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Understanding Group Effectiveness in a Newly Formed Distributed Group: An Action Research Perspective

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ABSTRACT

This research-in-progress study investigates the effects of group development and social capital on the effectiveness on a newly formed distributed group. Informed by the literature on development theory (Arrow et al., 2000, McGrath and Tschan, 2004, Gersick, 1989, Tuckman and Jensen, 1977), social capital (Adler and Kwon, 2002, Burt, 1992, Coleman, 1988), and team effectiveness (Guzzo and Dickson, 1996, Kozlowski and Bell, 2003, Sundstrom et al., 1990) a conceptual framework is developed that identifies the relationships among group maturity, social capital, group processes, and performance outcomes of 11 historians from diverse organizations who are geographically dispersed across the Commonwealth of Pennsylvania.

Keywords

Social Capital, group development, team effectiveness

INTRODUCTION

The proliferation of research on groups and teams in organizations has resulted in a substantial body of research that seeks to understand the factors that influence group effectiveness (Kozlowski and Bell, 2003, Sundstrom et al., 1990, Guzzo and Dickson, 1996). Many of these studies examined groups in organizational settings that afforded frequent face-to-face interaction.

In today's global society, many groups are geographically dispersed (Bell and Kozlowski, 2002) and must find ways collaborate remotely. Some of these groups are referred to as virtual teams (Bell and Kozlowski, 2002), while others are referred to as distributed communities of practice (Hildreth et al., 2000, Wenger, 2002). Given the proliferation of distributed groups and their subsequent use of information technologies, there is an increasing need to understand how to support these particular social structures across time and space.

Recent trends in computer-supported cooperative work (CSCW) highlight the need to support distributed communication and collaboration. Such collaboration is a complex process that requires groups to share diverse skills, expertise, and experiences remotely. Advances in computing and telecommunications technologies provide new tools to link distributed groups in order enable these groups to transcend the boundaries of time and space. This has become a thriving area of research for those who have an interest in the design and use of information systems to support distributed groups. However, groups are not born in their final state; groups form, mature, and evolve over time (Morgan et al., 1993). As such, there is an increasing need to better understand the factors that influence and constrain group functioning over time.

A review of the literature reveals two contrasting approaches that dominate the ways in which researchers have studied group effectiveness. First, the group development paradigm seeks to understand the relationship between the level of group maturity and performance. On the other hand, the network paradigm seeks to understand the effect of the structure of the network on group performance. While there has been considerable theoretical progress within both approaches, scant research attention has been devoted to integrating the two streams of research. What remains to be explored is how the two approaches converge to affect team effectiveness.

The purpose of this five-phase participatory action research study is to contribute to the knowledge base by exploring the link between group development, social capital, and time on group effectiveness. To that end, this research is guided by two

questions: (1) what are the factors that influence group effectiveness? and (2) what process mechanisms enable group effectiveness?

RESEARCH APPROACHES

Development-Performance Relationship

The link between group development and performance has been studied for over four decades (Arrow et al., 2000, Arrow et al., 2004, Gersick, 1989, Giddens, 1979, McGrath and Tschan, 2004, Runkel et al., 1971, Tuckman, 1965, Tuckman and Jensen, 1977). Early research suggested that groups progressed through linear stages of development. For instance, the classic stage model predicts that groups follow a fixed sequence of developmental stages: *forming*, *storming*, *norming*, *performing*, and *transforming* (Tuckman, 1965, Tuckman and Jensen, 1977). Scholars have noted that the linear models are not sensitive to context, external contingencies (Kozlowski and Bell, 2003), or mediating and moderating variables (Chidambaram and Bostrom, 1996), leading researchers to suggest that its empirical basis is rather limited (McGrath and Tschan, 2004).

As an alternative to the linear approach, Gersick proposed the punctuated equilibrium model (PEM) of group development (Gersick, 1988, Gersick, 1989). Gersick's theory was adopted from *punctuated equilibrium* in the field of natural history (Eldredge and Gould, 1972). The punctuated equilibrium model predicts that group development occurs in two phases with mid-point transitions that result from revolutionary or deep change (Gersick, 1988, Gersick, 1989). The differences in the approaches can be accounted for by how development is triggered. Change from the stage model is triggered by internal cues, while change in the PEM results from external forces (e.g., time awareness, pacing). Kozlowski and Bell (2003) indicate that the PEM model may be limited to project or problem-solving teams with a fixed objective and limited lifespan.

