for the bottom three teams was .933 (hardly ever), while the mean score for the top three teams was

.439 (never). These scores indicate that resistance from corporate was minimal.

Cooperrider and Plath (cited in Bushe & Johnson, 1989) stated that "group development is advanced or constrained by team members' perception of environmental support ... including the kind of attention given it by senior management" (cited in Bushe & Johnson, 1989). Similar to the research conducted by Cooperrider and Plath, this study supports the notion that team member perception of senior management support is associated with team success both in terms of tangible rewards and resources to complete project activities. One caution is that this perception of support could be an artifact, that is, team members received senior management recognition after they had experienced success reinforcing the old adage that success breeds upon success.

This finding supports issues which were presented earlier in the research that prompted this dissertation to begin with, that is, management is ultimately one of the most crucial forces behind the success of PDM teams, whether the form of the team is a quality circle, a task force, or a team of cross-functional managers. Practitioners should give serious consideration to incorporating PDM objectives in annual operating plans to ensure that direction and resources will be made available for project teams and creating a reward program which is meaningful to the participants.

Another explanation for differences in perceived support could be the difference between the top three and bottom three teams with regards to stakeholder involvement. The top three teams reported including stakeholder earlier in the process than did the bottom three teams. The top three teams could have interpreted stakeholder involvement as environmental support and hence this difference. This finding is of particular importance to those wishing to implement a participative decision making program and will be further discussed in the section pertaining to the importance of stakeholder involvement.

Resistance or Roadblocks to Solution Alternatives

The analysis of the project procedures survey also revealed differences in the teams' responses to the section on "roadblocks" to solution implementation. The top three teams reported greater resistance from the prevailing culture than did the bottom three teams. The culture issue was related to the perception of "top-down" management and an attitude that "we have always done things this way." Most of the quality "gurus" like Deming (1986) or Juran (1988) talk about the need to transform the culture if real change is to occur. The cultural transformation addresses such issues as worker participation and closer relationships with both customers and suppliers.

One contributor to this difference between the top

three and bottom three teams might be found in the use of the tools and techniques. As cited earlier, the top three teams reported using the flow chart, Pareto chart, and histogram more often than the bottom three teams. The top three teams may have been more apt to try something different than the bottom three teams for confronting established procedures as a result of the additional insight to the problem or opportunity afforded them by the greater use of the tools and techniques.

A related finding is the difference to the item involving stakeholder standards of performance (SOP). The bottom three teams reported greater difficulty with circumventing or resolving difficulty with the standards of performance of stakeholders than did the top three teams. The use of problem solving tools and techniques may be associated with success because the additional information required to use the tools and techniques and the resulting information may also serve as a means to include key stakeholders in change.

Making Stakeholder Involvement a Priority

One of the obvious desired outcomes of a participative decision making program is the goal of including those who would be affected or have a say in the final outcome. This was one of the original factors precipitating this research because middle mangers were being circumvented in the tra-

ditional quality circle concept. As mentioned in the pre-
vious section, the bottom three teams reported greater
difficulty with stakeholders when attempting to implement
solution alternatives than did the top three teams. Not
surprising then that the results also indicated that the
top three teams were more likely to get stakeholders in-
volved at the beginning of a project, that is, before deve-
loping the problem statement, and shortly after identi-
fying what the team wanted to change.

A pivotal issue of change in an organization through
participative decision making requires a solution which is
acceptable to those who have to live with the consequences.
Therefore, involving the key stakeholders as soon as pos-
sible seems to be an important factor associated with the
success of the teams. It is not too surprising then that
the bottom three teams reported greater resistances from
stakeholders when attempting to implement their solution
alternatives.

The finding that the top three teams utilized problem
solving tools and techniques somewhat more often than the
bottom three teams: buttressed their solution alternatives
with customer considerations, industry practices, and ease
of implementation; and included stakeholders more often
accentuates the benefits of stakeholder involvement. They
better understood and supported the projects.

It appears that the top three teams were more sensi-

tive to or more successful in including stakeholders directly or keeping them abreast of the progress made in the project. This is perhaps one of the most important findings of this study, that the more successful teams involved the stakeholder earlier or made them a higher priority than did the teams which were not as successful. Again, as in the literature on quality circle research, this demonstrates the need for participative decision making throughout the entire organization involving stakeholders from different levels and functional areas.

