Effective Information Systems for High-performing Self-managed Teams

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This research investigated how self-managed teams get the information they need to perform their job tasks. Two important factors prompted this study: the growing importance of self-managed teams in the workplace and the impact of the information system on team performance. These factors will be presented next, followed by a discussion of the theoretical framework, research questions, methodology, results, and discussion of the study.

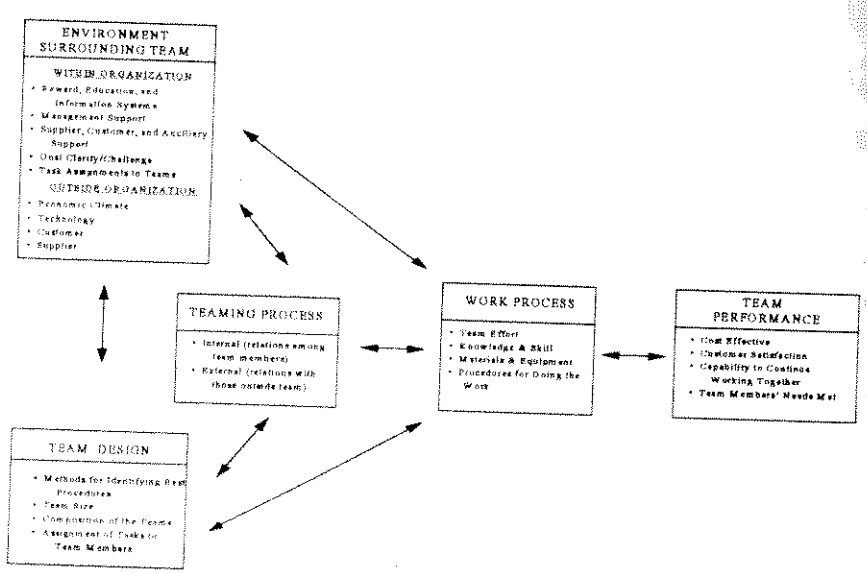
IMPORTANCE OF SELF-MANAGED TEAMS

Intense international competition has required companies to find ways of improving productivity and quality while reducing expenses. Since the workforce itself, represents one of the most viable resources for potential contributions, many companies are re-organizing their employees into self-contained teams. These self-contained teams have the skills and knowledge to do all or most of the jobs within the unit, rotate jobs regularly among team members, have no immediate supervisor, and make all or most management decisions related to the team (Goodman, Devadas & Griffith-Hughson 1988; Pearce & Ravlin 1987; Hackman & Oldman 1980). These teams are referred to as self-directed, self-managed, and autonomous.

IMPACT OF THE INFORMATION SYSTEM

Lawler (1986) contended that the information system is key to effective coordination and feedback in any organization, but it is vitally crucial for a high involvement system such as self-managed teams. For the purpose of this study, the information system included the entire information flow process among human and computer networks. With the flatter organizational structure, which lacks many of the levels of hierarchy and staff support, the information system must provide the capability for people to coordinate and manage themselves. Without an effective information system, employees cannot become self-regulating (Lawler 1986). When considering models focused specifically on self-managed teams, one of the most comprehensive and useful was developed by Yeatts and Hyten (Figure 1) (1994).

FIGURE 1
Factors Affecting Self-Managed Work Team Performance



Their model considers four groups of factors that affect the level of team performance: teaming process, the environment within and outside the organization, team design, and the work process. The information system is included as an important factor contributing to the environment surrounding the team, which ultimately affects the level of team performance. The system must provide the team with the crucial information it needs so that good decisions can be made (Hackman, 1988). However, it has been argued that self-managed teams are often not provided information but are expected to seek out whatever information they need. Therefore, teams are left on their own to develop

strategies to obtain information that is required to perform their tasks (Lawler 1986; Manz & Sims 1982).

