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LONG-TERM EFFECTS OF GROUP DECISION SUPPORT SYSTEMS ON GROUP COMMITMENT: A THEORETICAL MODEL

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Abstract

Human knowledge is one of the scarce resources and strategic assets of organization. Turnover in organization has long been one of the major problems that most organizations are facing. Commitment is found to be a critical factor to sustain organizations' competitive advantages. The organizational commitment is derived from group commitment within a particular organization. This paper introduces long-term variable (group commitment) of using GDSS and proposes a long-term effect of GDSS on group commitment. Socialization theory and team theory are used to explain the theoretical background underlying the model.

Introduction

Human knowledge is one of the scarce resources and strategic assets of organization (Volberda, 1999). The turnover in organization has long been one of the major problems that most organizations are facing. Several efforts have been taken in order to preserve the human knowledge and expertise. One of which is the use of the expert system in organization (Luconi et al, 1986). However, such attempt is the back-end approach where the problem is solved without considering the real cause. Literature suggests that the real cause or reason for losing human expertise mainly emanates from lack of commitment in organization. Employee's commitment is important, since it reduces the turn over rate (Sethi et al, 1999). The front-end approach should be taken by enhancing the commitment in organization.

Commitment is found to be a critical factor to sustain organizations' competitive advantages. The real organizational commitment can be derived from the group commitment within a particular organization. People who feel attached to the group are likely to be committed to the organization. A group can be formed within and across the departments of the organization. In addition, the commitment within a group is significantly escalated by the initial group performance (McLean, Smits, and Tanner, 1991). GDSS is one of the technologies currently employed to increase the performance of a group, and it has been one of the important issues in IS/IT area.

The past studies have shown how beneficial a GDSS is to group-decision-making processes (Lucas, 1997; Pinsonneault and Kraemer, 1989). However, most of the past studies seek to explain the impact of GDSS in short-term perspective. Effects of GDSS are investigated within one task. Examples of the short-term variables include decision quality, time reduction, confidence, and the number of alternatives. The long-term variable (group commitment) of using GDSS should be urgently examined. Few GDSS studies articulate the commitment variable but it is referred to a member's commitment to group's decision or group task (Herschel and Andrews, 1993; Gear et al, 1999), which is not the commitment to the group itself. This study attempts to explain how GDSS affects one member's commitment to the others in a group, or the group itself. One study (Pinsonneault and Kraemer, 1989) was found articulating the willingness to work in the group in the future, which is the closest to group commitment. However, there is no study found articulating how GDSS affects group commitment in detail, although such variable is critical to an organization's survival.

The primary objective of this study is to propose a long-term effect of GDSS on a group commitment. The model proposed herein this study strives to explain the direct and indirect effect that GDSS has on group commitment, a long-term variable of GDSS. Socialization theory and team theory are used to explain the theoretical background underlying the model.

Literature Review

Group decision support systems (GDSS) are computer technologies designed as a tool to improve the effectiveness and efficiency of group meetings involving problem solving and decision making (Huber, 1982). The purpose of using GDSS is to improve the process of group decision-making by eliminating common communication barrier and providing techniques for structuring decision analysis (DeSanctis and Gallupe, 1987; Huber, 1982). GDSS offers two main functions to the users. They are task-oriented functions and social-oriented functions. Past research has paid significant attention to the task-oriented functions. Task-oriented functions are the function that serves the main objective of group formation. Such objectives include problem solving,

planning, and negotiation, etc. The examples of task-oriented functions are anonymous conversation, electronic voting, etc. Social-oriented functions serve the need of group socialization. The example of social-oriented function is the electronic coffee break (Turoff and Hiltz, 1982). Another example is the smoking call developed at the Indiana University (DeSanctis and Gallupe, 1987). DeSanctis and Gallupe (1987) claimed that GDSS should aim to support both social need and task activities in a group. However, the same study raised the anticipation of having task-oriented functions dominate social-oriented functions in GDSS environment.