Strategies to Overcome Roadblocks

Among some of the key components in implementing a solution alternative is the ability to overcome resistance or roadblocks to the change. The top three teams differed from the bottom three teams in their strategies to overcome resistance. The top three teams differed from the bottom three teams in that the top three teams reported (a) greater usage of solutions with customer approvals, (b) developing solutions which were easier to implement, and (c) greater usage of solutions which were used elsewhere in industry.

Appealing to customer demands as means of gaining leverage for change reflects practices which are encouraged in quality improvement processes. Since customer demands can play such an important role in the development of pro-

ducts or services, and hence an organization's basis for decision making, it makes sense that one way to overcome obstacles to change is through the identification of and appeal to customer needs. It is interesting to note, as well, that none of the teams reported actually inviting customer participation on a project. This lack is despite a trend in total quality management practices to involve the end user or final customer in the planning or development of product or service.

Similarly, the appeal to industry practices as a means of gaining leverage coincides with some practices inherent in competitive benchmarking. Benchmarking is that practice which assesses the organization's performance against others in the industry, often times the best in industry. Therefore, the appeal to industry practice as a means to justify a solution alternative may have provided the leverage a team needed to implement a solution.

The finding that the top three teams pursued solutions which could be more easily implemented could be one contributing factor to the top three teams' ability to generate a greater proportion of their cost savings goal. The importance of this particular finding suggests that there were project and solution criteria that the top three teams used which they may not have even been aware of nor articulated during the interviews. Some questions that arise include: "What makes for an easy project to implement?," "How can a

team make it easier to implement a project?," "What were the criteria teams used to prioritize projects?," or "Do the more successful teams select easier projects to work on?"

These findings support the research by Steel and Shane (1986); and Elvins (1985), who found that members of successful quality circles perceived an increase in their sphere of influence as a result of participating on the quality circle. The findings of this study suggest that a way to exert greater influence on those in decision making capacities was through an appeal to an action which enhanced the organization's position in the marketplace. This was achieved either by way of adhering to industry practice or a customer request. The latter also supports many quality improvement philosophies which advocate identifying customer requirements (including cost) and translating those into specifications for a product or service.

Alternative Explanations

There are a number of alternative explanations regarding the conclusions which need to be addressed. First, one could argue that team member composition played a factor in the success of the teams. A team could have been organized by allowing members to form teams on the basis of some criteria other than functional responsibilities. This would have allowed individuals to "stack the deck" with

friends or on the basis of some other collective need. Team membership, however, was predetermined along functional responsbilities. Another explanation could have addressed varying abilities among team members to perform on the teams. But each team was given the same training for problem solving, tools and techniques of problem solving, and procedures for completing a project. This researcher therefore assumed that each team was relatively equal in terms of competence and "health." Prior to the formation of a team, there was no evidence to suggest that the teams were different with regard to the abilities required to perform successfully in the program.

Limitations of the study

This study employed a post hoc analysis. What actually happened may have varied from what the team members reported. Additionally, the researcher did not have independent observations or confirmations of the teams' activities other than confirmation from cost accounting that the costs and cost savings were accurate.

For the purposes of this research, the researcher had to assume that the opportunity for savings was equal through the creation of proportionate savings goals for each team. There was no easy way to evaluate the level task complexity faced by each team.

The sample size was very small due to the unit of

analysis which was the teams. Consequently, only very substantial differences were statistically significant in the analyses. Future studies of effectiveness in participative decision making should include both individual team member performance and whole teams as units of analysis. Additionally, future researchers would be well advised to employ larger samples.

Recommendations

The findings and conclusions of the study led to several recommendations for PDM practices and items for further research. Those items are contained in the next two sections.

Implications for Practice

The implications for practice are not new but have been reinforced by this study. Teams need to have goals, data to support theories and solution alternatives, access to stakeholders, and resources, whether time, personnel, or equipment, to complete projects. Having had the opportunity first hand to observe the intricacies of this program, this researcher suggests these additional recommendations for implementing participative decision making programs:

1. Integrate the program in the organization's long term plans to help clarify goals and increase the probabi-

lity that the PDM program will be of value to participants and the organization. Given the findings of this research and the supporting research cited, every effort should be made to ensure that teams develop or are given explicit performance expectations regarding the team's goals and individual role responsibilities prior to collecting data or implementing solution alternatives.