THEORETICAL FRAMEWORK

This research provided an in-depth analysis of the information-seeking behavior and communication activities of self-managed teams. Self-managed teams have assumed increasing responsibility for decision-making and problem solving related to their job tasks. Hence, the teams have also assumed the responsibility for seeking the information they need in responding to their expanded role. Information can be anything the team needs to know in order to effectively perform their job tasks. The information-seeking process includes how the team decides what information is needed, strategies used by the team to get the information, barriers to getting information (real or perceived), and how the team uses the information. Feedback information is particularly important to self-managed teams because of its potential to impact team performance (Lawler 1986). Feedback information includes quantitative performance measures compared with baseline standards, as well as formal and informal qualitative evaluation from customers and management. Effective information-seeking is a learning process in which feedback provides a means for evaluating the impact of the information gathered (Belkin 1980; Dervin 1992). However, information must be transmitted or exchanged in order to impact team performance. Therefore, the communication activities of self-managed teams was also explored as an integral part of the information system of the team.

Although there is a body of empirical studies investigating information-seeking behavior of individuals, few studies have examined information-seeking behavior and communication activities of self-managed teams (Hackman 1990). Of particular importance to this study are the theoretical models of information-seeking by managers (Mintzberg 1973; Aquilar 1967) and the communication activities of organizational teams (Ancona & Caldwell 1992). The responsibilities of self-managed teams and managers are somewhat similar characterized by their decision-making role. However, information-seeking strategies may differ because managers seek information based upon individual needs and team members seek information based upon their team's needs. The theoretical models from information-seeking of individuals, particularly managers, and theoretical models from communication studies investigating project teams were adapted to provide the framework for investigating the information-seeking behavior and communication activities of self-managed teams. Mintzberg (1973) in his observational study of five chief executives, described the information processing system of managers by representing their information roles as monitor of external and internal information, nerve center, disseminator, spokesman, and strategy maker. Within these roles, he defined kinds of information that were needed by managers. Ancona and Caldwell's (1992) model of

communication activities of organizational teams includes four main information roles: ambassadorial, task coordinator, scouting, and guard. While Mintzberg's and Ancona and Caldwell's models provided a substantive theoretical framework, Taylor's (1990) general model of the information environment of managers provided a general framework for investigating the information use environment of self-managed teams.

RESEARCH QUESTIONS

This research investigated how self-managed teams get the information they need to perform their job tasks. The following study questions were developed from a review of related literature to study the information use environment of self-managed teams: (1) What kinds of information are needed by self-managed teams to perform their job tasks? (2) How do self-managed teams decide what kind of information they need to perform their tasks? (3) How do self-managed teams get the information they need to perform their job tasks? (4) What factors enhance or inhibit efforts by self-managed teams to get information needed by the team to perform job tasks? and (5) Are there differences in the information use environment of high-performing versus low-performing self-managed teams?

METHODOLOGY

This research is part of a National Science Foundation (NSF) grant entitled, *Creating the High Performing Self-Managed Work Team: A Comparison of Theory to Practice*, (Yeatts & Hyten 1994). The research team conducted four case studies at a large U.S. manufacturing company with two teams having high team performance and two teams having low team performance. The theoretical study questions developed from a review of related literature were used to guide the data analyses to focus attention on certain data and contribute to the organization of the entire case study. At least three research methods were used to measure each study question in order to increase construct validity. The research methods were self-administered questionnaires of the team members; in-person interviews with team members, the teams' leaders, facilitators, and/or managers; observations of team meetings; content analysis of organizational documents; and researchers' overall observations and perceptions of the factors that affect team performance. The researchers' overall observations and perceptions of the team was critical to this study as it allowed consideration of organizational factors that may affect information-seeking and communication activities of self-managed teams. It also permitted consideration of the chronology of events for the team so the entire process of information-seeking and communication activities could be analyzed within context of events. By using this approach, organizational factors which enhance or inhibit information-seeking and communication activities of self-managed teams could be more clearly identified.

