PERFORMANCE IS A FUNCTION OF TEAM DESIGN: A FIELD STUDY

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ABSTRACT

This paper reports on field research comparing initial and on-going designs of work groups in two different organizations. Four components including task structure, group boundaries, norms, and authority, were specifically compared. Teams designed within the context of these four components were much more effective than work groups designed without consideration of these components. This field study, therefore, supports earlier results that design activities have a positive impact on team performance and project outcome. In addition, appropriate design activities can result in stronger team self-management.

INTRODUCTION

Literature on teams describes the positive impact that teams have on productivity, the conditions under which teams are successful, and the factors that lead to team success. Recent empirical studies suggest that well-designed teams tend to be more effective than work groups that do not account for critical design factors. This paper reports the findings of a field research that tested components of team design and their impact on team effectiveness in two distinct organizations. In particular, we used the framework established by Hughes, Ginnett and Curphy (2006) and the initial research by Hackman (1987) and Wageman (2001) that provided the basis for these four components.

REVIEW OF THE LITERATURE: TEAMS AND TEAM EFFECTIVENESS

Much literature discusses teams and team effectiveness. Katzenbach and Smith (1993) establish a working definition: "A team is a small number of people with complementary skills who are committed to a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable" (p.112). One common characteristic of teams is accountability. Team members hold themselves to be mutually accountable. Teams have a sense of shared purpose (Katzenbach & Smith, 1993) and the team's purpose is jointly determined and planned with management (Zenger & Associates, 1994). Teams have a leadership role shared by team members (Katzenbach & Smith, 1993). Katz (1997) describes a high performing team as one that is empowered, self-directed, and cross-functional to have complementary skills. In addition, team members are committed to working together and achieving their agreed upon, common goal. To accomplish this, they work collaboratively by respecting team members. This approach makes sense since they have a perspective of shared accountability where many tasks require collaboration and jointly produced outputs. Teams have collective work products

requiring joint contributions of members (Katzenbach & Smith, 1993). Teams are also important and can perform at higher levels than typical work groups. This higher performance level is the result of a greater synergy resulting from collaboration and jointly produced outputs (Katz, 1997).

The team environment is similar to successful job enrichment. In the typical work environment a manager determines and plans the work of his/her subordinates and the jobs (tasks) are narrowly defined, whereas in the team environment the manager collaborates with subordinates as peers and jointly establishes and plans the work. Thus, the skill set required for working effectively in teams is much broader than in other forms of work groups, potentially providing for individual growth and development. This development is often accomplished within the context of cross training and working directly with other team members. Moreover, this learning process is continuous and is part of the culture of the unit. Because joint accountability exists, people work together, rather than working individually on specific tasks as happens more in more traditional work situations. In team environments, rewards are based on both individual performance and the individual's contribution to the team's overall performance while all members are directly involved in continuous improvement.

Another critical skill in determining success of teams is the set of political skills. Political skills are often more critical than the technical skills required to complete the task for which the teams were created. A new product development team, typically cross-functional in composition, is an example of where this is the case. These political skills include the ability to gain support from key areas outside of the team, to gain acceptance of the team's output, to gather required resources which allow the team to work towards its goal, and to protect the team against external threats and overcome obstacles in the team's path. Likewise, internal political skills are required of team members to confront and overcome conflict issues as they arise. An agreed upon conflict resolution process is necessary to provide opportunities for intra-team cooperation and high performance levels (Katz, 1997).

Interpersonal skills comprise the sports analogy of team chemistry and are the necessary component to allow for synergy. To gain the benefits of synergy, that is, where the whole is greater than the sum of the parts, requires people to willingly and openly share ideas, comments and criticism. This open communication, and concentration on and acknowledgement of the importance of informal communication networks, separates technically skilled from high-performing teams. Katz (1997) identifies effective communication as one of those characteristics usually associated with high performing teams while Katzenbach and Smith (1993) suggest teams encourage open-ended discussion and active problem solving.

Hackman's (1987) conceptual model for work-team effectiveness identifies four general conditions that are necessary to facilitate team effectiveness: (1) a real team, (2) clear direction, (3) an enabling team structure, and (4) a supportive organizational context. As suggested above, a real team must have a common purpose, set of performance goals, and approach for which they hold themselves mutually accountable (Katzenbach & Smith, 1993). Wageman (2001) states that real teams are a bounded social system with clear membership that is reasonably stable over time. Teams in many organizations may not meet this condition. The extent to which a team's purpose is clearly stated rather than focused on achieving a short-term goal is important for team commitment and effectiveness (Wageman, 2001).

