

# Chapter IX

## The Impact of Communication Medium on Virtual Team Group Process

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### **ABSTRACT**

*Organizations must provide appropriate work group structures and communication technologies in order for work groups to function effectively and efficiently. This study investigated the hypotheses that team structure (e.g., fully collocated teams vs. virtual teams) and communication mode (i.e., face-to-face vs. videoconferencing) will impact virtual team group processes (e.g., team orientation, workload sharing, proclivity to seek and exchange information) that evolve. Furthermore, these group processes will dictate team member information exchange patterns (e.g., across all team members vs. only within collocated subgroups), which subsequently impact team productivity (i.e., accuracy and timeliness) and group process satisfaction. Four-person teams worked in either face-to-face (i.e., fully collocated group) or videoconferencing (i.e., dispersed subgroups) settings to develop detailed design documentation for specified enhancements to a hypothetical university information system. Results indicated that the dispersed subgroups exhibited more within subgroup collective behaviors and engaged greater within subgroup information exchange as compared to fully collocated teams, where more teamwide collective behaviors and information exchange were observed. Furthermore, greater team collective behaviors gave rise to greater information exchange and activation among team members. Finally, information exchange and activation were associated positively with productivity and process satisfaction.*

**INTRODUCTION**

The most distinctive features of virtual teams are that they cross boundaries of space (i.e., geographically dispersed) and that team interaction is mediated through communication technologies such as videoconferencing and e-mail. In contrast, conventional teams are fully collocated, and team interaction is conducted in a face-to-face fashion (Bell & Kozlowski, 2002; Olsen et al., 2002). The formation of virtual teams facilitates the incorporation of a wide range of knowledge and expertise possessed by individual members into a collective body of knowledge needed to conduct effective group problem-solving activities typical to decision making, product engineering, and software development contexts (Graetz et al., 1998; Kraut et al., 2002). Much of the past research on

virtual teams is somewhat disjointed because of the tendency of each study to focus on a narrow range of issues, such as (1) media ability to convey both verbal and nonverbal information (Burke & Chidambaram, 1999; Yoo & Alavi, 2001); (2) social presence, or media ability to promote awareness of team member presence (Burke & Chidambaram, 1999; Yoo & Alavi, 2001); (3) extent of information sharing (Graetz et al., 1998); (4) type of information exchanged — task-related and nontask-related (Kahai & Cooper, 1999); (5) perceived utility of computer-mediated technology (Townsend et al., 2001); and (6) group cohesion (Yoo & Alavi, 2001). The summary in Table 1 indicates that more recent virtual team research has begun to investigate issues related to virtual team member interactions.

*Table 1. Recent research on virtual teams*

<b>Author(s)</b>	<b>Study's Key Finding(s)</b>
Brown et. al., (2004)	1. Personality type affect the individual's disposition to trust, perceived trustworthiness, communication, and thereby affects willingness to collaborate and productivity
Kirkman et. al., (2004)	1. Highly empowered teams had higher levels of process improvement and satisfaction than were less empowered teams.
Paul et. al. (2004)	1. Collaborative conflict management style positively impacted satisfaction with the decision making process, perceived decision quality, and perceived participation of the virtual teams
Huang et. al., (2003)	1. A GSS with an embedded goal-setting structure lead to better team cohesion, better team commitment, better collaboration climate, better perceived decision quality and generated more decision alternatives
Piccoli and Ives (2003)	1. Behavior control mechanisms typically used in traditional teams have a significant negative effect on trust; 2. Trust declines in instances of renegeing and incongruence.
Andres (2002)	1. The face-to-face setting exhibited greater productivity and interaction quality
Burke & Chidambaram (1999)	1. Computer-mediated and face-to-face teams reported differences in perceived social presence; 2. Communication effectiveness was significantly greater for face-to-face groups
Mannecke & Valacich (1998)	1. Established groups discussed less unique information than ad-hoc groups; 2. Information sharing was positively related to the quality of group decisions; 3. Members using the computer-mediated systems were less satisfied than those communicating face-to-face.

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