Although these models appear to be opposites, Chang, Bordia and Duck (2003) suggest that the models are indeed complementary. They posit that the focus on developmental trajectories supports the stage view, whereas the focus on temporal awareness and timing supports the PEM. Similarly, Chidambaram and Bostrom (1996) supported the fact the two models are complementary. These researchers suggested that linear models focus solely on developmental patterns of groups, whereas non-linear models seek to understand the underlying causes of these changing developmental patterns.

A more contemporary approach to theorizing and analyzing groups is to posit that groups are "adaptive, dynamic systems that are driven by interactions both among group members and between the group and its embedding context" (Arrow et al., 2000, p. 3). From this perspective, group work and formation occur simultaneously, and change is triggered by both internal and external forces. Instead of using the language of stages or phases, the dynamic view focuses on modes and processes (e.g., formation, operation, and metamorphosis). Theoretical underpinnings of this model are derived from dynamic systems theory, general systems theory, and complexity theory.

Network-Performance Relationship

Five decades of empirical research has supported the notion that networks are important conduits for the flow of resources (e.g., information, knowledge, social support, etc.). Historically, the network structure-performance relationship was studied on short-lived or ad hoc small groups in laboratory settings (Bavelas, 1950, Guetzkow and Simon, 1955, Leavitt, 1951, Shaw, 1964, Shaw, 1954, Shaw, 1958). These studies examined the effect of certain communication nets on group performance. Most of these studies focused on ad-hoc groups working on short-term tasks to achieve a specific goal.

Current research examines the network-performance relationship from either an internal or external view (Adler and Kwon, 2002, Ancona and Caldwell, 1992). These views can be further classified as bonding versus bridging perspectives (Putnam, 1995), while others use strong versus weak tie propositions (Granovetter, 1983). A bonding view emphasizes the externalities derived from closure (Coleman, 1988), whereas a bridging view illuminates the benefits derived from structural holes (Burt, 1992). Given that the strands are not mutually exclusive, these opposing theoretical arguments and approaches result in competing predictions. For example, some researchers have found a positive linear relationship between highly dense networks and performance (Reagans and Zuckerman, 2001), while others have found that high density networks hindered performance (Sparrowe et al., 2001). Variations in findings may be attributed to different types of groups with diverse characteristics, or perhaps methodological flaws in the research strategy.

Of the major streams of network-based research, social capital represents the biggest growth (Borgatti and Foster, 2003). From a resource perspective, Adler and Kwon (2002) define social capital as "the goodwill available to individuals or groups. Its sources lie in the structure and content of the actor's social relations. Its effects flow from the information, influence, and

solidarity it makes available to the actor” (p. 23). They differentiate the structure of the network (bonding or bridging), the resources that flow through the tie (content), and the effects of social capital. In fact, tie content has recently been proposed as a strong moderator of performance (Balkundi and Harrison, 2006). In a meta-analysis of 37 teams, these researchers found that there was no real difference in the type of tie on performance, but found expressive tie density had a stronger effect on viability.

Deficiencies in Approaches

Despite four decades of research on the development-performance relationship (Arrow, 1997, Arrow et al., 2000, Arrow et al., 2004, Chang et al., 2003, Eldredge and Gould, 1972, Seers and Woodruff, 1997, Tuckman, 1965, Tuckman and Jensen, 1977) and five decades of research on the network structure-performance relationship (Bavelas, 1950, Borgatti and Foster, 2003, Guetzkow and Simon, 1955, Rosenthal, 1996, Shaw, 1958, Sparrowe et al., 2001), it is surprising that very little research has taken an integrative approach.

Scholars from the network paradigm report a deficiency in treating the network as a “black box” (Oh et al., 2004). What remains to be explored is an understanding of *when* and under *what* conditions networks have the effects that they do. Alder and Kwon (2002), however, suggest a deficiency as a consequence of the paucity of empirical research that examines both perspectives in the same study.

Prior research is also deficient as only a handful of studies have empirically examined competing development theories in the same study (Chang et al., 2003). For example, very few studies have directly examined linear versus nonlinear models of development (Arrow, 1997, Lim and Murnighan, 1994, Seers and Woodruff, 1997) or empirically analyzed dynamic models over longer periods of time (Arrow et al., 2000). Ahuja (2000) notes deficiencies in the design of the study and calls for a more longitudinal approach to better understand this phenomenon.

This study will address these deficiencies by integrating the literature on group development, social capital, and group effectiveness and explore the applicability to understanding the factors that enhance (or constrain) the formation, maintenance, and members support activities of a newly formed distributed group over the period of a year.

