Leadership and Performance in Virtual Teams: Exploring Brokerage in Electronic Communication

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ABSTRACT

This article explores the structural foundations of leadership and performance in virtual project teams. In an experimental business case, the article demonstrates the effect of structural brokerage in team communication on leadership and team performance. This research suggests that social roles as well as the acknowledgement of leadership and performance are conditional to the way individuals and teams relate to their environment. It supports structural hole theory in that leaders and a winner team achieved the highest values of flow betweenness and network efficiency. Strategically, managers of virtual knowledge networks should focus their attention not only on the qualifications of individuals, but also on communication structures within their work groups.

Keywords: leadership; mobile communication; performance; social network analysis; structural hole theory; virtual team

INTRODUCTION

The project is an important type of organization, as it encourages flexible production and the assembly of a diverse expertise. In contrast to permanent organizational forms, projects often create unique output and are essentially non-routine forms of collaboration in which search procedures are highly complex. Projects are organized in temporary, often multidisciplinary teams. Virtual teams have especially been experiencing considerable expansion in the organization of production and knowledge generation (Cascio & Shurygailo, 2003; Pinsonneault & Caya, 2005). This is
largely a consequence of several developments in the current economy: an increase of inter-firm project cooperation, a shift from manufacturing to service and knowledge work, and the ongoing internationalization of factor and commodity markets. Compared to permanent work organizational structures and localized projects, virtual teams offer a number of strategic advantages. Firms can form work groups with optimum membership while retaining the advantages of flat hierarchies (Townsend et al., 1998). Moreover, organizations gain access to formerly unavailable expertise and maximize the potential use of this expertise across geographically disperse locations within the firm. Finally, though reliable statistics are not yet available, firms report that virtual teams cut down the costs of production when compared to alternative forms of collaborative production.

The trend toward physically dispersed work groups with only limited space for intimate communication has necessitated a fresh inquiry into the role and nature of team organization, leadership, and performance in virtual settings (Kayworth & Leidner, 2002). Warkentin and Beranek (1999) found social ties among team members to be a significant contributor to the effectiveness of information exchange in the use of computer-mediated communication systems. Since many managers still tend to base their decisions on intuition rather than structural analysis of virtual communication processes (Cross, Parker, Prusak, & Borgatti, 2001; Cross & Prusak, 2002), more research is needed to explore mechanisms of coordination and communication in virtual teams (Montoya-Weiss, Massey, & Song, 2001).

This article aims at identifying some of the dynamics and drivers of leadership and performance in virtual teams. The objective of the analysis is to understand the basis of leadership and team performance from a network perspective focusing on communication relationships between project participants. The second section develops hypotheses for the effect of network structure on individual and team performance in virtual projects. The third section presents the design of an experiment with students for empirical exploration and introduces the network methods used for analysis. The fourth section presents the results from the social network analysis of the communication patterns. The results are discussed, with respect to leadership and performance, and then the fifth section closes with a conclusion.

**Theory and Hypotheses**

Research on leadership and work performance often sticks to the notion that effective leadership or performance increase with the appropriate abilities, characteristics, or qualifications of individuals (e.g., Kayworth & Leidner, 2002; Yoo & Alavi, 2004). Though the analysis of constant conjunctions between a certain type of behavior and particular attributes of actors represents the default mode of establishing cause-
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