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ABSTRACT
                A study was conducted to describe the present status
of self-managed work groups in Ohio manufacturing companies. Data for
the study were gathered through lengthy interviews and site visits
with 45 manufacturing companies in the state, 24 employing
2,000-14,000 workers and 21 employing 300 to 1,900 workers. The
results of the study are presented in four separate reports contained
in this document. They address the following subjects: (1) planning
to use self-managed work groups, which answers questions about the
planning processes used, goals that have been identified, the role of
pilot areas, and training programs that are provided; (2) features of
such groups, including what company structures and what features are
used, the roles of steering committees and group leaders, and what
other organizational changes have occurred; (3) results of using
self-managed work groups, outlining what job and processes changes
occurred, the organizational impacts, the perceived value of the
change, and what would be done differently; and issues and
implications that emerged during the study, such as the
appropriateness of self-managed work groups, use of a broader change
process, changes in compensation schemes, employee development as a
goal, and allocation of resources. A list of participating companies
is attached. (KC)

Planning Self-Managed Work Groups

Features of Self-Managed Work Groups

Results of Using Self-Managed Work Groups

Issues and Implications in Using Self-Managed Work Groups

Status of Ohio Manufacturing Companies

Patrick E. Smylie

Graduate Research Associate

Ronald L. Jacobs, Ph.D.

Associate Professor

A research study conducted in partnership between The Ohio State University, Graduate Program in Training and Development, and the State of Ohio, Department of Education

July 1991

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Planning Self-Managed Work Groups:

Present Status of Ohio Manufacturing Companies

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July 1991

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Introduction

The aim of this study was to describe the present status of self-managed work groups in Ohio manufacturing companies. Simply put, the intent of this study was to provide a "snapshot" view of on-going activities related to one business sector. In general, the literature reports dramatic increases in the number of companies using self-managed work groups, or related designs, to help achieve important goals. Benefits have been shown for both companies and workers. Companies have benefited through greater productivity, lower costs, and higher quality. Workers have benefited through increased feelings of accomplishment, greater involvement, and increased potential for self-development.

It is from this perspective that the present study was conducted. If Ohio manufacturing companies and workers are to benefit from the use of self-managed work groups, then it seems appropriate to describe the present status of their use. This information seems useful to managers and workers for at least two reasons. First, it provides a means to learn from the experiences of other companies. Second, it provides a beginning point to monitor future changes in Ohio manufacturing.

Data for the study were gathered through lengthy interviews and on-site visits from 45 manufacturing companies in the State. The companies were categorized into two groups as listed in the *Harris Directory*: larger companies with 2,000 to 14,000 workers (n=24) and smaller companies with 1,900 to 300 employees (n=21). Previous research has suggested a relationship between company size and ways of implementing organizational change. The number of manufacturing companies included in each category increases confidence of the validity of the results.

The results of the study are presented in four separate reports:

- *Planning to Use Self-Managed Work Groups*
- *Features of Self-Managed Work Groups*
- *Results From Using Self-Managed Work Groups*
- *Issues and Implications*

The first three reports address topics of interest and importance. The final report presents concerns and issues that emerged during the study. The reports have been written in a way that is responsive to the information needs of managers and workers.

Results

The results are organized to address four basic questions about planning to use self-managed work groups:

1. What planning processes are used?
2. What goals have been identified?
3. What is role of pilot areas?
4. What training programs are provided?

1. What planning processes are used?

a. All companies use planning processes of some type to help implement self-managed work groups.

b. No company uses a formal planning proce s to assess strategic needs.

c. 29 companies use a planning process developed by individuals within the company. 12 are larger companies, 17 are smaller companies.

d. 14 companies use a joint union-management planning process. 10 are larger companies, four are smaller companies.

e. Two companies use a planning process developed by an external consultant. Both are smaller companies.

f. 21 companies use a timetable to determine when certain events should occur. 12 are larger companies, nine are smaller companies.

g. 18 companies prefer not to use a timetable, allowing events to occur when most appropriate. 10 are larger companies, eight are smaller companies.

h. Four companies have on-going self-directed work groups and have concluded the planning phase. One is a larger company, three are smaller companies.