AN INTEGRATED FRAMEWORK

Informed by activity theory, the conceptual model (see Figure 1) is built from the premise that group effectiveness is a function of group development, social capital, and group processes over time. Activity theory is a philosophical framework for studying different forms of human praxis as developmental processes at multiple levels of analysis (Kurti and Arvonen, 1992). Similar to sociotechnical theory, there is a concern with the joint optimization of the technical and social systems. This conceptual framework satisfies principles of group effectiveness outlined in (Cannon-Bowers and Salas, 1997). The model is descriptive, evaluative, and diagnostic. Due to space limitations, a mere summary is provided.

Group Outcomes

Group effectiveness, which consists of performance and viability, is broadly defined as the quantity and quality of a group’s outputs over time (Sundstrom et al., 1990, Shea and Guzzo, 1987, Guzzo and Dickson, 1996). Performance (e.g., productivity) is defined as the acceptability of outputs by members inside the group and the stakeholders in the external community, whereas viability concerns members’ satisfaction, participation, and willingness to continue working together in the future (Sundstrom et al., 1990, Guzzo and Dickson, 1996).

Group Processes

Group processes are defined as mechanisms that inhibit or enable the group’s capacity to combine their capabilities and behavior (Kozlowski and Bell, 2003) and focus on the factors that facilitate or constrain group functioning. In this model, five processes are proposed as variables that facilitate group outcomes. These variables consist of the following: effective communication, cohesion, positive conflict, participation, and learning.

- Effective communication enables coordination and cooperation (Kozlowski and Bell, 2003). Researchers have found that groups that communicated more frequently outperformed groups that communicated less frequently.
- Cohesion is defined as forces acting on members to remain in the group (Fetingsler, 1950), the commitment of members to the group’s task (Goodman et al., 1987), and member attraction to the group (Evans and Dion, 1991, Evans and Jarvis, 1980).
- Positive conflict is characteristic of groups where there are honest differences of opinions, agreeing to disagree, devil’s advocacy, and debates to clarify positions (Putnam, 1986).

- Participation refers to the level of involvement in group tasks as well as member maintenance and member support activities. Research has suggested that participation facilitates expectation management and ownership (Preece et al., 2002).
- Learning is defined as the detection and correction of errors (Argyris and Schön, 1996). Argyris and Schön make a distinction between single-loop and double-loop learning (reflection-in-action).

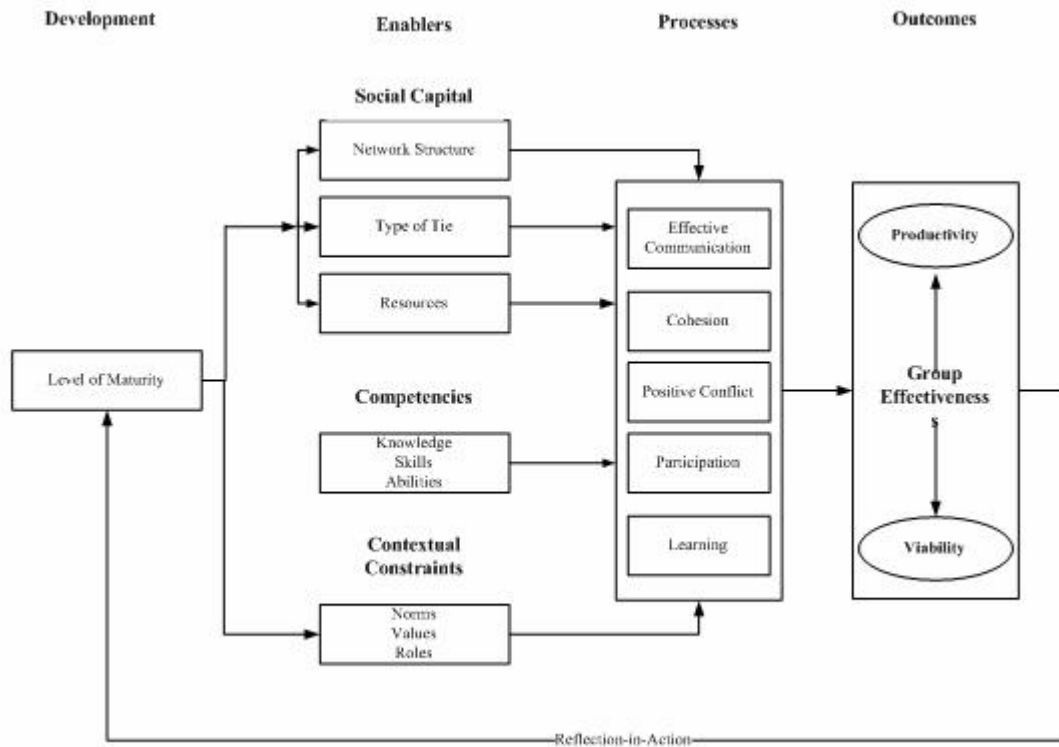


Figure 1: Conceptual Model of Group Effectiveness

Enablers

Enablers consist of factors that mediate the relationship between group development and group processes. These enablers consist of social capital, group competencies, and contextual constraints.