Nour and Yen (1992) also posited that the task to be supported by the GDSS should not be viewed as a specific or one-time task. Such notion raises the concept of continuity of group existence. In other words, a group is formed in organization to accomplish more than one task or one project. Then it is important that the group members should be willing to work within the group again. Such feeling is a long-term variable and is labeled as the group commitment in our study. However, most GDSS studies to date have focused on the short-term variables, including, decision quality, acceptance, satisfaction, confidence, etc. (Lam, 1997, DeSanctis and Gallupe, 1987; Pinsonneault and Kraemer, 1989, Rao and Jarvenpaa, 1991). For example, Rao and Jarvenpaa (1991) investigated short-term effects of GDSS with three contingency factors. One such factor is characteristics of tasks. The study considered the characteristics of task as a bipolar variable, being creative task or choice tasks. It was asserted that creative task called for a greater examination of alternative solutions than choice type of tasks did. In addition, it was predicted that the performance in creative tasks would be improved by anonymous communication. In fact, one of their proposition was "anonymous communications will be more effective for creative tasks than for choice tasks." In other words, the creative tasks have a greater need of anonymity than the choice tasks do.

Group commitment shows several promising benefits to organization. Both descriptive and empirical studies have demonstrated the benefits of group commitment in term of conflict reduction, willingness to help co-worker, and productivity improvement (Minkes and Gear, 1994, Bishop and Scott, 1997). In addition, group commitment will enhance the commitment to the organization as well. The commitment to organization is found to have negative influence on the intention to quit or enhance the need to remain in organization (Bishop and Scott, 1997). Most studies of commitment variable were in the organizational context. Few were done in a smaller context, a group of worker. In the organizational context, the commitment is defined as the motivational ties that employees develop to their organizations (Zmud

and McLaughlin, 1989). Consequently, group commitment should refer to the motivational ties that the members develop to their groups. In order to develop a systematic approach for examining the group commitment variable, both short-term and long-term variables from GDSS, have to be connected.

When group commitment is used, one theory would shed light on the issues. Team theory is a comprehensive model of organizational decision and control (Marschak and Radner, 1972). Team theory posits that the group congruence is important for the group commitment, and it is defined as the degree to which the vested interests of individual team members are compatible with the group goal (Briggs, 1994). Therefore, in order to solve such a conflict in a group, the organization's rewarding system should be taken into account.

Another aspect of group commitment is the mode of communication. Encouraging communication that involves the group member's feeling is important for member's acceptance of the solution and with group member feelings to work together in the future (Miner, 1979). The cohesiveness and mutual feeling of group members can easily occur when the members have face-to-face interaction. This is the product derived from the traditional socialization in a group. Socialization theory implies that face-to-face communication is important. In addition, a study of online meeting emphasizes that the face-to-face communication is of value in terms of group cohesiveness (Kerr, E.B., 1986). Therefore, it might be articulated that having face-to-face communication is necessary to enhance the group commitment, yet it will potentially compromise the anonymity offered by GDSS. The subsequent section will delineate how the research model is developed based on the team and socialization theories.

Proposed Model and Propositions

While task-oriented functions influence the short-term variables in teamwork environment, social-oriented functions influence both short-term and long-term variables. This argument calls for the combination of long-term and short-term variables together to investigate the longitudinal effect of GDSS. Possible short-term variables are time reduction, decision accuracy, decision satisfaction, etc. However, it is not our intention, to incorporate the comprehensive list of such variables in this model, since our focus in the study is long-term variables. The following is the proposed model of our research to present how functions of GDSS and group performance affect the group commitment.