2. What goals have been identified?

a. Most companies identify more than one goal for using self-managed work groups.

b. 35 companies identify improved product quality as the most important goal. 19 are larger companies, 16 are smaller companies.

c. 32 companies identify improved organizational
    productivity as important 19 are larger companies,
    13 are smaller companies.

d. 26 companies identify improved problem-solving
    skills as important. 13 are larger companies, 13
    are smaller companies.

e. 26 companies identify greater employee involvement
    as important. 11 are larger companies, 13 are
    smaller companies.

f. 14 companies identify improved quality of work life
    as important. Nine are larger companies, five are
    smaller companies.

g. 13 companies identify greater job ownership as
    important. Nine are larger companies, four are
    smaller.

h. Five companies identify change in organizational
    culture or management style as important. Three are
    smaller companies, two are larger.

i. Additional companies identified the following areas
    for goals: customer satisfaction, communication, job
    security, and process knowledge.

3. What is the role of pilot areas?

a. 33 companies used pilot areas before more expanded
    implementation of self-managed work groups. 21 are
    larger companies, 12 are smaller companies.

b. Nine companies did not use a pilot area before
    expanded implementation. Two are larger companies,
    seven are smaller companies.

c. 21 companies evaluated their pilot areas and made
    revisions based on the results of the evaluation.
    10 are larger companies, 11 are smaller companies.

d. 11 companies used group productivity as measures to
    evaluate the pilot areas. Six are larger companies,
    five are smaller companies.

e. Nine companies used additional measures such as
    worker satisfaction, supervisor involvement, and
    absenteeism.

f. 11 companies provided more training as a result of the evaluation. Six are larger companies, five are smaller.

g. Six companies increased the level of responsibility of the groups as a result of the evaluation. One is a larger company, five are smaller.

h. Additional companies made revisions in the following areas: equipment, job instruction, management commitment, group size, and participation policies.

4. *What training programs are provided?*

a. No company established a training plan for workers or supervisors based on a systematic needs analysis.

b. 30 companies provide awareness training. 14 are larger companies, 16 are smaller companies.

c. 26 companies provide awareness training for all employees. 10 are larger companies, 16 are smaller companies.

d. Nine companies did not provide awareness training. Five are larger companies, three are smaller.

e. 30 companies provide problem-solving training. 18 are larger companies, 12 are smaller companies.

f. 27 companies provide team-building training. 17 are larger companies, 10 are smaller companies.

g. 18 companies provide interpersonal skills training. 11 are larger companies, seven are smaller companies.

h. Additional companies provide training in the following topics: job instruction, statistical process control, participative management, effective meetings, brainstorming, total quality management, continuous improvement, and just-in-time inventory.

i. 18 companies developed training in-house. 11 are larger, seven are smaller companies.

j. 13 companies use internal and external trainers to deliver training. Eight are larger companies, five are smaller companies.

k. 10 companies only use external trainers to deliver training. Three are larger companies, seven are smaller companies.

Conclusions

The results suggest that, regardless of size, Ohio manufacturing companies recognize the value of planning processes before using self-managed work groups. However, no evidence was found to suggest that planning processes were used to assess the need for self-managed work groups in the first place. Improved quality and productivity were the goals most frequently cited, though other goals were cited, such as employee development, to suggest concerns for benefits to workers as well. Pilot areas were used by most companies, both smaller and larger, to test and refine the self-managed work groups. Most companies provided extensive amounts of training. However, awareness training was the most frequent type of training provided and no company had analyzed the performance needs of employees prior to implementing self-managed work groups.

In conclusion, the results suggest that many planning activities are now on-going related to using self-managed work groups. Questions can be raised whether these planning activities are being conducted in a formal and structured way.