An enabling structure includes five basic design features: (a) appropriate size; (b) optimal skill diversity with sufficient, but not too many, differences to impact coordinating activities (Ancona & Caldwell, 1992; Ray, Zuckerman & McEvily, 2004; Thompson & Brajkovich, 2003); (c) task interdependence so members are dependent upon one another to accomplish the overall work product (Wageman, 1995); (d) challenging task goals with "stretch" performance targets (Katzenbach & Smith, 1993); and (e) articulated strategy norms (Hackman, 1990).

Finally, Hackman's (1987) fourth condition stated above is a supportive organizational environment where there is an incentive system that rewards team performance (Cohen & Bailey, 1996; Wageman, 1995); an information system that provides members with data required to competently perform their work; an educational system to provide training or technical consultation (Edmondson, 2003); and material resources necessary to complete the work product.

A normative approach to team effectiveness has been used by Hackman (1990) and Ginnett (1993), and cited in Hughes, Ginnett and Curphy (2006). This approach has also been used in a comprehensive research study by Wageman (2001). In this last study, team design was found to be associated with leader behavior, team self-management, and overall team performance.

Hughes, Ginnett and Curphy (2006) present a model of four components of team design that have a positive impact on team effectiveness. They include: (1) task structure (the task is known to the team and the team has sufficient autonomy to perform it; (2) group boundaries (team size, skill set and diversity are appropriate for the task); (3) norms (members share norms for team functioning); and (4) authority (an appropriate climate is established by the leader to fit situation demands). The present paper reports on the impact of team design on team effectiveness in an engineering firm and a computer software organization.

FIELD RESEARCH

Information was gathered from two different organizations on the initial design of teams and modifications to these work groups over time. Interviews were conducted on two different levels: open ended questions providing initial data on background information of each of the two companies, general information on the cultures of both organizations, and the perceptions of performance and job satisfaction levels for work groups and teams in each company; and, people from each company who were in comparable positions responsible for creating cross-functional teams, assigning particular projects to each work group/team, providing resources needed to fulfill task assignments and evaluating work group performance were interviewed for more specific information related directly to the areas being researched and discussed in this paper. Performance measures were compared so conclusions could be drawn from the differences in team/group formation in the two organizations. While the two companies were non-competing, one in computer software design and development, and the other in engineering design and consultation, both companies required similar creative problem-solving approaches to fulfill client needs.

In the computer software company, teams were purposefully formed by first identifying technical skill sets and key roles, including political and interpersonal roles, necessary to create and develop software packages to be used by client companies. All four variables presented by Hughes, Ginnett and Curphy (2006) were apparently purposefully included in the team design phase. First, task structure was the basis for team composition and membership. Top

management's leadership style was inclusive and managers were concerned with leadership development for all organizational members. An organizational culture was created and maintained that encouraged open questioning to ensure full understanding of organizational mission and task requirements. Tasks were ambiguous by nature, but unambiguous with respect to expectations and performance criteria. Members perceived a climate conducive to open interaction and commitment to both team and organizational members. Empowerment seemed to be an everyday occurrence. As a result, team members were readily delegated autonomy necessary to creatively solve problems that occurred, and team members accepted and sought leadership opportunities.

Second, group boundary issues were openly considered in team design. Skill set requirements became the basis for determining each team's membership. Experience taught the top managers that five specific and independent skill sets were required to complete clients' projects. Four of these skill sets were required throughout the problem solving process, while the fifth skill set became critical only during certain phases of the project. The COO, therefore, determined that team size should be five with membership including four permanent members and one rotating member who would actually be involved with more than one team. Thus, one person had multiple team memberships resulting from both skill requirements and amount of time that particular skill set was required for each team. Team size was carefully controlled on the basis of these skill set requirements to ensure both efficient and effective project completion. Recruitment, selection, and placement of personnel were determined by these skill requirements established for each of the project teams, and no team was fully developed until it had the full component of skill sets/members. Organizational culture encouraged creative problem solving, highly cohesive teams, open communication, and effective conflict resolution through strong interpersonal relations. Indeed, it appeared to us that an inordinate amount of time was spent on interpersonal skills to ensure member interaction would be both positive and effective. Thus, both technical and interpersonal skills were included in team design and people at all levels of the organization, from team members to top level managers, seemed to suggest that the efforts put into their team design had a positive impact on team output and performance.