2. An important finding of this study is also related to the role of senior management. Senior management must demonstrate and encourage acceptance for change to ensure that various organizational objectives will not be "short-circuited" by suboptimization. Involve senior management in projects of their own to help them understand what is required of their subordinates and how they can provide the recognition and support teams need to succeed.

3. Include program participation in the participant's standards of performance. Try to foster the notion that PDM and problem solving is the way to do the job. Anchor participation in specific tangible goals, that is, quality improvements, cost reductions, grievance resolutions, etc. Do not force participative decision making merely for the sake of participative decision making.

4. Train participants in data collection and analysis to reinforce items provided in Item 1 listed above.

5. Train participants in small group facilitation skills, including negotiation skills, for interaction with

stakeholders.

Items for Further Research

The findings and the conclusions of the study led to several areas that would be appropriate for additional research and study:

1. How do teams identify and choose projects? Is there a correlation between the kinds of projects a team chooses and its level of success? Are there some projects which are more conducive to participative decision making programs than others?

2. What kinds of data analysis skills are required for teams involved in participative decision making programs? Are teams more fluent in data analysis likely to report greater satisfaction than teams which are not as skilled in data analysis?

3. What kinds of facilitation or coordination skills are needed to succeed in participative decision making programs? Specifically, what skills are necessary to address concerns and issues raised by the stakeholders, that is, team building or negotiation skills?

4. How should participative decision making be integrated in the long term plans of an organization to maximize senior management support and recognition to the participants? What should the role of senior management be in such a program?

5. There is a need to research the viability of the Project Procedures Survey regarding the way in which teams initiate, research, and implement projects. The items prepared for the survey need to be tested in other kinds of industries and with other kinds of success criterion.

Appendix A

Team Practices Inventory

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LAWRENCE A. PFAFF and ASSOCIATES

July 20, 1992
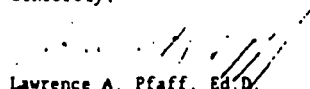
Mr. Eric de Nijs
4683 Crantwood S.E.
Kentwood, MI 49508

Dear Mr. de Nijs.

It has been a pleasure to assist you in completing your doctoral
dissertation

I am writing this letter to verify that I approved, in advance, your use
of the *Team Practices Inventory* in your dissertation research. In
addition, you have permission to reproduce the *Team Practices Inventory*
for inclusion in your dissertation.

Sincerely.

Lawrence A. Pfaff, Ed.D.

LAP·cs

Organizational & Human Resource Consulting

TEAM PRACTICES INVENTORY

by

Lawrence A. Pfaff, Ed.D.

This survey is being completed about _____

    Your relationship to this group is: (check one)

    ___ You are a member of the group

    ___ You are the leader of the group

    ___ You are a person outside the group

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INSTRUCTIONS:

This survey contains a series of statements that describe how people interact in a group. Answer each item about the group named on the front page. Respond to each statement by circling the number that best describes your rating of the group and the people in it.

To guide you:

"1" means that the statement is true to an **extremely small extent, never, or not at all.**
"4" means that the statement is true to an **average extent, or sometimes.**
"7" means that the statement is true to an **extremely high extent, always, or without fail.**

Of course, you may use the other numbers:

"3" and "2" to represent varying degrees between **sometimes** and **never.**
"5" and "6" to represent varying degrees between **sometimes** and **always.**

CIRCLE ONLY ONE NUMBER FOR EACH STATEMENT. DO NOT CIRCLE BETWEEN NUMBERS.

Your answers should represent how *you* think things *actually are*, not how they should be or how you wish they were. Answer as accurately and honestly as you can.

Try to complete all statements. There is no time limit. There are no right or wrong answers. If you find a statement is irrelevant to this group, leave it blank.

Do not put your name anywhere on the questionnaire. Your responses will remain anonymous.

Remember: Mark each statement "1" to "7" based on how accurately you feel it describes the group named on the front of the survey.