Participating Manufacturing Companies

Companies with 2,000 - 14,000 workers

Armco Steel, Middletown
Campbell Soup Company, Napolean
Cincinatti Milacron, Cincinatti
Delco Products, Dayton
EG&G Mound Applied Technology, Miamisburg
Ford Motor Casting, Brook Park
Ford Motor Engine Plant, Lima
Ford Transmission and Chasis, Cincinatti
General Electric Lighting, Cleveland
General Dynamics, Lima
General Motors Fabricating and Assembly, Lordstown
General Motors, Central Foundry, Defiance
General Motors, Harrison Radiator, Dayton
General Motors, Inland Fisher-Guide, Columbus
Hoover, North Canton
Mead Paper Company, Chillicothe
Nordson, Cleveland
Packard Electric, Warren
Picker International, Highland Heights
Republic Engineered Steels, Canton
Stolle, Sidney
Whirlpool Corporation, Marion
Whirlpool Corporation, Findlay
Whirlpool Corporation, Clyde

Companies with 1999 - 300 workers

Aircraft Braking Systems, Akron
Alcoa, Newburgh Heights
Babcock & Wilcox, Barberton
Champion International-Paper Division, Hamilton
Cooper Tire, Findlay
R.R. Donnelly & Sons, Willard
Ford Transmissions, Batavia
Ford Plastic Products Division, Sandusky
General Electric Superabrasives, Worhington
Huffy Bicycles, Celina
Ormet, Hannibal
Owens Corning Fiberglass, Newark
PMI Food Equipment Group, Troy
PPG Auto Glass, Cleveland
Procter & Gamble Detergent Plant, St Bernard
Ranco, Plain City
Ross Labs, Columbus
Senco, Cincinatti
Stouffer Foods, Solon
Timken Bearings Plant, Bucyrus
TRW Valve Plant, Cleveland

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Features of Self-Managed Work

Groups: Status of Ohio Manufacturing Companies

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Introduction

The aim of this study was to describe the present status of self-managed work groups in Ohio manufacturing companies. Simply put, the intent of this study was to provide a "snapshot" view of on-going activities related to one business sector. In general, the literature reports dramatic increases in the number of companies using self-managed work groups, or related designs, to help achieve important goals. Benefits have been shown for both companies and workers. Companies have benefited through greater productivity, lower costs, and higher quality. Workers have benefited through increased feelings of accomplishment, greater involvement, and increased potential for self-development.

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- *Results From Using Self-Managed Work Groups*
- *Issues and Implications*

The first three reports address topics of interest and importance. The final report presents concerns and issues that emerged during the study. The reports have been written in a way that is responsive to the information needs of managers and workers.

Results

The results address five questions about the features of self-managed work groups:

1. *What company structures are used?*
2. *What features are used?*
3. *How are steering committees used?*
4. *What are the roles of group leaders?*
5. *What other organizational changes occurred?*

1. *What company structures are used?*

   The results showed the following:

   a. Companies use a wide variety of terms to describe their self-managed work groups.

   b. 13 companies use the term "employee involvement team," which is the most frequently used term overall. Nine are larger companies, four are smaller companies.

   c. Nine companies do not have a formal designation for their groups. Three are larger companies, six are smaller companies.

   d. Five companies use the term "self-directed work group." Three are larger companies, two are smaller companies.

   e. Remaining companies use terms such as "Continuous Improvement Teams," "Total Quality Teams," "Quality Teams," and "Task Teams."

   f. Two companies use the term "Quality Circles."

   g. Four companies use terms imposed from the corporate level, such as "Quality of Work Life (QWL) Team, "Synchronous Work Group," "Employee Empowerment Team," and "Cross-Functional Task Force."

   h. 22 companies form temporary groups to solve specific work-related problems, such as reducing defect rates and meeting customer delivery requirements. Nine are larger companies, 13 are smaller companies.

   i. 19 companies form temporary groups to solve specific work-related problems and address general policy issues such as safety, work assignments, and work schedules. 13 are larger companies, six are smaller companies.

j. Four companies form groups as part of a cell-based process.

k. 25 companies estimate that up to one-half of all employees are involved in groups at any given time.

l. 27 companies implemented the present structure within the past three years.

m. 13 companies report using a team structure for up to nine years.

n. Two companies report using a team structure for over 15 years.