Third, as Hughes, Ginnett and Curphy (2006) suggest, team norms came from all three of the possible sources. They indicate team norms can come from: "(a) They can be imported from the organization existing outside the team, (b) they can be instituted and reinforced by the leader or leaders of the team, or (c) they can be developed by the team itself as the situation demands." These teams existed in a strong organizational culture. Deal and Kennedy (1982) describe a strong organizational culture as one in which there is a consensus on the values and deeply held beliefs by organizational members. This definition was very evident in the teams and throughout the company. Importing norms from the larger organization was a natural outcome of the culture since team members were highly committed to both the team and the organization. While it is unclear whether a strong culture leads to improved organizational performance, it is clear that a consensus on the values and beliefs of a company lead to stronger identification with the organization and its members, and as a result a more readily accepted set of norms. Such was certainly the case with this computer software company.

Empowerment was an organizational norm, instilled by leaders whose leadership styles helped to infuse team members with performance norms and expectations. The COO's relationships with team members were based on mutual acceptance of skills and abilities. He created an open environment by creating self-managed teams and a creative, almost playful work atmosphere. From the time people came into work at the computer software company in the morning, when

the COO posted “brain teasers” to start the day with a puzzle, to deciding on where and what to eat for dinner, since late hours was often a necessary (but always a desirable state of employment) team members were responsible for task completion and providing input into work issues. Team members wanted and expected not only to solve client problems, but also to work closely with customers to identify and define issues to be resolved. This ensured they had complete ownership of their daily tasks and overall client projects. They appeared to work as effective self-managed teams that had the emotional and resource support of their managers.

Finally, team members, as they were trained to do from the time of their initial hiring, readily created norms as required for task performance. All three of these sources, therefore, were very apparent in our interviews with organizational members. High cohesiveness levels, which were part of the environment established by top managers, further supported the purposeful design of team norms in this whole process of team development.

The last component of team design that was found to have a positive impact on team performance is authority. In the computer software company teams were empowered to create and make their own work rules with the authority necessary to collect information as needed and establish work processes as deemed appropriate to complete work projects. The nature of project assignments and client demands required flexibility on the part of team members and authority to respond immediately to changing situations. As discussed above, leadership styles empowered teams to be self-managed. Top management ensured that team members had leadership and interpersonal skills, which were both necessary and appropriate to the nature of the task. Authority did not appear to ever become an issue of concern to either team members or top management. All parties involved in or responsible for the projects responded to changing demands in a way that appeared to be very effective. Performance outcomes and measurements seem to support this conclusion.

By contrast, team/group development and design in the engineering company took on a very different perspective. For example, while the task structure was unambiguous, work groups had narrowly defined constraints within which they were required to complete these tasks. Because managers who created these workgroups determined both questions of what to do and how to do it, there was little if any autonomy in completing assigned projects. When client demands changed an element of a project, all changes had to be approved by upper management before work could continue. There was no assigned leader from among the group membership and, apparently, no in-group leader emerged in any of the work groups. According to group members, an external manager was the only recognized leader in these work groups. This top-down approach to management had a negative impact on the organization, clients, and employees. For example, the time required to respond and react to client issues was greatly extended. Rather than project groups responding to concerns while on site, these concerns had to be communicated to upper management, and they had to determine what, if any, changes were to be implemented. Moreover, they became the sole arbiter of what was a legitimate issue and then what was the appropriate solution. Once this solution was determined, it then had to be communicated back to the on site work group. This solution may or may not be acceptable to the client, who might then complain all over again. Occasionally, when the client went directly to a top manager, the on site group would be completely left out of the loop and be unaware of any concerns until after the manager would finally communicate agreed upon changes. This resulted in extra work for the project group and helped to increase work dissatisfaction. Professionalism still provided a basis for commitment to the projects, but not to the work group or the engineering company.

This organization reflected an example of a weak culture where there was very little agreement on values, and there did not seem to be any deeply held beliefs that permeated the engineering company. The COO seemed to purposefully create an environment where no strong culture evolved. He was more concerned about maintaining full control of work place activities than he was about employee satisfaction. He did not appear to trust his subordinates to make decisions on any level, and certainly did not create self-managed teams. His was a power trip.