RESULTS

An aggregate analysis of the results from study questions one through four is presented in response to study question five to address the differences in the information use environment of high- and low-performing teams. This section begins with an explanation of how the level of performance was determined for each of the self-managed teams included in this study and is followed by a description then a comparison of the high- and low-performing teams by study question.

Performance Level of Self-Managed Teams

Performance dimensions: Two sets of case studies were conducted, with each set including one high-performing team and one low-performing team. Team performance does not easily lend itself to quantitative measures that validly indicate how well a team had done its work. Therefore, the teams were evaluated using three dimensions: (1) The degree to which the team's productive output (that is, its product, service, or decision) meets the standards of quantity, quality, and timeliness of the people who receive, review, and/or use that output (Hackman 1990); (2) The degree to which the process of carrying out the work enhances the capability of members to work together interdependently in the future (Hackman 1990; Ilgen & Klein 1988); and (3) The degree to which the group experience contributes to the growth and personal well-being of team members (Hackman 1990; Kaplan & Greenbaum 1989; Schwalbe 1988, and Peters & Waterman 1982). In these cases, team performance is viewed as low when the team is performing such that it will ultimately disband or discontinue providing a team output that is satisfactory and when development of team members is blocked and the satisfaction of personal needs is frustrated.

Description of the High- and Low-Performing Teams

The teams were selected by members of the NSF research team and managers using the above criteria to measure team performance. The two teams considered high-performing were Team 1 and Team 3. The two teams considered low-performing were Team 2 and Team 4. Table 1 shows the summary of data for the four teams included in this study.

On the self-administered questionnaire, with 5 having most of the characteristic, the team members reported their overall performance to be 4.3 for Team 1, 4.2 for Team 3, 4.0 for Team 2, and 3.6 for Team 4. All are considered high ratings except the 3.6 reported by Team 4. Although Team 2 met the criteria of the study for a low-performing team, their own evaluation of 4.0 implies that their current performance level may be the result of circumstances beyond their control. One of their suppliers is Team 4, which was also classified by the NSF research team and managers as a low-performing team, validated by their self-

TABLE 1
Summary of Data for Four Self-Managed Teams

FACTORS	Team 1 6	Team 2 11	Team 3 12	Team 4 11	Other Org** 362
PERFORMANCE:					
Overall Performance	4.3	4.0	4.2	3.6	--
ORGANIZATIONAL FACTORS:					
Available information	4.0	3.5	3.4	2.8	3.2
Access to information	2.5	3.0	2.8	3.0	2.6
GROUP DESIGN:					
Decision-making Process					
Domineering team members	1.8	2.6	3.1	2.9	3.1
Most knowledgeable have most input	4.0	3.4	3.6	4.0	--
Job Characteristics					
Knowledge of performance	4.2	4.0	3.9	3.9	3.9
STAGE OF DEVELOPMENT:	4.0	3.5	3.8	2.6	--
NATURE OF FEEDBACK:	4.0	3.5	3.5	3.0	2.9

* Rating scale of 1-5 with the higher the number the more of the characteristic, except the team's stage development, which is 1 = just getting started; 2 = currently struggling; 3 = responsibilities becoming clear; and 4 = responsibilities are clear

** Includes aggregate data for 362 employees from 40 self-managed teams at AT&T, Boeing, Department of Defense, and GTE-Valente

Note: Dashes (--) indicate zero percent or data that is not available.

reported rating of 3.6 for overall performance. The problems experienced by Team 4 are obviously affecting the performance level of Team 2.

Differences in the Information Use Environment of Teams by Study Question

As indicated in the Taxonomy of the Information Use Environment of Self-Managed Teams (Table 2), there are differences among high- and low-performing teams when considering their expressed information needs.