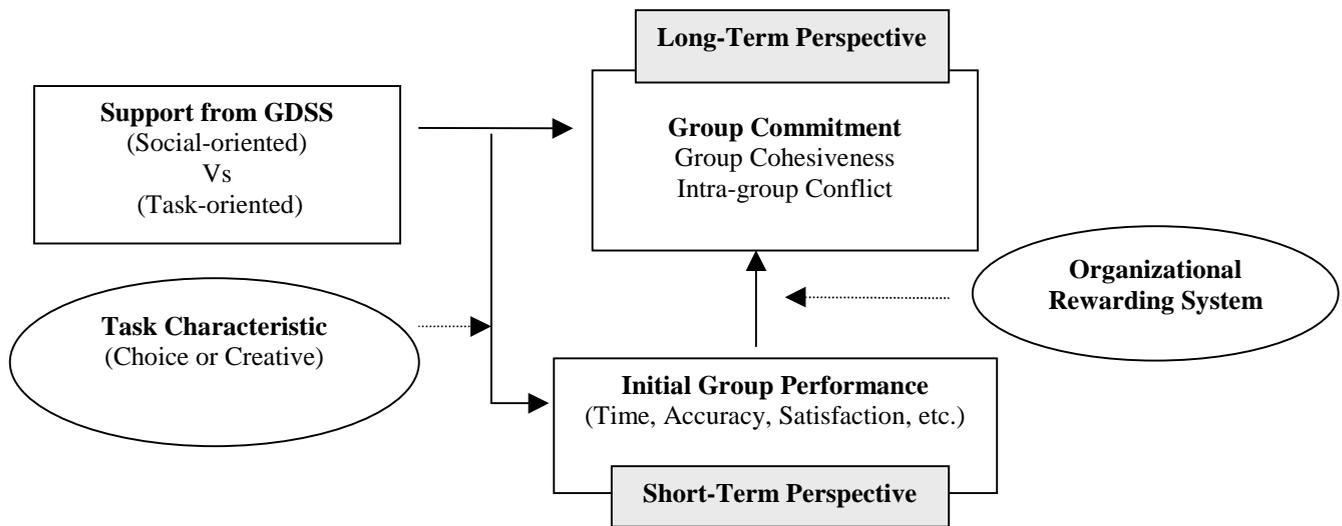


Figure 1: A Theoretical Model of GDSS Impact on Group Commitment

From the above model, the research proposition can be generated. As mentioned earlier, the short-term and long-term effect from GDSS needs to be interconnected in order to examine the GDSS effect of group commitment systematically. The above model demonstrates how the short-term variables are connected to the long-term variables, rendering to understanding of direct and indirect effect of GDSS on group commitment. The propositions are categorized into three major groups. The first group of propositions delineates the relationship between the functions offered by GDSS and initial group performance (Short-term perspective). The second group elicits the direct effect of support from GDSS to group commitment (Long-term perspective). The third group examine the indirect effect of support form GDSS to the group commitment, which is another proposition for long-term perspective in this study. They are presented as follows.

In our study, we employ the two important underlying factors in the group commitment variable. They are group cohesiveness and intra-group conflict. Group cohesiveness is defined as the attraction between members in a group and it is a meaningful factor to encourage cooperation (Sweeney and Lee, 1999). Intra-group conflict is defined as the disagreement among the group members. Both group cohesiveness and intra-group conflict have the significant impact on group commitment (Jaffe and Scott, 1998, Porter and Lilly, 1996, George and Bettenhausen, 1990). The intra-group conflicts mostly emanate from the conflicts between individual values and group values (Jaffe and Scott, 1998). Therefore, the team theory will play the underlying role in the model.

The Relationship between Functions from GDSS and Initial Group Performance

Task-oriented functions have been suggested to have positive influence to the group performance. However, social-oriented functions yield the opposite outcomes. Since social-oriented functions are related to the non-task conversation, it is expected to reduce the task performance (Shaw, 1981). Additionally, social-oriented functions require some face-to-face communication, and therefore, have a detrimental effect on the anonymity characteristics offered by the task-oriented functions of GDSS. This can explain why the benefit of anonymity decreases, as the group members work together over a period of time. It is because group members get acquainted to one another and are able to identify the source of idea, rendering the lower participation in a group meeting. This leads to the following proposition.

Proposition 1: Unlike the task-oriented functions, the social-oriented functions have a negative influence on the initial group performance.

According to Rao and Jarvenpaa (1991), the creative tasks have a greater need of anonymity than the choice tasks do. Since the social-oriented functions of GDSS have debilitating effect on the anonymity, it is likely that the negative influence of social-oriented function will be larger in creative task. Hence, the task characteristics should be taken into consideration of the model development. Task characteristics act as the moderator in the relationship between support from

GDSS and initial group performance, which leads to the next proposition.

Proposition 2: The negative influence of social-oriented function will be larger in creative task than it is in the choice task.

Proposition 1 explains the factors that have the influence on the short-term variable. On the other hand, such factors have the impact on the long-term variable, group commitment, as well. The impact can be both direct and indirect. The direct impact of such factors is presented below.

