Chapter XVI

The Effects of Synchronous Collaborative Technologies on Decision Making:

A Study of Virtual Teams

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ABSTRACT

Technological advances have an ever-increasing impact on our society. Globalization and the changing structures of organizations have created virtual work groups that are distributed across space (different sites) and time. Collaboration among workers is vital to both ongoing organizational activities and project-based activities. Communication is often seen as the most important factor contributing to the success of individuals, project teams, and organizational growth. Improved connectivity together with the increase in groups and teams has resulted in increased interest in extending the usefulness of IT at the individual level to support the issues faced by dispersed teams. This study compares the performance of sixty-four virtual teams utilizing four different collaborative technologies; text-only, audio-only, text-video and audio-video. While the results of the study found no significant difference between the quality of the decisions for teams using text-only versus audio-only communication, the addition of video to audio-only communication resulted in a significant improvement in the quality of teams' strategic decisions.

INTRODUCTION

The integration of systems within and between organizations has led to the development of new organizational forms which are more flexible and responsive (Janvanpaa & Ives, 1994; Pasternack & Viscio, 1998). Virtual teams consisting of individuals who are geographically and organizationally disbursed are increasingly common. As communication is often seen as the most important factor in coordinating work among team members (Ancona & Caldwell, 1992; Dougherty, 1992; Ebadi & Utterback 1984, Pinto et al., 1993), effective communication is vital for virtual teams that cannot meet in face-to-face settings.

The use of collaborative technologies continues to grow as accessibility increases and costs decline. Companies such as Wells Fargo, Caterpillar, Lockheed, Dow, ARCO and Ford have implemented real-time collaboration tools to support the activities of virtual teams (Ferranti, 1997; Cope, 2000). Synchronous collaborative technologies linking geographically dispersed individuals can save companies millions of dollars by facilitating effective communication. As organizations' technological environments extend to support multimedia computing, the potential exists to add voice and video to the traditional text-based input/output of computer communication.

Coordination problems result from the lack of face-to-face interaction between team members and the restriction of social interaction and nonverbal cues in text-based communication (Curris et al., 1988; DeSanctis & Gallupe, 1987 and Kiesler et al., 1984). Previous research has presented several theories that attempt to explain how different forms of communication affect individuals, and more recent studies have focused on the use of the Internet and web-based applications to support teams in a virtual environment (Huang et al., 2002, Kersten & Noronha, 1999; Raghu et al., 2001). As this new era of collaborative organizations continues to emerge, Potter et al. (2000) highlight the need to actively manage the distribution of individuals and the communication tools available within organizations.

This chapter presents results from a study of 64 randomly assigned teams performing a virtual decision-making task in an experimental setting. Each group utilized one of four synchronous communications technologies. The analysis is designed to examine the difference in task performance between text-only and audio-only communication media and to examine the incremental effect of adding video to both of these media. This chapter begins with a review of previous research, followed by the development of the research hypothesis, a review of the research methodology used, and a discussion of the results from this study. Finally, the conclusion covers both the practical and the theoretical implications associated with the research results.

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