		Never			Sometimes			Always
1.	The group's overall objective is clear to me	1	2	3	4	5	6	7
2.	I am sure of my responsibilities in the group	1	2	3	4	5	6	7
3.	Group members are asked for input on decisions that affect them	1	2	3	4	5	6	7
4.	The group leader is fair to all	1	2	3	4	5	6	7
5.	Group meetings are usually focused on relevant issues	1	2	3	4	5	6	7
6.	The group possesses the skills necessary to be effective	1	2	3	4	5	6	7
7.	Group members believe the team goal is more important than personal success	1	2	3	4	5	6	7
8.	Group members know what they are trying to accomplish as a group	1	2	3	4	5	6	7
9.	Each person is treated as an important part of the group	1	2	3	4	5	6	7
10.	When you bring up an idea, people in the group sit up and take notice	1	2	3	4	5	6	7
11.	This group works together to get the work done efficiently	1	2	3	4	5	6	7
12.	Everyone's effort is directly related to accomplishing key goals	1	2	3	4	5	6	7
13	The group leader actively supports group members	1	2	3	4	5	6	7
14.	Group members communicate clearly with each other	1	2	3	4	5	6	7
15.	There are high standards of performance in the group	1	2	3	4	5	6	7
16.	Responsibilities are discussed by group members, especially when people have questions about what to do	1	2	3	4	5	6	7
17.	People in the group get rewarded for team effort	1	2	3	4	5	6	7
18.	The group's meetings lead to sound decisions	1	2	3	4	5	6	7
19.	What the group does is challenging	1	2	3	4	5	6	7
20.	I trust the members of the group	1	2	3	4	5	6	7

Remember: Mark each statement "1" to "7" based on how accurately you feel it describes the group named on the front of the survey.

Never   Sometimes   Always

21. In this group, personal success is achieved through group success 1 2 3 4 5 6 7
22. Group members feel appreciated by other members of the group 1 2 3 4 5 6 7
23. When things are not going well, people make an effort to help each other 1 2 3 4 5 6 7
24. The group's structure results in a more effective group 1 2 3 4 5 6 7
25. People try hard to listen to each other in this group 1 2 3 4 5 6 7

26. Group members are highly competent 1 2 3 4 5 6 7
27. The group leader is committed to the group goals 1 2 3 4 5 6 7
28. The direction of the group is clear 1 2 3 4 5 6 7
29. The group is given the resources to do the job 1 2 3 4 5 6 7
30. People in the group expect high performance from each other 1 2 3 4 5 6 7

31. Group members are dependable 1 2 3 4 5 6 7
32. The group's energy is directed toward doing the right things 1 2 3 4 5 6 7
33. Members have influence on what happens in the group 1 2 3 4 5 6 7
34. Everyone is committed to achieving group goals 1 2 3 4 5 6 7
35. People in this group are knowledgeable about their work 1 2 3 4 5 6 7

36. Written communication among group members is clear 1 2 3 4 5 6 7
37. The group leader trusts members of the group 1 2 3 4 5 6 7
38. Individuals know how their role in the group fits with everyone else's 1 2 3 4 5 6 7
39. Group members have developed a sense of trust 1 2 3 4 5 6 7
40. This group serves a worthwhile purpose 1 2 3 4 5 6 7

41. Everyone realizes cooperation is important for the group to be successful 1 2 3 4 5 6 7
42. Group members benefit from achieving group goals 1 2 3 4 5 6 7
43. This group is characterized by a high degree of commitment 1 2 3 4 5 6 7
44. People leave group meetings with a clear idea of what they need to do next 1 2 3 4 5 6 7
45. The group tries to improve its performance 1 2 3 4 5 6 7

46. Most efforts are directed at accomplishing the most important things 1 2 3 4 5 6 7
47. People in this group communicate effectively 1 2 3 4 5 6 7
48. Group members are efficient 1 2 3 4 5 6 7
49. Group members support each other 1 2 3 4 5 6 7
50. The group leader is open to new ideas 1 2 3 4 5 6 7

51. I have a feeling of accomplishment and satisfaction about this group 1 2 3 4 5 6 7
52. What the group does is important 1 2 3 4 5 6 7
53. The group is organized in a way that helps it accomplish its goals 1 2 3 4 5 6 7
54. When the going gets tough, people pull together to get the job done 1 2 3 4 5 6 7
55. The group gets support for what it does from outside the group 1 2 3 4 5 6 7