Kinds of information needed: High-performing teams share characteristics of a very rich information use environment. The high-performing teams re-

TABLE 2
Taxonomy of the Information Use Environment of Self-Managed Teams

ITEM	Team 1	Team 2	Team 3	Team 4
Kinds of Information:				
Internal:				
Feedback on performance	X		X	
Available resources	X	X	X	
Production expectations	X	X	X	X
Operational information	X	X	X	
Available equipment	X		X	
Training for Technical Skills				X
Training for Interpersonal Skills			X	X
External:				
Feedback from Customers	X		X	
Competitors	X		X	
Suppliers	X	X	X	
Market Changes	X		X	
Political Moves	X		X	
Developments in Technology	X		X	
Analyses & Reports:				
Solicited	X	X	X	X
Unsolicited	X	X	X	X
Ideas & Trends:				
Brainstorming	X			
Trial and Error	X			
Bench marking			X	
Pressures:				
Special Communication Channels			X	X
Personal Communication Networks			X	
Strategies:				
Information Roles	X	X	X	X
Factors that Enhance/Hinder:				
Openness of Information System	X	X	X	X
Amount of Information	X	X	X	X
Communication/Team Meeting Skills	X	X	X	X

ported that feedback information about performance and operations within and outside the team is crucial in monitoring their own progress and making adjustments where needed. In addition to the internal and external information required by the high-performing teams, Team 3 reported that training for interpersonal skills is important to their team. This training helps them balance the personality conflicts on their team. Team 1 did not emphasize the importance of interpersonal skills training, however, their team members were not currently experiencing problems with personal conflicts on the team.

Low-performing teams focus more on information needed to deal with immediate problems which leaves very little time for planning, process improvement, and evaluation. They react to their environment rather than controlling and directing their team toward shared goals. Team 4 lacked basic information about organizational methods for managing processes. This conclusion is supported by Team 4's emphasis on technical and interpersonal skills training as the information they most needed. They received information about their production expectations but lacked the information and knowledge as a team for how to accomplish their tasks. The low-performing teams reported relatively no external information exchange, except with suppliers. As an exception, Team 2 was experiencing problems with a defective part supplied to them for the computer assembly as well as the quantity of electronic boards being supplied to them by Team 4. Hence, because of immediate problems they were exchanging information with suppliers.

All the teams received analyses and reports, solicited and unsolicited. The difference in the high- and low-performing teams is in how they use this information to improve performance. The high- performing teams are effective consumers of information. They know what information to gather and they know where to go to get the information they need. Because the high-performing teams are meeting their goals, they have more time to devote to gathering information about ideas and trends pertinent to their job tasks. Team 1 is goal oriented and operates in an environment of trust; therefore, they successfully employ techniques such as brainstorming and actual trial and error. However, Team 3 favors benchmarking other teams to gather information about ideas and trends. Use of special communication channels is most emphasized by teams as a substitute when usual communication channels have broken down as a result of personality conflicts on the team or lack of trust among team members. These characteristics were reported and observed on one high-performing team (Team 3) and one low-performing team (Team 4). Team 3 assigns members to nurture relationships with others outside the team who could assist them. Their work environment includes suspicion of management and other teams who may attempt to bid on one of their jobs. Therefore, they place more emphasis on controlling their information environment. Team 4 also operates in an environment where management and other team members are suspect which causes

them to mistrust information filtered to the team from team members who communicate with management.

How teams decide what information is needed: Data from interviews and observations of teams indicate there is a difference in how high- and low-performing teams decide what information they need. Team 1 communicates in meetings very effectively. One NSF research team member reported that they operate their team meetings like a group of executives. They have clear goals and continually compare their performance to the baseline standard on the Oregon Productivity Matrix (OPM). The OPM is an overall performance measurement tool that weights certain criteria. Team 1 reported that the most knowledgeable team members have the most input in making certain decisions and that no one member dominates decision-making. Although, Team 3 was considered a high-performing team, they reported neutral positions (3.1 and 3.6) for domineering team members and whether the most knowledgeable team members have the most input in decision-making, respectively. This was most likely due to the personality conflicts on the team and the fact that some of the team members preferred a more traditionally-managed work environment. The low-performing teams reported a 2.6 (Team 2) and 2.9 (Team 4) for domineering team members. In data collected by interview and observation methods, it is obvious that Team 2 communicates among themselves very effectively. However, their current problem in production is largely due to communication breakdown with people outside the team such as managers and engineers. Team 4 reported a low score on the self-administered questionnaire for domineering team members, however, through data collected by other methods, it is apparent that one of their major problems is domineering team members. They also reported that the most knowledgeable team members have the most input (4.0), which is consistent with data collected by other methods. There is a vast difference in the level of skill and knowledge on Team 4 because of different experience levels. Therefore, it may be that the team members with the most experience dominate the team because they are considered the most knowledgeable by the team.

