

# Situational Synchronicity for Decision Support

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## INTRODUCTION

As cost constraints and expanding geographic and temporal boundaries move organizations toward virtual team work for increasingly complex tasks, research focused on understanding how to best support virtual teams is warranted. Virtual teams consist of people that use electronic communications media for all or most of their communication regarding a common task. Virtual teams allow “organizing work teams by electronic workflow, not physical location” (Dutton, 1999).

Since its introduction, Media Richness Theory (MRT) (Daft & Lengel, 1986) has been broadly applied to predict effects of various media and task combinations. The premise of MRT is that the information needs for performing a task should be matched with the medium’s richness or “capacity to facilitate shared meaning” (Daft, Lengel, & Trevino, 1987). The richest media is considered to be face-to-face (FTF), with failure reported for complex tasks using any leaner media (Lengel & Daft, 1988).

Despite its wide use, this theory has only mixed support. For virtual teams performing complex tasks, the dire predictions of MRT have been eclipsed with success (Davidson, 2000; DeLuca, Gasson, & Kock, 2006; Kruempel, 2000; Kock & DeLuca, 2006; Majchrzak, Rice, Malhotra, King, & Ba, 2000; Maznevski & Chudoba, 2000; Miranda & Saunders, 2003; Ocker, Fjermestad, Hiltz, Turoff, & Johnson, 1998; Robey, Khoo, & Powers, 2000). This success requires a new explanation (Lee, 1994), one that considers “how” the communication occurs. Consequently, researchers have looked for an alternative theoretical lens to provide theory for the management and use of information and communication technologies (Zmud, 1995) that explains the interplay of teams and communication media, particularly when attempting to solve business problems with little or no face-to-face communication (Weber, 2002).

## BACKGROUND

Prior practical literature (Duarte & Snyder, 2001) and academic literature (Lipnack & Stamps, 1997) focusing on MRT predicts failure for virtual teams attempting complex tasks like decision making. A weakness of MRT is that it is linear and static, focusing on immediacy of feedback and availability of verbal and non-verbal cues as the criteria most suited to complex tasks; using these characteristics, face-to-face (FTF) is considered the richest medium. Yet as Van Den Hooff (2005) reports, after time and experience, e-mail is “increasingly used for both lean and rich communication.” People are able to process the data in the e-mail into information (Ngwenyama & Lee, 1997). MRT is ultimately unable to explain either the reports of successes using lean media, or why studies show that lean media users adapt their behavior (DeLuca et al., 2006). Fulk, Schmitz, and Steinfeld (1990) offer that properties of a medium vary by individuals and context. A theory which embraces the differences in preferred media for various stages of complex tasks and team maturity, and offers some explanation for the contradictory results from studies on virtual teams is media synchronicity theory (MST) (Dennis & Valacich, 1999).

MST suggests that to successfully utilize media to accomplish a task, the most effective media choices must consider the mix of two basic communication processes required for performing any type of task. These processes focus on information transmission (conveying information) and information processing (convergence on shared meaning). MST asserts that media vary in their ability to support conveyance and convergence processes. For “conveyance” processes, media of low synchronicity (e-mail, listserv, bulletin board, file sharing) will lead to more effective communication; whereas media of high synchronicity (face-to-face, telephone) will lead to more effective communication for “convergence” processes. Addi-

tionally, teams composed of members with a history of working together or with experience in solving a particular task will require a differing mix of conveyance and convergence communications processes to successfully complete a task than teams with less shared understanding.

MST has a broader view of media characteristics than MRT. MRT primarily focuses on immediacy (rapid transmission of and rapid feedback from communications) and cues (vocal, non-verbal, paralinguistic, bodily, and social cues), in which FTF communications are high and lean, asynchronous communications media are low. MST also examines the effects of parallelism (simultaneous conversations in process), rehearsability (fine tuning a message before sending), and reprocessability (readdressing a message), for which e-mail and bulletin boards are high and FTF communications are low, a key distinction between the theories.

**RESULTS OF THE STUDY**

The purpose of the study was to employ the theoretical lens of MST to understand the effectiveness of media of various synchronicities. Perceptions were gained from process improvement team members who primarily used lean asynchronous collaboration media (ACM) (listserv, e-mail, and bulletin boards). From a MST perspective, “lean” refers to limitations in immediate feedback, verbal and non-verbal cues, or symbols.

This chapter discusses the results from a field-based, two-phase, empirical study (DeLuca & Valacich, 2006). In the study, members from various functional areas made the necessary decisions to redesign a problematic business process and implement the final redesign decision. They followed a structured process (Kock, 2005b) and used listserv or bulletin board as the primary communication media.

We examine the influence of lean, asynchronous communication media (listserv and bulletin board) on the task performance perception of virtual teams from two organizations. The teams made decisions to improve their business processes. Data gathered from observation and from the interview of all participants provide support for hypothesized predictions motivated by MST.

The central research question was:

**CQ:** “Can Media Synchronicity Theory be used to explain the perceptions of process improvement team members regarding the effectiveness of using lean asynchronous electronic media for virtual team communications?”

The seven hypotheses for the study are based on MST and shown in Table 1. Since it was a research goal to study naturally formed teams, and with all teams from both sites being newly formed, only those hypotheses relevant to this context are shown (i.e., the

*Table 1. Research hypotheses based on media synchronicity theory*

Hypothesis #	Hypothesis
H1	Teams which use media of high synchronicity will have better general team performance on tasks requiring convergence communications than teams which use media of low synchronicity.
H2	Teams which use media of low synchronicity will have better general team performance on tasks requiring conveyance communications than teams which use media of high synchronicity.
H3	Teams which use media of high synchronicity will have better general team performance due to lack of symbol variety only when a symbol is unavailable than teams which use media of low synchronicity.
H4	Teams which use media of low synchronicity will have better general team performance due to higher rehearsability of the media than teams which use media of lower rehearsability.
H5	Teams which use media of low synchronicity will have better general team performance due to higher reprocessability of the media than teams which use media of lower reprocessability.
H6	Newly formed teams will have better general team performance on communications affecting team well-being and member support using media of higher synchronicity than using media of lower synchronicity.
H7	Newly formed teams will have better general team performance on socially-related communications using media with symbol sets of greater social presence than media with symbol sets with less social presence.

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