56. People in the group welcome my suggestions about what they do 1 2 3 4 5 6 7
57. The group strives for excellence in what it does 1 2 3 4 5 6 7
58. I have confidence in the ability of the group members 1 2 3 4 5 6 7
59. Everyone in the group is committed to achieving the same goal 1 2 3 4 5 6 7
60. Each member knows what he/she is expected to do in the group 1 2 3 4 5 6 7

61. The group leader can be trusted 1 2 3 4 5 6 7
62. I am proud of what the group does 1 2 3 4 5 6 7

Appendix B

Project Procedures Survey

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DELIBERATE METHODS CHANGE

TEAM SURVEY

Introduction: Much has been made of Participative Decision Making (PDM) in the last few years especially as it relates to quality improvement and cost reductions. I am conducting research in the area of PDM and would like to obtain some information as it pertains to your experience in DMC. The specific target areas of this part of the research includes identifying projects, developing solution alternatives, overcoming obstacles, and working with stakeholders. Your responses will be kept anonymous.

Instructions: Please follow the instructions for responding to items that are provided at the beginning of each section. When responding, please don't respond to the questions on the basis of one project or experience but rather in terms of the "typical" or "general" experience. The survey should take no more than 15-20 minutes to complete. Please give me your completed survey at the time of our interview. Thank you for your participation.

DMC TEAM SURVEY

```
                    4 = almost always
                    3 = frequently
                    2 = occasionally
                    1 = hardly ever
                    0 = none at all/never
```

1. Selecting projects

a. How you identified projects

    DMC projects could come from a variety of different sources. Using the scale above, please rate the following items by circling the number which best reflects your experience.

4 3 2 1 0   Informal meeting -- You identified projects with team members during informal meetings or conversations

4 3 2 1 0   Formal meetings -- You identified projects with team members during formal team meetings

4 3 2 1 0   Individual Standard of Performance -- You were able to identify projects from items contained in your SOP

4 3 2 1 0   Superiors -- You were able to identify projects from your boss's SOP or your boss offered you suggestions

4 3 2 1 0   Peers -- You were able to identify projects with fellow workers who were not involved with DMC

4 3 2 1 0   Subordinates -- You were able to identify projects from subordinates who were not involved with DMC

4 3 2 1 0   Corporate -- You were able to identify projects from Sara Lee Corporate priorities

4 3 2 1 0   Industry Practice -- You were able to identify projects from practices or innovation from the poultry industry

4 3 2 1 0   Government Regulations -- You were able to identify projects because of changes to government regulations in our industry

4 3 2 1 0   Internal Customers -- You were able to identify projects because of contact with other departments in Bil Mar or Sister Companies

4 3 2 1 0   External Companies -- You were able to identify projects because of suggestions from customers who bought Bil Mar products

4 3 2 1 0   Suppliers -- You were able to identify projects based on contact or suggestions from suppliers

4 3 2 1 0   Crisis/Chronic Problem -- You were able to identify projects from crises or chronic (reoccurring) problems

4 3 2 1 0   Other (Please specify -- if not applicable, answer 0)

DMC TEAM SURVEY

b. When it came time to pick a project

DMC team members chose the projects the wanted to work on. When you had the opportunity to choose, what criteria did you use to select your projects? From the 7 items listed below, please identify and rank order the top three reasons why you would typically choose one project over another (1 = most important, 2 =- very important, 3 = important)

_____ Company Priority -- The projects addressed a priority listed in the Annual Operating Plan or SOP

_____ Customer Request -- An external customer requested the action involved in the project

_____ Ease of Resolution -- The problem addressed in our project could be solved easily

_____ Return on Investment -- The projects we chose had the highest return on capital investment

_____ Chronic Problem -- The projects we chose solved a lot of problems we had experienced for a long time

_____ Stakeholder Participation -- We chose the project because we could get those affected by the change to participate in or contribute to the project

_____ Other (Please describe)

2. Collecting the supporting data/documentation

Part of the process for getting projects verified included identifying causes and providing the baseline or supporting data to support your projects. Please circle the number of items which best reflects your experience in gathering data for your projects using the scale below:

a. Collecting supporting data or documentation

                    4 = almost always
                    3 = frequently
                    2 = occasionally
                    1 = hardly ever
                    0 = none at all/never