With respect to group boundaries, managers outside of the work groups predetermined team membership and task requirements without involvement of subordinates. Managers constructed group membership and group size by deciding which members they wanted to work together or thought had the required technical skill sets as they envisioned the project would demand. Thus, work groups had variable sizes based on these perceptions of project requirements. Managers simply ignored issues of interpersonal skills that might be required to enhance group performance. The ranking manager responsible for most group formation processes indicated that this was a professional organization—even if someone did not like another individual, those two people could work well together, as they could with just about every other member of the organization. Political issues or concerns were exclusively within the purview of upper management and were not a relevant consideration in work group design. Instead, membership in these groups was dependent entirely upon the nature and duration of a particular task. That is, groups were formed exclusively to complete a particular project and were immediately disbanded upon completion. Group norms were discouraged. Rather, managers established company-wide norms and tried to gain commitment to these. As a result, group cohesiveness was low and group boundaries were ill defined. There seemed to be a purposeful intent to create identification with and commitment to the organization rather than any set of members. Interviews with management personnel support this intent. They perceived task performance to be more effective when group members did not gain an attachment to each other. Commitment to the organization was described as more critical to mission accomplishment.

In the computer software company, because the norms of the team were consistent with the culture of the organization, team members seemed to be loyal and committed to both their team members and the organization. Authority differences were virtually non-existent within the context of the workgroup. Leadership styles of management personnel naturally supported self-managed teams within the context of empowerment. These styles were readily emulated by team members and were particularly apparent when the leadership role rotated across team members.

The leadership style at the engineering design firm was more authoritarian and, as was true in the computer software company, this style permeated throughout the workgroups. This was most evident since a top manager typically directed each of the project groups that he created. Members did not feel they could question management decisions and eventually lost the willingness to do so. No empowerment took place here and group members had no real flexibility to modify task assignments, or how to do them. We looked within the project groups to determine whether they had the appropriate amount of authority necessary to respond to client needs, questions and modifications and, therefore, successfully complete assigned projects. What we found was a few groups that were working on projects with little or no changes in the initial task definition seemed to be able to complete tasks within the framework originally established by the manager responsible to that particular client. However, most of the projects required constant modifications to respond to the changing situations in which the clients found themselves. Since these groups did not have the authority to make their own decisions, they had

to wait for an external manager, who was the de facto leader, to determine what changes would be made in the overall project. The suitable level of authority, therefore, was not apparent in these work groups, given the nature of the projects to which these groups were assigned.

Team effectiveness at the computer software company was rated high along a number of dimensions. Internally, for example, member satisfaction was very high. We would expect this given the high level of team cohesiveness and autonomy. In addition, client satisfaction was very high both with the specific team output and ability to interact with and modify task requirements during the course of a given project. They appreciated the flexibility of these teams and willingness of group members to undo, redo, or modify existing project modules. Moreover, company management was delighted with how performance goals and expectations were being fully met and often surpassed. Team members often used project successes as an outward confirmation of their own internal motivation on the job. This continued a spiral effect that led to greater commitment to team members and the organization. Since client and management feedback often was provided directly to team members, everybody had the opportunity to gain psychological rewards on the job. In part, this might explain why team members so willingly worked long hours, even after a particular project was completed. This added directly to team cohesiveness and organizational commitment.

Performance results at the engineering firm were dramatically different. In particular, member satisfaction was not very high. Group members repeatedly referred to their professional organization, as if that helped explained why interpersonal relations were neither emphasized nor needed at this company. Perhaps this explains why any commitment was to the company rather than the group. The lack of autonomy and empowerment almost numbed members with respect to intrinsic satisfaction of the task at hand. Most projects were viewed as tasks to simply complete rather than challenges to meet and overcome. Motivation seemed to be tied more to maintaining one's relationship with the organization rather than developing new skills required to complete a particular project. While group members were willing to work hard and long hours to complete a project, they did so within the context of job performance and monetary rewards to be gained (extrinsic motivation) rather than the satisfaction derived from intrinsic motivation of task accomplishment. Client responses seemed to suggest work performance was adequate and minimally met expectations. Likewise, management performance expectations were also met but rarely surpassed. Thus, while all goals and expectations were met, there seemed to be little desire to go beyond a minimally acceptable performance level. Faced with increasing competition, however, organizational prospects were actually decreasing without understanding or acknowledgement by upper management levels. In addition, since the only sources of ideas were the upper echelons of management, the company's ability to meet changing market demands and client requirements was limited. Adequacy of performance suggested significantly lower outcome results than the superior performance levels found in the more effectively designed teams of the computer software company.