2. *What features are used?*

a. 39 companies expect hourly workers to inspect all products they produce. 20 are larger companies, 19 are smaller.

b. 12 companies use supervisors to facilitate problem-solving group meetings. Ten are larger companies, two are smaller.

c. 32 companies expect hourly workers to maintain some or all their production charts. 19 are larger companies, 13 are smaller.

d. 19 companies expect hourly workers and supervisors to share responsibility to maintain production charts. 11 are larger companies, eight are smaller.

e. 28 companies expect hourly workers to schedule some or all their work. 15 are larger companies, 13 are smaller.

f. 27 companies expect hourly workers to contact external suppliers and customers. 15 are larger companies, nine are smaller.

g. 33 companies expect hourly workers to stop production when a problem is located. 25 are larger companies, eight are smaller.

h. 33 companies use some aspects of a just-in-time inventory system. 19 companies are larger companies, 14 are smaller.

i. 35 companies expect hourly production workers to perform some preventive maintenance. 20 are larger companies, 15 are smaller.

j. 30 companies expect hourly production workers to perform die changeovers or adjust equipment. 14 are larger companies, 16 are smaller.

k. 38 companies use statistical process control to monitor production processes. 20 are larger companies, 18 are smaller.

l. 38 companies use problem-solving techniques such as fishboning. 20 are larger companies, 18 are smaller.

m. Four companies compensate hourly workers based on group performance as opposed to individual performance. Three are larger companies.

n. 15 companies allow groups to select their own members. Nine are larger companies, six are smaller.

o. 32 companies have a standard continuous improvement process for use by groups. 17 are larger companies, 15 are smaller.

p. 21 companies support adult literacy programs on-site. 11 are larger companies, ten are smaller.

3. *How are steering committees used?*

a. Nine companies do not use steering committees of any type.

b. 36 companies use steering committees. 21 are larger companies, 15 are smaller companies.

c. 18 companies use steering committees as part of on-going joint management/union activities. 12 are larger companies, six are smaller companies.

d. 18 companies use specially-mandated steering committees. Nine are larger companies.

e. 30 companies use steering committees to give advice on implementation issues and policies. 16 are larger companies, 14 are smaller companies.

f. Seven companies use steering committees to identify or prioritize projects. Five are larger companies, two are smaller companies.

g. Six companies use steering committees to obtain resources and ensure that team members have adequate training. Three are large companies.

h. One larger company uses their steering committee to suggest recognitions and rewards for successful group efforts.

4. *What are the roles of group leaders?*

   a. 42 companies use team leaders. 22 are larger companies, 19 are smaller companies.

   b. 28 companies allow groups to elect their own team leaders. 13 are larger companies, 15 are smaller companies.

   c. Two companies appoint team leaders. Both are smaller companies.

   d. One larger company has a rotating team-leader policy.

   e. 11 companies do not have established policies related to team leaders.

   f. 18 companies have hourly team leaders only. 11 are larger companies, seven are smaller companies.

   g. Seven companies have either hourly or management team leaders. Three are larger companies, four are smaller companies.

   h. Two companies have joint management-union team leaders. One is a larger company, one is a smaller company.

   i. One smaller company uses only supervisors for team leaders.

   j. 23 companies use team leaders to facilitate group meetings. 12 are larger companies, 11 are smaller companies.

   k. 11 companies use team leaders to manage some aspects of the work. Six are larger companies, five are smaller companies.

   l. Seven companies use team leaders to replace the first-level supervisor. Four are larger companies, three are smaller companies.

