Chapter 36
Virtual Team Effectiveness:
Investigating the Moderating Role of Experience with Computer-Mediated Communication on the Impact of Team Cohesion and Openness

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ABSTRACT

The work of virtual teams is increasingly important to today's organizations, work that is accomplished predominantly via computer-mediated communication. The authors investigate the moderating role of experience with instant messaging on the team interpersonal processes (cohesion and openness) to team effectiveness relationship in virtual teams. Data were obtained from 365 virtual team members using survey methodology and analyzed using hierarchical moderated regression and multilevel analyses. They found that team cohesion has a main effect on team effectiveness. Team openness has a main effect and is moderated by experience with instant messaging, i.e., strengthens the relationship. Understanding the role of team interpersonal processes and the role of the communication media will allow managers to more effectively build virtual teams and provide effective training and support. Using the theoretical lens of channel expansion theory the authors expand theoretical, empirical and practical knowledge of this area.

INTRODUCTION

The importance of effective teams to modern organizational performance is a topic of longstanding interest (Guzzo & Dickson, 1996). Organizations are increasingly using virtual teams to accomplish a variety of tasks in the organization (Gibson & Cohen, 2003) as more and more of that work is shifting to integrated tools known as collaboration technologies (Spreitzer, 2003) using computer-mediated communication (CMC) such as e-mail and instant messaging (IM). As a result, the nature of team interaction and the relationship between teamwork and outcomes is evolving (Kirkman, Rosen, Tesluk, & Gibson, 2004). However, little is known about the effect of experience with CMC in enabling or hindering the impact of team processes on performance outcomes. The performance outcome we examined is team effectiveness, defined here as perceptions that the team worked effectively together in accomplishing a collaborative task. The goal of this research is to examine the moderating role of experience with CMC (i.e., instant messaging) on the relationship between team interpersonal processes (i.e., cohesion, openness) and team effectiveness in virtual teams.

Our research examines the development of team interpersonal processes, or processes that involve relationships among team members (Martins, Gilson, & Maynard, 2004), and the subsequent impact on outcomes in virtual teams. The relationship between team processes and outcomes can be described by the shared mental models theory that suggests the degree to which team members share a common knowledge framework will allow team members to adapt their behavior to better complete a task (Cannon-Bowers & Salas, 2001). While this interpersonal-outcome relationship has received a great deal of attention in the literature, most empirical studies deal with face-to-face relationships not virtual teams (Martins et al., 2004). Furthermore, by their nature virtual teams may struggle more than face-to-face teams with forming cohesive bonds and sharing information openly (Alge, Wiethoff, & Klein, 2003; Warkentin, Sayeed, & Hightower, 1997); however, the possible impact of user experiences on teamwork has not been examined. Thus, we are interested to see if virtual teams can utilize these interpersonal processes (i.e., cohesion and openness) in such a way that they contribute to the effectiveness of the team and whether user experience can moderate those relationships.

Thus, one contribution of the current study is that we answer the call for research on the team interpersonal processes that impact outcomes in virtual teams (Martins et al., 2004), as well as the generalizability of face-to-face communication constructs on the performance of such teams (Fjermestad, 2004; Kim, 2006). Some research has investigated cohesion in virtual teams (e.g., Cramton, 2001; Gonzalez, Burke, Santuzzi, & Bradley, 2003; Knight, Pearson, & Hunsinger, 2008; Straus, 1997; Wakefield, Leidner, & Garrison, 2008; Yoo & Alavi, 2001). For example, cohesion influences social presence and task participation in established groups (Yoo & Alavi, 2001), but the cohesion-performance link is weaker for teams using leaner communication media (Knight et al., 2008). While cohesiveness may improve team effectiveness by building collective team knowledge, team effectiveness also hinges on the extent to which team members are open and willing to share knowledge (Driskell, Radtke, & Salas, 2003). To our knowledge, team member openness, or the degree to which teammates openly share and receive information, has seldom been examined in a virtual context. We propose that both cohesion and openness will be related to team effectiveness for virtual teams.

A second purpose of this study was to investigate the possible impact of "channel expansion" on the participants' ability to use interpersonal team processes to develop team knowledge and subsequently accomplish teamwork. Channel expansion theory suggests that experience of several forms contributes to an individual's ability to communicate richly using a given medium (Carlson & Zmud, 1999). We

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