4 3 2 1 0   Identifying existing data -- Our team found it easy to
                identify what data we needed to substantiate our projects

4 3 2 1 0   Obtaining existing data -- Our team found it easy to
                obtain baseline or supporting data for our project

a. Collecting supporting data or documentation (cont)

          4 = almost always
          3 = frequently
          2 = occasionally
          1 = hardly ever
          0 = none at all/never

4 3 2 1 0   Creating baseline or supporting data -- The frequency you
              had to work with the Cost Department to get approval for
              new data or new methods of collecting data to prove gains
              you made with your projects

4 3 2 1 0   The impact of data availability on projects -- The
              frequency with which your team dropped projects or put
              them on hold because baseline or supporting data was not
              available

Please rate the last item on a scale of 0 - 4 with 4 being very much
improved and 0 being no improvement at all

4 3 2 1 0   Learning about data requirements for project verification
              -- The degree of improvement regarding your ability to
              identify and obtain data needed to support your projects
              since you started DMC

b. Problem Solving Tools and Techniques

Teams were trained and encouraged to use a variety of problem solving
tools and techniques in diagnosing their projects. Please rate the
items from 0 - 4 using the following scale:

          4 = almost always
          3 = frequently
          2 = occasionally
          1 = hardly ever
          0 = never

4 3 2 1 0   Brainstorming

4 3 2 1 0   Flowchart

4 3 2 1 0   Fishbone (Cause and Effect Diagram)

4 3 2 1 0   Backward Fishbone Diagram

4 3 2 1 0   Pareto Chart

4 3 2 1 0   Histogram

4 3 2 1 0   Force Field Analysis

          (Please specify others -- answer 0 if not applicable)

4 3 2 1 0   Other:

4 3 2 1 0   Other:

DMC TEAM SURVEY

3. Developing Solution Alternatives

When it came time to develop solutions, teams were encouraged to consult with anyone who might have the knowledge or expertise to assist in solving the problem. Using the scale below, please circle the number which corresponds to the frequency with which you used them to help you develop solutions:

> 4 = almost always
> 3 = frequently
> 2 = sometimes
> 1 = infrequently
> 0 = hardly ever

a. Where solution alternatives might come from

4 3 2 1 0   Informal meeting -- You identified solution alternatives with team members during informal conversations or meetings

4 3 2 1 0   Formal meetings -- You identified solution alternatives with team members during formal team meetings

4 3 2 1 0   Individual Standard of Performance -- You were able to identify solution alternatives from items contained in your SOP

4 3 2 1 0   Superiors -- You were able to identify solution alternatives from your boss's SOP or your boss offered you suggestions

4 3 2 1 0   Peers -- You were able to identify solution alternatives with fellow workers who were not involved with DMC

4 3 2 1 0   Subordinates -- You were able to identify solution alternatives from subordinates who were not involved with DMC

4 3 2 1 0   Corporate -- You were able to identify solution alternatives from Sara Lee Corporate priorities

4 3 2 1 0   Industry Practice -- You were able to identify solution alternatives from practices or innovation from the poultry industry

4 3 2 1 0   Government Regulations -- You were able to identify solutions alternatives because of changes to government regulations in our industry

4 3 2 1 0   Internal Customers -- You were able to identify solution alterna-tives because of contact with other departments Bil Mar or Sister Companies

4 3 2 1 0   External Companies -- You were able to identify solution alterna-tives because of suggestions from customers who bought Bil Mar products

3. a. Where solution alternatives might come from (cont).

4 3 2 1 0   Suppliers -- You were able to identify solution alternatives based on contact or suggestions from suppliers

4 3 2 1 0   Crisis/Chronic Problem -- You were able to identify solution alternatives from crises or chronic reoccurring) problems

4 3 2 1 0   Other (Please specify -- if not applicable, answer 0)

b. When it came time to pick a project

Team members often had a number of feasible solution alternatives to pick from. There were probably a number of different reasons why team members would choose one solution over another. From the 7 items listed below, please select and rank order the top three reasons why you would choose one solution over another: (1 = most important, 2 = very important, 3 = important).