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5. What other organizational changes occurred?

    a. 24 companies assigned one person the responsibility to coordinate the activities of all groups. 11 are larger companies, 13 for smaller companies.

    b. 12 companies assigned two persons, one management and the other union, the responsibility to coordinate the activities of all groups. Nine are larger companies, three are smaller companies.

    c. All coordinators are expected to present training to team leaders and members, monitor the progress of groups, facilitate planning, secure resources for groups, and evaluate progress of the groups.

Conclusions

The results suggest that self-managed work groups are structured in two basic ways. First, groups may be structured as part of a cell layout, making group composition relatively permanent since members work together in the same area. Second, groups may be structured to address work-related problems as they arise, giving making group composition relatively temporary since members represent areas affected by the problem. More smaller companies use the later way than larger companies. Different terms are used, though "employee involvement team" was the most frequently used term among larger companies. Group participation is relatively high among larger and smaller companies.

Companies seem to be integrating other changes with use of self-managed work groups, such as: inspecting products within the production areas, facilitating group meetings by hourly workers and supervisors, maintaining production charts, conducting preventive maintenance by hourly workers, using SPC to monitor processes, and supporting adult basic literacy programs. Steering committees are used by most companies, reinforcing the notion that employee involvement activities have been provided a more formal structure. Steering committees give advice on implementation issues and policies.

In conclusion, the results suggest that the features of self-managed work groups go beyond having workers get together to discuss problems. Many other changes have occurred, requiring attention to both structural and human resource issues.

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General Motors, Harrison Radiator, Dayton
General Motors, Inland Fisher-Guide, Columbus
Hoover, North Canton
Mead Paper Company, Chillicothe
Nordson, Cleveland
Packard Electric, Warren
Picker International, Highland Heights
Republic Engineered Steels, Canton
Stolle, Sidney
Whirlpool Corporation, Marion
Whirlpool Corporation, Findlay
Whirlpool Corporation, Clyde

Companies with 1999 - 300 workers

Aircraft Braking Systems, Akron
Alcoa, Newburgh Heights
Babcock & Wilcox, Barberton
Champion International-Paper Division, Hamilton
Cooper Tire, Findlay
R.R. Donnelly & Sons, Willard
Ford Transmissions, Batavia
Ford Plastic Products Division, Sandusky
General Electric Superabrasives, Worhington
Huffy Bicycles, Celina
Ormet, Hannibal
Owens Corning Fiberglass, Newark
PMI Food Equipment Group, Troy
PPG Auto Glass, Cleveland
Procter & Gamble Detergent Plant, St Bernard
Ranco, Plain City
Ross Labs, Columbus
Senco, Cincinatti
Stouffer Foods, Solon
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Results of Using Self-Managed Work Groups: Status of Ohio Manufacturing Companies

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July 1991

Introduction

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It is from this perspective that the present study was conducted. If Ohio manufacturing companies and workers are to benefit from the use of self-managed work groups, then it seems appropriate to describe the present status of their use. This information seems useful to managers and workers for at least two reasons. First, it provides a means to learn from the experiences of other companies. Second, it provides a beginning point to monitor future changes in Ohio manufacturing.

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The first three reports address topics of interest and importance. The final report presents concerns and issues that emerged during the study. The reports have been written in a way that is responsive to the information needs of managers and workers.

Results

The results are organized to address four basic questions about the results after using self-managed work groups:

1. What job changes occurred?
2. What process changes occurred?
3. What organizational impacts occurred?
4. What is the perceived value of the change?
5. What would be done differently, same?