Strategies for gathering and disseminating the information: The results of this study support Ancona and Caldwell's (1992) findings that team members assume information and communication roles. The four main communication activities documented by Ancona and Caldwell (ambassadorial, task coordinator, scouting, and guard) were exemplified on the four self-managed teams included in this study. All the teams use information roles as a strategy to obtain information for the team (Table 2); however, some are more effective than others. Because the organization has implemented the star point methodology, all the teams use information roles to gather and disseminate information for the team. Star points are groups of non-core tasks that are performed by one member of the self-managed team. Seven star point positions (communicator, quality,

production planning, safety, administrator, methods, and cost) are assigned on each team. Each star point position receives a documented instruction manual which includes purpose, policy, brief description, detailed description of responsibilities, length of term, and training required for the star point position they have assumed. This standardization of star point positions allows teams to interact across team boundaries to solve global issues. The difference in high- and low-performing teams is in how effective team members are in these assigned roles. For example, the communicator star point on Team 4 doesn't take notes of meetings nor does the team facilitator conduct effective meetings. This breakdown in the communicator and facilitator star point positions affects the quality and quantity of the team's information system. The high-performing teams have learned to be very effective in using information roles (star point positions) to gather and disseminate the information needed by the team to impact performance. Even though Team 2 is considered a low-performing team, this team uses the star point positions effectively as information roles.

Factors that enhance or hinder efforts to get information: There is no significant difference in high- and low-performing teams in regard to the effect of openness of the information system and the amount of information available to the team on team performance (Table 2). However, through interviews and observations, data reveal that each team's tolerance of these two factors is substantially different. Their tolerance for how open the information system should be as well as how much information to make available correlates to the maturity level of the team. Team 1 reports these factors as barriers when they first formed as a team. However, the team members unanimously reported its current level of maturity at 4.0, which is the highest rating on the self-administered questionnaire. Over time, they have learned which information is crucial to their performance and how best to gather and disseminate that information. Team 3, also a high- performing team, reports a maturity level of 3.8 and demonstrates information-gathering and -disseminating skills that have been acquired by the team. Although, Team 2 reported a 3.5 maturity level for the team, they were experiencing some problems in getting the information they need such as production expectations from management and accurate blueprints from the engineers. Team 4 reported a low 2.6 maturity level along with major problems in getting the information they need, particularly training in technical and interpersonal skills. The lack of information-gathering and -disseminating skills of Team 4, which can be learned over time, exacerbates their efforts to obtain pertinent information for performing their job tasks.

DISCUSSION

This section presents a discussion of the results about the information use environment of self- managed teams by study question followed by the conclusion of the study. First is a comparison of the information use environment of

self-managed teams, derived from comparing proposed theory to what actually was found to exist in practice.

Information Use Environment of Self-Managed Teams – Comparing Theory to Practice

A multiple-case, multi-method replication design (Yin, 1989) was used to assess the accuracy of the proposed theory of the information use environment of self-managed teams. Hence, each study question will be discussed separately comparing what was predicted by theory with findings from practice that either supported or refuted the proposed theory. As the cases supported or refuted the proposed theory, revisions were made to model what actually exists in practice. The analyses of data from the case studies presented in the Results section about the information use environment of self-managed teams provide the foundation for the ensuing discussion. This section references, where applicable, the Taxonomy of the Information Use Environment of Self- Managed Teams (Table 2), which was developed to illustrate the results of this study.