_____ Company Priority -- The solution addressed a company priority (i.e, an item in the Annual Operating Plan)

_____ Customer Request -- A customer requested the action involved in the solution

_____ Ease of Implementation -- The solution addressed in our project could easily be implemented

_____ Return on Investment -- The solution we chose had the highest return on capital investment

_____ Chronic problem -- The solution we chose solved a problem we had experienced for a long time

_____ Stakeholder Participation (Internal/External Customer, superiors, USDA, MIOSHA, etc.) -- We chose the solution because we could get those affected by change to participate or contribute to the project's success

_____ Other (Please specify)

c. Roadblocks to solution implementation

At one time or another, teams encountered "roadblocks" or resis- tance to DMC projects and proposed solutions. Please rate the frequency with which you met resistance to your projects from the sources below using the following scale:

4 = almost always
3 = frequently
2 = occasionally
1 = infrequently
0 = none at all/never

4 3 2 1 0   Project Teams -- Your project team could not arrive at a feasible or agreeable solution alternative

4 3 2 1 0   Individual Standard of Performance -- You were not able to identify solution alternatives because of a conflict with stakeholder's SOP

4 3 2 1 0   Superiors -- You were not able to sell your solution to your boss

4 3 2 1 0   Peers -- You were not able to resolve resistance from fellow workers who were not involved with DMC

4 3 2 1 0   Subordinates -- You did not want to create dissension among your subordinates

4 3 2 1 0   Corporate -- You were not able to work around priorities or directives from Sara Lee Corporate

4 3 2 1 0   Technology -- You were able to implement solutions because the technology involved in your solution was not available

4 3 2 1 0   Government Regulations -- You were not able to implement solution alternatives because of changes government regulations in our industry

4 3 2 1 0   Internal Customers -- You were not able to implement solution alternatives acceptable with stakeholders, other departments in Bil Mar or Sister Companies

4 3 2 1 0   External Companies -- You were not able to identify solution alternatives acceptable to customers who bought Bil Mar products

4 3 2 1 0   Suppliers -- You were able to identify solution alternatives available from our suppliers

4 3 2 1 0   Company Priority -- The solution involved resources which were directed toward other company priorities

4 3 2 1 0   Difficulty of Implementation -- The solution alternative would not be easily implemented

4 3 2 1 0   Company Culture -- The solution involved action or issues which ran contrary to company values or culture

4 3 2 1 0   Other (Please specify -- answer 0 if not applicable)

d. Means to overcome "roadblocks" or resistance

    4 = almost always
    3 = frequently
    2 = occasionally
    1 = infrequently
    0 = hardly ever

Teams often developed different strategies to overcome roadblocks and get support for their projects. Assuming your solutions were cost effective, use the scale above to indicate how frequently you used the strategy to overcome "roadblocks" or get support for your projects:

4 3 2 1 0   Project Teams -- Project team members created support within their respective departments

4 3 2 1 0   Individual Standard of Performance -- You were able to get support and implement a solution alternative because it was contained in your SOPs

4 3 2 1 0   Stakeholders -- You were able to get important stakeholders (fellow workers, superiors, senior management Sara Lee) to participate in the project

d. Means to overcome "roadblocks" or resistance

    4 = almost always
    3 = frequently
    2 = occasionally
    1 = infrequently
    0 = hardly ever

4 3 2 1 0   Technology -- You were able to implement solutions because the technology involved finally became available or affordable and cost effective

4 3 2 1 0   Quality -- You were able to get support because in addition to cost savings, you were able to improve the quality of your product or service

4 3 2 1 0   Suppliers -- You were able to identify suppliers who could work with you to develop or implement your solution alternatives

4 3 2 1 0   Company Priority -- The solution involved issues which were high on the list of company priorities

4 3 2 1 0   Customer Request -- A customer approved the proposed action in your solution alternative

4 3 2 1 0   Ease of Implementation -- The solution would be easily implemented

4 3 2 1 0   Industry Practice -- You were able to get a solution alternative accepted because it was a standard industry practice

4 3 2 1 0   Other (Please specify -- answer 0 if not applicable)

4. Stakeholder Input

Team members were encouraged to seek stakeholder participation while working on the project to obtain their support. Team members were instructed to use their discretion as to when they would invite stakeholder participation.