1. What job changes occurred?

a. 28 companies report no changes in hourly jobs. 16 are larger companies, 12 are smaller.

b. Seven companies report collapsing hourly jobs into fewer job classifications. Two are larger companies, five are smaller.

c. Five companies report collapsing hourly jobs into a single job classification. Four are larger companies, one is a smaller company.

d. 23 companies report no changes in supervisors. 10 are larger companies, 13 are smaller.

e. 17 companies report expanded supervisor expectations to include facilitation skills. 11 are larger, six are smaller.

f. Four companies eliminated supervisors to oversee groups. Two are larger companies.

g. Seven companies report greater emphasis on cross-training. Five are larger companies, two are smaller.

2. What process changes occurred?

a. 21 companies report no process changes. 10 are larger, 11 are smaller.

b. Eight companies report changes in the physical layout. Six are larger, two are smaller.

c. Five companies report change to cell manufacturing approach. Two are larger, three are smaller.

d. Four companies report cell manufacturing in pilot areas. Three are larger, one is smaller.

e. Two companies report nearly completing change to cell manufacturing. One larger company.

f. Additional companies report process changes that include: greater information exchange between areas and flatter management structures.

3. *What organizational impacts occurred?*

a. 23 companies report improved product quality 15 are larger, eight are smaller.

b. 14 companies report increased productivity. Nine are larger companies, five are smaller.

c. 13 companies report improved quality of work life. 10 are larger companies, three are smaller.

d. 13 companies report decreased costs. Seven are larger companies, six are smaller.

e. 12 companies report increased job ownership among workers. Seven are larger companies, five are smaller.

f. Additional companies report organizational impacts including: overall work climate, learning atmosphere, individual respect, union-management relations, and employee involvement.

4. *What is the perceived value of the change?*

a. 16 companies perceive that change was essential. 11 are larger, five are smaller.

b. 13 companies perceive changes in organizational commitment among employees. Eight are larger companies, five are smaller.

c. 10 companies perceive overall improved functioning of the organization. Four are larger companies, six are smaller.

d. 10 companies perceive improved quality of work life. Five are larger, five smaller.

e. Additional companies perceive changes in employee development, business knowledge, interest in company problems.

5. What would be done differently, same?

    a.   12 companies report a greater need for planning activities before implementing self-managed work groups. Six larger companies, six smaller.

    b.   11 companies a greater need for more training programs. Seven are larger companies, four are smaller.

    c.   Additional companies report a increased awareness of the importance of trust, change as an evolutionary process, and importance of leadership.

    d.   Six companies viewed greater attention to obtaining employee acceptance as an important part of the process, three larger and three smaller.

    e.   Training was cited by five companies as an important component of their process. Two are larger companies, three are smaller.

    f.   Other items cited as important to the process were: slow pacing, team autonomy and management buy-in.

Conclusions

The results suggest three levels of impact for using self-managed work groups in Ohio manufacturing companies. At the job level, changes were reported that affect hourly workers and supervisors for both smaller and larger companies. Several companies collapsed hourly jobs into fewer job classifications. In general, supervisory jobs were expanded, and in a few instances were eliminated. Cross-training to achieve a more multi-skilled workforce received greater attention. At the process level, changes were reported in work layouts to accommodate the use of cell manufacturing, though these changes were not as frequent as might be expected. At the organization level, improvements in product quality and productivity were reported, though specific information in this regard was not available. Quality of work-life changes also were cited. Planning skills and a greater appreciation for training were among issues that would have been done different.

In conclusion, the results suggest that smaller and larger companies can expect results to occur at three levels: job, process, and organization. Results differ across companies in regards to the job and process levels, while most companies reported beneficial results at the organization level.

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Issues and Implications in Using Self-Managed

Work Groups: Status of Ohio Manufacturing Companies

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Graduate Research Associate

Ronald L. Jacobs, Ph.D.

Associate Professor

A research study conducted in partnership between
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Introduction

The aim of this study was to describe the present status of self-managed work groups in Ohio manufacturing companies. Simply put, the intent of this study was to provide a "snapshot" view of on-going activities related to one business sector. In general, the literature reports dramatic increases in the number of companies using self-managed work groups, or related designs, to help achieve important goals. Benefits have been shown for both companies and workers. Companies have benefited through greater productivity, lower costs, and higher quality. Workers have benefited through increased feelings of accomplishment, greater involvement, and increased potential for self-development.