Kinds of Information Needed: The data support the theory that self-managed teams need a wide variety of information from different sources to effectively perform their job tasks. As indicated in the taxonomy, there are differences among high- and low-performing teams when considering their expressed information needs. Each kind of information need as described by Mintzberg will be discussed next in context of the teams' performance levels.

Internal: The high-performing teams utilized a wider scope of internal information than did low-performing teams and emphasized that continuous feedback on performance is the most crucial information needed by the team. In fact, they felt a profound responsibility to gather their own information and placed a higher value on information gathered by the team. All the teams required information on production expectations; however the low-performing teams were experiencing communication problems with managers affecting their access to accurate, timely information regarding production expectations. Information about operations and available resources and equipment were stressed as important information affecting performance for all the teams except Team 4. However, this team was experiencing serious problems in working as a team, and most of their time and effort were wasted. This could explain why they felt the most important information they needed to improve performance was training for technical and interpersonal skills. Team 3 also reported that training for interpersonal skills is important to their team, however, they were experiencing some personality conflicts on the team that were affecting the team's performance.

External: External information includes feedback from customers, competitors, suppliers, market changes, political moves, and developments in technology. This kind of information is needed by teams in order to plan their work and

respond to threats and opportunities in their work environment. The high-performing teams included in this study actively pursue and nurture relationships external to the team to assist the team in performing their tasks. Neither one of the low-performing teams in this study emphasized the importance of external information to their team, with one exception. Team 2 had contacted a supplier when there was a problem with a defective part, however, this was not an on-going practice. It could be that low-performing teams must stay focused on current, immediate problems for survival, leaving little time to expand their boundaries to cultivate external relationships for gathering information for the team.

Analyses and reports: All the teams in this study received information in the form of analyses and reports. However, the difference in how teams used the information influenced their level of performance. The high-performing teams relied more on their own information system rather than information sent to them from other sources.

Ideas and trends: Only the two high-performing teams expressed a need for information about ideas and trends, although they used different techniques for gathering this kind of information. There again, it could be that the low-performing teams are working in a crisis situation, which forces them focus inwardly.

Pressures: One high-performing and one low-performing team reported the use of communication channels and networks. Both of these teams were experiencing communication problems and had substituted open communication with other methods for obtaining information such as the grapevine and two-step flow.

How the Team Decides What Information is Needed: The case study research design provided an opportunity for the NSF research team to explore the process of how teams decide upon the information they need for performing their job tasks. The model of Factors Effecting Self-Managed Work Team Performance (Figure 1) indicates that team design includes consideration of the methods used by the team to identify the best procedures. Concepts measured by the self-administered questionnaire which reveal the decision-making process of the teams are the level of domineering team members on the team and whether the most knowledgeable team members have the most input in decisions made by the team. Data reveal that the level of information and communication skills of the teams did, indeed, affect their performance level. Team 1 exhibited a high level of skill in gathering the information they needed for the team and conducting team meetings. Although Team 3 reported a neutral position (3.1) in regard to domineering team members, data from interviews and observations reveal that the decision-making process of the team is impaired by domineering team members. Team 3 also reported a relatively neutral position (3.6) in measuring the concept of whether the most knowledgeable teams members have

the most input. However, observations of team meetings support an effective use of information and communication skills by the team. Team 2 and Team 4 demonstrated a less than satisfactory level of information-gathering and communication skills. While Team 2 communicated very effectively internally among their team members, they were experiencing problems in gathering accurate information from management and engineering representatives who were external to the team. Team 4 lacked the basic information-gathering and communication skills both internally and externally, which has brought the teaming process to a halt. The decision-making process of the team influences its ability to formulate effective procedures for determining what information is needed by the team to perform at a high level.

