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Self-Managed Teams and the InformationSystem Development Process

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Abstract

The use of self-managed teams is considered for improving the Information System Development process. A series of characteristics and related research questions are proposed to measure performance of self-managed teams.

Introduction

Early MIS studies were often concerned with the software development cycle. Over twenty years ago, Harlan Mills (1976) stated:

"The next 25 years will see much more effective system development, and system evolution beyond initial development, carried out in units of small competent teams, rather than casts of hundreds or thousands".

A particular form of team, the self-managed team (SMT) has been shown to be effective in a number of complex work designs. Here, the use of SMTs are proposed for addressing issues associated with information system design (ISD). A series of research questions are also raised for investigating the appropriateness of SMTs.

Teams in the ISD Process

Results from a survey over 450 MIS managers, show the widespread use and satisfaction with IS project management teams (Ford and McLaughlin 1992). ISD teams are primarily managed by a leader, and cross the continuum of functional-matrix-project dimensions. (Abdel-Hamid and Madnick 1991).

Curtis et al. (1988), place the team between the individual and the project, stating that both project and team are subject to group dynamics. Since little research has been performed on "long-duration activities like system design", it is uncertain if the behavior of large system design teams follow theoretical group decision-making models.

Team member and leader turnover are additional team related ISD issues. Turnover of experienced team members have first order effects(Abdel-Hamid, 1989). Abdel-Hamid (1989) has shown that turnover potentially contributes between 40-60% additional labor cost to a project. These experienced team members perform much of the technical and social training on new team members.

Leader turnover, whether through succession or other reasons, usually has a negative impact on project resources (Abdel-Hamid, 1992). The level of impact depends on the nature and seriousness of contingency factors relating to leader changeover. More difficult situations cause greater disruption. Leader turnover can impact staff allocation, and both time and dollar schedules. Promoting an existing team member to the leadership position is one recommendation for resolving the turnover problem. (Abdel-Hamid, 1989).

The ISD team can be represented by various constituencies, and may contain a number of distinct, yet interrelated steps. Zmud and Cox (1979) depict six concurrent stages of both the ISD process and overall project membership. These stages include participation from members of different organizational levels, top and functional management, and both operating and systems managers and personnel. A set of role prescriptions depicts involvement and educational levels for these members across the different stages of a MIS project. These members, representing distinct task and job descriptions, bring both unique and common technical development skills and organizational expertise to the team.

Another two attributes of ISD teams includes their cross-functional and organizational relationships, and the combination of organizational and technical issues. Bostrom and Heinen (1977) address these concerns by identifying causes of behavioral problems.

Cross-functional teams, the organizational form implied by Zmud and Cox (1979), are commonly referred to as "other" organizational issues. Other synonyms include autonomous, semi-autonomous and self-managing team and group forms (Guzzo and Dickson, 1996). These forms of teams can provide the functional form to address the ISD process. They may also offer solutions to some of the problems common to the ISD process and address the various role requirements of ISD team members. In the following section, we briefly present a framework, set of behavioral characteristics, and research questions regarding these and other forms of teams, which we refer to as self-managed teams (SMT).

Self-managed Teams

A socio-technical framework for "self-regulating work groups" was presented by Cummings in 1978. He stated that these types of groups were synonymous with "autonomous", "composite" and "self-managing" work groups. They are characterized by several attributes. First, there are relatively whole tasks to be performed by a set of members where each member possesses a variety of task relevant skills. Next, these workers have discretion regarding such things as work methods, task schedules and the assignment of members to different tasks. In addition, a final attribute concerns compensation and feedback regarding the group's performance.

More recent work has refined the characteristics of SMTs by identifying relationships between predictor variables and effectiveness outcomes (Cohen et al., 1996). The socio-technical approach to ISD (Bostrom and Heinen, 1977), may further define the social

behavior of the ISD team. A brief list of characteristics for SMTs is presented for further examination.

A number of writers have presented definitions and/or characteristics of the SMT. In addition to Cummings (1978), other researchers have considered additional characteristics to SMTs (Goodman, et al. 1988, Larson & LaFasto, 1989, Sundstrom, et al. 1990, Cohen, et al. 1996, Guzzo & Dickson, 1996). These additional characteristics of the SMT are:

1) It shall consist of more than two people.

2) It will have a definable product and/or service, and be recognized as a distinct social entity.

3) It will interact with similar teams and groups.

4) It will exist within a larger organizational or social context.

5) It will work towards the individual goals of its members.

6) Members will come and go, yet there will always be some continuity (dyad).

7) The set of necessary technical and teamwork knowledge, skills and attributes (KSAs) will evolve.

8) The definable product and/or service will change, but the team's identity will not.

9) The team can become extinct.

These characteristics present a formidable set of dimensions for examining their appropriateness for SMT projects. In addition, there are the concerns associated with supervisory intervention, because the SMT can have direct supervisors (Cohen et al., 1996).

Although we suggest that these characteristics are applicable to ISD teams, they exist across all levels of the organization as a popular form initiating organizational change (Barua, et al., 1995). Our focus is on effectiveness and efficiency (Bowman, et al., 1983). While efficiency can be measured by quantitative variables (time, money), effectiveness measures are less quantifiable and more perceptive (user satisfaction, quality).

Teamwork

Stevens & Campion (1994) have identified five knowledge, skills and attributes (KSAs) dimensions of teamwork. Three of these are interpersonal, and two are for self-management. Teams high in these dimensions are characterized as possessing "teamwork". Research questions are proposed to investigate these issues further.

Research Questions

We believe that SMTs play an important role in the effectiveness and efficiency of ISD projects for the various stages of ISD. Since organizational form is highly contextual, we believe that SMTs high in teamwork and SMT characteristics will perform better overall. We raise the following general research questions:

RQ1: How do self-managed teams (SMT) differ in different stages of the Information System Development (ISD) process?

RQ2: What characteristics do more efficient SMT's possess?

RQ3: What characteristics do more effective SMT's possess?

RQ4: What interpersonal and self-management dimensions differentiate these teams.

Both group and individual measures are proposed to investigate SMTs in the ISD context. We plan to begin our research by contacting local organizations who have adopted, considered, or abandoned self-managed teams in the information system development process.

Conclusion

Teams are commonly used in the ISD process, and exhibit a common set of concerns. Refinement of the dynamics present in a well functioning ISD project team could advance our understanding of the critical functions of successful ISD teams..

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