It is from this perspective that the present study was conducted. If Ohio manufacturing companies and workers are to benefit from the use of self-managed work groups, then it seems appropriate to describe the present status of their use. This information seems useful to managers and workers for at least two reasons. First, it provides a means to learn from the experiences of other companies. Second, it provides a beginning point to monitor future changes in Ohio manufacturing.

Data for the study were gathered through lengthy interviews and on-site visits from 45 manufacturing companies in the State. The companies were categorized into two groups as listed in the *Harris Directory*: larger companies with 2,000 to 14,000 workers (n=24) and smaller companies with 1,900 to 300 employees (n=21). Previous research has suggested a relationship between company size and ways of implementing organizational change. The number of manufacturing companies included in each category increases confidence of the validity of the results.

The results of the study are presented in four separate reports:

- *Planning to Use Self-Managed Work Groups*
- *Features of Self-Managed Work Groups*
- *Results From Using Self-Managed Work Groups*
- *Issues and Implications*

The first three reports address topics of interest and importance. The final report presents concerns and issues that emerged during the study. The reports have been written in a way that is responsive to the information needs of managers and workers.

Results

The results are organized to address five issues that emerged from the study and implications for further research and development:

1. *Appropriateness of Self-Managed Work Groups*
2. *Use of a Broader Change Process*
3. *Changes in Compensation Schemes*
4. *Employee Development as a Goal*
5. *Allocation of Resources*

1. Appropriateness of Self-Managed Work Groups

An issue was raised about the appropriateness of using self-managed work groups to address all organizational problems. Further, they suggested that some companies are using self-managed work groups because of its apparent popularity alone or without complete knowledge of the problem. Underlying this issue is the assumption that self-managed work groups are simply one means to solve problems, and not an end in themselves. The nature of the problem should determine the means to address the problem, instead of the reverse situation.

From this issue, two related implications for further research and development can be presented. First, there is a need to devise a set of criteria for selecting self-managed work groups in organizations. Second, there is a need to test the appropriateness of these criteria in a systematic manner across different company structures, sizes, work environments, and product lines.

2. Use of a Broader Change Process

An issue was raised about the adequacy of the planning processes used to implement self-managed work groups. Specifically, several respondents questioned whether their planning processes might be too limiting, given the complex changes they later found to be necessary in their organization. They realized that using self-managed work groups, and related features, involves organizational change on a broad scale. This realization resulted in substantial changes in some companies.

From this issue, one implication for further research and development can be presented. There is a need for managers and workers to increase their awareness that using self-managed work groups affects more than just one or two work areas of a company. Using self-managed work groups affects many parts of a company in complex ways, requiring a more systemic view of the change process.

3. Changes in Compensation Schemes

Numerous respondents expressed the issue that use of self-managed work groups also required changes in the compensation scheme. Respondents reported two specific situations which seemed to cause the greatest concerns among managers and workers. The first situation involves how to reward workers for increasing their knowledge and skills through employee development activities. While employee development is encouraged in most companies, how to compensate individuals remains an issue, especially since it is unlikely that all the knowledge and skills will be used in the near term. Strict pay-for-performance or pay-for-tenure schemes tend to punish workers involved in employee development activities.

The second situation involves how to reward individuals when their performance is largely affected by others in their work group. Unfair compensation can occur when only a few individuals do most of the work, all the while everyone receives an equal share of the rewards.

From this issue, one implication for future research and development can be presented. There is a need for managers and workers to become more aware of the compensation issues related to using self-managed work groups. Additional awareness might be obtained through an in-depth study of present compensation schemes and their affects on worker performance.