Using the scale below, rate the items to indicate when you typically got stakeholders involved in your projects:

```
4 = almost always
3 = frequently
2 = occasionally
1 = hardly ever
0 = none at all/never
```

a. Timing of stakeholder participation

4 3 2 1 0   At the beginning of the project before we developed the problem statement

4 3 2 1 0   After identifying what you wanted changed

4 3 2 1 0   Before generating solution alternatives

4 3 2 1 0   After choosing a solution alternative

DMC TEAM SURVEY

4 b. What kind of stakeholder participation did you typically obtain?

```
4 = almost always
3 = frequently
2 = occasionally
1 = hardly ever
0 = none at all/never
```

4 3 2 1 0   Full participation -- we got the stakeholder to help in the project from the beginning of the project

4 3 2 1 0   Part time -- we met with the stakeholder at times predetermined by the project team and the stakeholder

4 3 2 1 0   Only as needed -- only when we got stuck or needed their approval

5. Team Meetings

Team members used a variety of meeting formats to initiate and complete projects. Members met biweekly in large team meetings and as scheduled for project work. Teams used these meetings in a variety of ways to achieve their objectives. For sections a - c, please circle the number which best reflects your experiences with meetings.

a. Frequency of project meetings (for each project)

     1. More than once a week

     2. 1 - 2 times a week

     3. Every other week

b. Meeting function

     1. We used our large team meeting for reporting only

     2. We used our large team meeting to actually do our project work

     3. We used our large team meeting to report on our progress and do our project work

c. How soon after your large team meetings did you typically receive the meeting summaries? (Please circle)

     1. 1 - 2 days

     2. 3 - 4 days

     3. 5 - 6 days

     4. 7 or more days

Appendix C

Interview Questions

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INTERVIEW QUESTIONS

1. Selecting projects

   a. How did your team generate projects?

   b. What were some of your best sources for project
      ideas?

   c. What kind of research did you do to verify the
      feasibility of project ideas?

   d. What were the criteria your team used to choose
      projects?

2. Collecting the Supporting Data/Documentation

   a. What kind of data did your team access/use?

   b. How did your team identify and collect the baseline
      data your teams needed?

   c. Did your team have difficulty obtaining baseline data
      and if so what difficulties did your team experience?

   d. What did your team do when baseline data wasn't
      available?

   e. Did your team use the problem solving tools and
      techniques introduced during training and if so, what
      tools/techniques did you use most often? why?

      1. When did your team typically use these tools and
         techniques

      2. Did you use other problem solving tools and
         techniques not introduced during training and if
         so what are they where did you learn them?

DMC INTERVIEW

3. Developing Solutions

    a. How did your team generate solution alternatives?

    b. What were some of your best sources for solution ideas?

    c. What criteria did your team use to evaluate solution alternatives?

    d. How did your team come to adopt these criteria?

    e. What kind of obstacles did your team face when attempting to implement a solution alternative?

4. Stakeholders

    a. In your opinion:

        1. How much do directors value DMC?

        2. How much do vice-presidents value DMC?

    b. What evidence can you cite that

        1. Directors support DMC

        2. Vice-presidents support DMC

    c. What kind of feedback did you get from your boss regarding your participation in DMC?

    d. When did you typically involve stakeholders in your projects?

    e. What type of participation did you typically seek from stakeholders?

DMC INTERVIEW

5. Team Interaction

a. Where did most of the actual decision making take place in your projects?

b. Did you have informal/spontaneous meetings with team members?

   1. If yes, how important was this informal contact?

   2. What did your team do to cultivate these informal meetings?

Appendix D

Human Subjects Instututional
Review Board Approval

Human Subjects Institutional Review Board

WESTERN MICHIGAN UNIVERSITY

Date: February 27, 1991

To: Eric de Nijs

From: Mary Anne Bunda, Chair *Mary Anne Bunda*

Re: HSIRB Project Number: 91-02-16

This letter will serve as confirmation that your research protocol, "Factors associated with success in a participative decision making program for supervisors, managers, and salaried professionals," has been approved under the exempt category of review by the HSIRB. The conditions and duration of this approval are specified in the Policies of Western Michigan University. You may now begin to implement the research as described in the approval application.

You must seek reapproval for any changes in this design. You must also seek reapproval if the project extends beyond the termination date.

The Board wishes you success in the pursuit of your research goals.

xc: Robert Brinkerhoff, Educational Leadership

Approval Termination: February 27, 1992

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