- Social capital represents the goodwill derived from the network of social relations that can be mobilized to facilitate the pursuit of collective goals (Adler and Kwon, 2002)
- Group competencies consist of the KSAs (e.g., knowledge, skills, and abilities) that are necessary for effective taskwork and teamwork (Stevens and Campion, 1994). Competencies provide information on the knowledge, skills, and abilities that underlie group processes and performance strategies.
- Contextual constraints consist of the norms and values that guide behavior as well as the various roles that the members occupy. Values will influence the way that members interact with each other (Schein, 2003).

Group Development

Arrow et al.'s (2000) theory of small groups as complex systems is selected as the theoretical model to derive the propositions for this research. This model is chosen primarily because it examines the processes, development over time, and adaptation to external contexts. In addition, McGrath and Tschan (2004) identify four triggers that prompt change in groups: developmental, adaptational, experiential, and operational.

METHODOLOGY

This research uses a participatory action research methodology. Linked to the seminal work of Kurt Lewin (Lewin, 1947), action research is an interventionist method that is ideally suited to the study of technology in context, which involves close collaboration between the researcher and practitioners (Baskerville and Wood-Harper, 1996). According to Rapoport (1970), the aims of action research contribute “both to the practical concerns of people in an immediate problematic situation and to the goals of science by joint collaboration within a mutually acceptable ethical framework” (p. 499). Susman (1980) adds a third aim: “to develop the self-help competencies of people facing the problems” (p. 146).

Given that this research has a strong focus on group behavior and social systems, this study adopts the action research method outlined by Susman (1983). Susman’s model of action research consists of five phases: *diagnosing*, *action planning*, *action taking*, *evaluation*, and *specifying learning* (see Figure 2). This form of action research is more empirical as the researcher has some a priori framework to investigate. Verification then rests on two beliefs (Susman, 1983). First, there is an envisioned configuration of an activity system that will produce desired outcomes. This aspect is amendable to verification by prediction because one can observe whether or not the anticipated outcomes were achieved. The second belief is based on certain actions that will produce the desired outcomes. The second is not amenable to verification because groups are dynamic and complex systems.

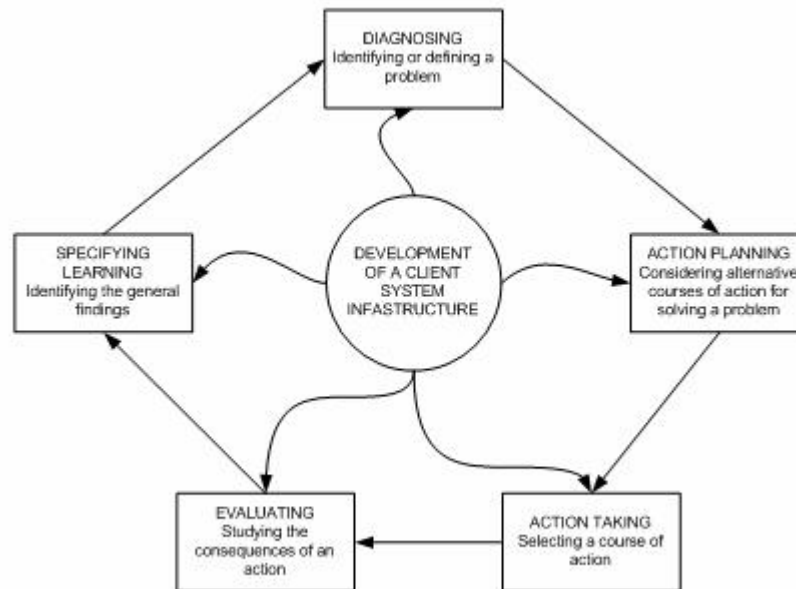


Figure 2: Action Research Cycles

Source: Susman, G. (1983) *Action Research: A Sociotechnical systems perspective*. In *Beyond Method: Strategies for Social Science Research* (Ed, Morgan, G.) Sage Publications, London

DISCUSSION

The objective of this research is to identify the relationship between group development, social capital and performance of a newly formed distributed group and their subsequent implications for the design and use of information systems. This study is unique as it extends the discussion in the extant literature and provides a new solution to an old problem. More specifically, this research integrates two streams of literature from small group research and explores these frameworks in the context of distributed groups. Finally, consistent with (Chisholm, 2001), this study seeks to demonstrate that participatory action research can considerably influence the formation of a distributed group from “scratch” in a relatively short period of time.

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