4. Employee Development as a Goal

An issue was identified that while employee development was a stated goal, few companies sought to measure progress toward that end. For example, several respondents reported that while their companies supported the delivery of awareness sessions, little support was provided for addressing employee development needs beyond that point. As a result, training and other employee development activities occurred sporadically with limited management and worker commitment.

From this issue, two implications for further research and development can be presented. First, there is a need to make employee development goals explicit so that individuals can be held responsible and accountable for achieving them. For example, achieving multi-skilled workers is an employee development goal that supervisors are, in part, responsible for helping to achieve with their subordinates. Second, there is a need to assess employee development needs on a continuous basis and to develop systems that address those needs.

5. *Allocation of Resources*

An issue was raised by almost every respondent that less than sufficient resources were allocated to support the use of self-managed work groups. For example, several companies did not anticipate the need for "floaters" so that team members could attend training sessions or meetings without disrupting production schedules. Finding additional workers to serve in this role was hindered by on-going budget constraints. Lack of resources also were reported to increase the response times for responding to maintenance and work layout requests by self-managed work groups.

From this issue, two implications for further research and development can be presented. First, there is a need to devise more accurate estimates of the implementation costs of self-managed work groups. Second, there is a need to allocate resources based on the benefits that can be predicted from making different decisions.

Conclusions

The five issues represent barriers for successful implementation of self-managed work groups. Not surprisingly, the five issues are closely interrelated. For example, viewing self-managed work groups as a systemic intervention leads to the recognition that changes in the present compensation scheme must be considered. These issues seem pertinent regardless of company size. Implications for further research and development suggest that many specific topics require attention. The overall aim of this study was to begin to identify these specific research topics.

In conclusion, the five issues suggest that self-managed work groups are similar in many respects to other types of organizational change. For self-managed work groups to be successful, managers and workers must:

- select them with care, based on a documented set of organizational problems;

- consider them within a broader system context,

- structure the rewards and recognitions so that individual and group performance are accommodated,

- seek to attain a broad set of outcomes, including employee development, with the assumption that the organization and workers will benefit; and,

- allocate sufficient resources to start-up and sustain the changes.

Participating Manufacturing Companies

Companies with 2,000 - 14,000 workers

Armco Steel, Middletown
Campbell Soup Company, Napolean
Cincinatti Milacron, Cincinatti
Delco Products, Dayton
EG&G Mound Applied Technology, Miamisburg
Ford Motor Casting, Brook Park
Ford Motor Engine Plant, Lima
Ford Transmission and Chasis, Cincinatti
General Electric Lighting, Cleveland
General Dynamics, Lima
General Motors Fabricating and Assembly, Lordstown
General Motors, Central Foundry, Defiance
General Motors, Harrison Radiator, Dayton
General Motors, Inland Fisher-Guide, Columbus
Hoover, North Canton
Mead Paper Company, Chillicothe
Nordson, Cleveland
Packard Electric, Warren
Picker International, Highland Heights
Republic Engineered Steels, Canton
Stolle, Sidney
Whirlpool Corporation, Marion
Whirlpool Corporation, Findlay
Whirlpool Corporation, Clyde

Companies with 1999 - 300 workers

Aircraft Braking Systems, Akron
Alcoa, Newburgh Heights
Babcock & Wilcox, Barberton
Champion International-Paper Division, Hamilton
Cooper Tire, Findlay
R.R. Donnelly & Sons, Willard
Ford Transmissions, Batavia
Ford Plastic Products Division, Sandusky
General Electric Superabrasives, Worhington
Huffy Bicycles, Celina
Ormet, Hannibal
Owens Corning Fiberglass, Newark
PMI Food Equipment Group, Troy
PPG Auto Glass, Cleveland
Procter & Gamble Detergent Plant, St Bernard
Ranco, Plain City
Ross Labs, Columbus
Senco, Cincinatti
Stouffer Foods, Solon
Timken Bearings Plant, Bucyrus
TRW Valve Plant, Cleveland

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