The Direct Effect of GDSS Support on Group Commitment

One of the functions that a GDSS offers to group work is the social-oriented function. The examples are the electronic coffee break and smoking call. The major objective of this function is to allow the group member to get acquainted to the others. Such objective requires the face-to-face communication and may reduce anonymity offered by the task-oriented functions, resulting in decreasing in group performance. However, the social-oriented functions have the positive influence to stress reduction and job satisfaction. Face-to-face communication allows the process of socialization in groups to take place. Socialization was found to have a significant impact on group commitment. It is also found that socialization had influence on the two factors in group commitment variables, group cohesiveness and intra-group conflict (Young and Lundberg, 1996; George and Bettenhausen, 1990). In terms of task-oriented function, Rutter and Robinson (1981) posited that social cues are lost when people do not meet in the same room (Cuelessness). Consequently, the task-oriented function should have a negative effect on the group commitment. The propositions of the two factors are presented below.

Proposition 3: Unlike the task-oriented function, the social-oriented functions in GDSS have a positive influence on group cohesiveness.

Proposition 4: Unlike the task-oriented function, the social-oriented functions in GDSS have a negative influence on intra-group conflict.

The third group of propositions explains the indirect effect of social-oriented functions of GDSS on the group commitment. The indirect effect is through the group initial performance.

Indirect Effect of Supports of GDSS to Group Commitment

Studies suggest that decision history potentially dominates the conflict-resolution process in a group (Corfman and Lehmann, 1987; Ashforth and Saks, 1996). In addition, initial work performance creates a feeling of responsibility and then the likelihood that lasting commitment will evolve (McLean, Smits, and Tanner, 1991). Group initial performance is also considered as a part of group initial experience, and it influences the group commitment as well. Therefore, the group's initial performance should affect both intra-group conflict and group cohesiveness, which leads to the following proposition.

Proposition 5: Initial group performance acts as the mediator in the relationship between the support from GDSS and group commitment

The reward system is found to have a significant role for maintaining the commitment in groups (Acampora and Boissoneau, 1994). It is articulated that the rewarding system should be based on not only the individual performance but also on the group performance as well. In addition, it is said that the reward system should not only be based on the performance but also on the participation of member (Acampora and Boissoneau, 1994). Such approach will facilitate the group commitment. Therefore, the rewarding system that is based on the performance and individual incentive will have a negative influence on group commitment, while the rewarding system that is based on the combination of performance, member's participation, individual incentives, and group incentive will escalate the group commitment from the use of GDSS (Shirani, Aiken, and Paolilo, 1998; Sweeney and Lee, 1999). This leads to the last proposition in this study.

Proposition 6: Organizational rewarding system acts as the moderator in the path relationship from the initial group performance and group commitment.

Future Research

Both short-term and long-term variables should be combined here. GDSS should not only offer the functions that support the group task only, it should offer the functions that satisfy the social needs of group member as well. Moreover, GDSS should also focus on how to help organization build a team. In order to build a team successfully literature suggests that group importance, group purpose, group identity, group tasks, group potency and member relationship should be well addressed and clarified (Zmud and McLaughlin, 1989). Those elements will help enhance the group commitment.

In addition, the team commitment factors, including regular interaction, shared goals, and cooperation (Sweeney and Lee, 1999) should be supported via the use of GDSS as well.

Future research should focus on both short-term and long-term variables of GDSS. The experimental design, one of the most employed for GDSS study, should examine how these two variables are interrelated. By allowing the subject in the future study to change the group over the period of study, the future research can scrutinize the effect of group commitment clearly. We encourage the future research to investigate the effects of task characteristics and organizational rewarding system on both short-term and long-term variables. Last but not least, the other external factors, such as the leader characteristics in a group, group hierarchy, etc. should be incorporated in the future model as well.

Conclusion

GDSS is not a new assistant tool in decision-making process. However, it provides a wide range of utilities for decision-makers and can easily team up with other new technologies, such as the Internet for distributed collaborative work. It seems that GDSS will continue to be the trend for main research areas in the foreseeable future. However, it has been very difficult to prove that GDSS is useful without thinking of the long-term benefits of GDSS. This paper has two major contributions. First, this paper opened a venue for another possibility of GDSS benefits, namely a positive influence on group commitment, which in turn will enhance the organizational performance. Second, for researchers, the new model of GDSS provides a starting point for future discussion in this area, especially those involving a longitudinal study of group commitment.

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