Strategies for Gathering and Disseminating Information: Theories from the literature that groups and teams support certain information roles, formally or informally, to obtain information for the group (Allen 1971; Hall & Ritchie 1975; Taylor 1975; McClure 1978) were supported by the case studies. Ancona and Caldwell (1992) identified roles that were assumed either formally or informally on organizational teams to provide certain expertise needed by the team. Their topology included four main communications activities and team strategies directed toward the environment: ambassadorial activities to provide access to the power structure of the organization; task coordinator activities to provide access to the workflow structure; scouting activities to provide access to the information structure; and guard activities, which do not include interaction with the environment but are designed to avoid releasing information to the environment.

Effective self-managed teams use all these information roles through star point positions assigned by function. Each star point is responsible for creating and maintaining relationships within a functional area such as production, planning, communication, quality, safety, methods, cost, and administrator with others outside the team who could assist them in performing their tasks. Although information roles are assigned on all teams for the star point positions, individual team members exhibit varying levels of skill in performing their information role. High-performing teams are clear on their goals and responsibilities as a team and as individuals representing the team as a star point. The effectiveness of the star points correlate with overall team effectiveness.

Since the organization utilizes the star point methodology, information flow is facilitated primarily by star points and team meetings. Therefore, if a team lacks communications and meeting skills, their availability and access to needed information is impaired. These basic skills are necessary to employ techniques such as brainstorming, trial and error, benchmarking, and building communication networks for gathering information about ideas, trends, and pressures in their work environment.

Factors that Enhance or Hinder Efforts to Get Information: Data from the case studies indicate the theoretical propositions that amount of information and openness of information do enhance or hinder attempts by the team to gather and disseminate the information it needs. However, data also provide evidence that the decision-making process of the team affects how the team determines what information is needed. Information-gathering and communication skills are impacted by the process that the team uses in deciding upon information needs. Important concepts to measure the effectiveness of the decision-making process of teams are the level of domineering team members on the team and whether the most knowledgeable have the most input when the team is making decisions. Study question two, How do self-managed teams get the information they need to perform their job tasks?, explored these concepts and provides evidence that the level of information-gathering and communicating skills is an important factor also for enhancing or inhibiting the team in getting the information they need.

CONCLUSION

This study was part of a National Science Foundation (NSF) grant entitled, *Creating the High Performing Self-Managed Work Team: A Comparison of Theory to Practice*, (Yeatts & Hyten, 1994). The purpose of the NSF grant was to use a series of case studies to provide an empirical assessment of several competing theoretical models of work team performance and to provide further theoretical development. In their theory of Factors Affecting Self-Managed Work Team Performance (Figure 1), Yeatts and Hyten consider four groups of factors that affect the level of team performance: the teaming process, the environment within and outside the organization, team design, and the work process. According to Yeatts and Hyten, an effective information system provides the information the team needs to effectively develop its team design, teaming process, and work process, which all ultimately affect team performance.

The case studies supported the theoretical propositions of the information use environment of self-managed teams. However, the data revealed another important factor which enhances or inhibits the teams' ability to access the information they need to perform job tasks. Decision-makers in team environments should be sensitive to the effects of information-gathering and communication skills on team performance. These are necessary tools for self-managed teams to accomplish their job tasks. It cannot be assumed that information-gathering and communication skills occur naturally on teams. Although, some individuals do have expertise in these areas, other do not. Therefore, in order to provide an environment that promotes high performance, these interpersonal skills must be trained and cultivated. Alternatively, decision-makers, responsible for recruiting and assigning team members, could purposely design teams to include the important information-gathering and communication skills. Data from this study revealed that some teams, over time, learn and develop effective information-gathering and communication skills. However, training programs could intervene to expedite this process leveraging the team for early success thereby reducing the learning curve for the team.

The results of this study provide an impetus for continued research in developing a model of the information use environment of self-managed teams. These findings contribute to the theoretical development of the environment within the team, specifically the information system of the team, which is included as an integral part of Yeatts and Hyten's model. Additionally, the findings provide theoretical development for modeling information-seeking behaviors and communication activities of self-managed teams.

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