Member behavior, while not an immediate concern of this investigation, showed dramatic differences in these two companies. At the engineering design firm, group members performed in an almost robot-like manner. This seems to be consistent with an organizational culture that did not support empowerment and a leadership style that did not empower group members or readily delegate authority to groups in completing assigned projects. This is in stark contrast to the culture created within the computer software company. Team members here were animated from the time they walked into work. They never used the clock to cut off creative interactions, had a friendlier, more open relationship with team members, and relished in the opportunities

created by full empowerment and delegation of project-appropriate authority. We could not determine which was cause and which was effect from data collected in this research.

Performance differences found in these two companies cannot be explained by differences in corporate missions or industries. Missions of the two companies are essentially the same, and while the industries are different, they are both project-based and have the same expectations with respect to work group creativity and problem solving. Moreover, project group relationships with clients and the necessity to modify projects based on client demands in both industries make the work environment very similar. Therefore, any differences in performance cannot be tied to these factors. Thus, we are saying, it must be somehow tied to, at least on some level, the differences we noted in structurally creating teams. Management styles were very different in the two companies, which resulted in cultural and climate differences as well. In the computer software company, the top management levels created self-managed teams who interacted directly with clients and were responsible for adapting their project activities to fit changing demands. In the engineering company, however, top managers became part of the project work groups by maintaining control over all project decisions, including when and how to adapt to any change in client demands. Whether team/group effectiveness helps create leadership behavior and/or organizational culture or is instead created by behavior and culture is beyond the scope of this research. Other studies have found engineering design firms that were highly effective based on appropriate initial team designs (e.g., Whiteley, 1994).

CONCLUSIONS

Results from this field study strongly support Wageman's (2001) conclusion that initial team design has a positive impact on team task performance. A lot of effort was put into team design in the computer software company. Moreover, the specific design was appropriate for self-managed teams and ultimately for team performance. All four of the design components described by Hughes, Ginnett and Curphy (2006) were indeed present in this firm. There was a conscious effort on the part of company managers to create teams only after integrating the considerations of task structure, team boundaries, norms and authority appropriate to the task at hand. We found support for all components being purposely included in team design. Indeed, there seemed to be a conscious effort to create an appropriate organizational culture to support team development and performance. This culture actually contained all four of these components, or at least supported each of them. In any case, team design was developed deliberately and appeared to lead to higher team performance and effectiveness in the computer software company.

Group design in the engineering company lacked elements of each of the four components tied to group effectiveness. For example, while the task structure included an unambiguous project assignment for group members, there was no sufficient autonomy to complete it. Likewise, technical skills were present in group members to initially complete assigned projects. Team size also seemed to be appropriate, though variable across projects. Interpersonal skills, however, were clearly lacking, perhaps purposefully so. Moreover, when task requirements changed as a result of client concerns, skill sets did not include abilities to respond to and solve these problems, as top managers were the sole decisions makers. In addition, any interpersonal issues were beyond the scope of members' interpersonal and political skills. As noted earlier group norms were purposefully discouraged in favor of broader corporate norms. Finally, with respect to authority, members perceived a climate and structure that prevented leadership within the

group or appropriate authority to effectively handle any modification in the initial project definition.

It seems clear to us that the differences in characteristics of work teams in the computer software company and the workgroups of the engineering firm are quite significant. We suspect that team design has either a causal relationship to or, at the very least, a high positive correlation with effective project performance. This field research has both the benefits and shortcomings of any such research methodology. For example, shortcomings in this study are seen when the sample size is two smaller Midwest companies. The cause/effect relationship between leadership style and culture/climate could not be established, nor could any correlation coefficients. Design requirements and their relationship to outputs and project success, as reported in the literature and cited in this paper, are strongly replicated in this field research. The impact of work team/group design is further supported by this study.

We would like to see future research consider the differences between work teams and workgroups. The question of whether organizational culture and leadership behavior are causes of or are caused by work team/group effectiveness is also an important issue to study. Company characteristics such as size, industry, location, and mission/vision are also issues that need to be addressed. In addition, political issues and interpersonal relationships have to be studied to gain further insight into overall team/group effectiveness.

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JOURNAL OF INTERNATIONAL BUSINESS DISCIPLINES

Volume 1, Number 1, November 2006

Published By:
International Academy of Business Disciplines and Frostburg State University

ISBN 1-889754-99-4

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