

Virtual Teams Demystified: An Integrative Framework for Understanding Virtual Teams

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ABSTRACT

Virtual teams have been researched intensely in the last ten years and there is a growing body of literature on the topic. At this point, the authors need an integrative theory-driven framework through which they can conceptualize the notion of virtual teams and organize and make sense of prior research. This can help them better understand what drives virtual team dynamics and ultimately effectiveness and can guide future research on the topic. Drawing on models of team effectiveness and emergent processes and states, the authors developed a framework for understanding virtual team dynamics. They then use this framework to review and synthesize one hundred and twenty-one empirical studies of virtual teams published since 1990. The authors analyzed the direct and indirect antecedents of virtual team effectiveness and identify key gaps in both their knowledge of, and approach to studying, virtual teams. They outlined areas for future research and discuss, the implications for the authors' paper for practice and for the study of virtual and traditional teams.

Keywords: Emergent Team Processes, Emergent Team States, Information Technology, Team Design, Virtual Team Effectiveness, Virtual Teams

INTRODUCTION

Technological advances, a globally distributed workforce, and a rapidly changing business context have created both the ability and need for organizations to operate across distance. Virtual teams, defined as *interdependent individuals physically separated from one another and relying on information technologies to communicate, collaborate, and coordinate work to achieve a common goal* (Cramton, 2001; Espinosa, Slaughter, Kraut, & Herbsleb, 2007;

Jarvenpaa, Knoll, & Leidner, 1998, Maznevski & Chudoba, 2000; Townsend, DeMarie, & Hendrickson, 1998), are seen as a means to face these challenges. They allow firms to leverage dispersed intellectual capital and access local resources and markets. Organizations have used virtual teams for core processes including knowledge management, R&D and product development, software development, customer service, and strategic analysis (Cramton, 2001; Espinosa, Slaughter, Kraut, & Herbsleb, 2007; Majchrzak, Rice, Malhotra, King, & Ba, 2000;

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Malhotra & Majchrzak, 2004). It is hoped that virtual teams will enhance work unit performance, improve responsiveness to changing customer demands, and ultimately provide competitive advantages (Jarvenpaa, Knoll, & Leidner, 1998; Jarvenpaa & Leidner, 1999; Malhotra, Majchrzak, Carman, & Lott, 2001; Sole & Edmonson, 2002).

Important research efforts have yielded insights into a wide range of topics such as design factors (e.g. physical distance, temporal overlap, configuration), virtual team processes (e.g., interpersonal, task, and IT dynamics, and outcomes (e.g. quality of output, production efficiency, creativity and innovation). However, research on virtual teams is becoming fragmented. For instance, Weisband's (2005) citation analysis indicates that scholars primarily cite papers that are within their own paradigms. Raghuram et al's co-citation analyses, shows that the field has grown from 9 clusters in 1995 to 16 in 2006 (Raghuram, Tuerstcher, & Garud, 2009). A frequent occurrence as fields mature (King & He, 2005), such fragmentation makes it difficult to fully understand the functioning of virtual teams and obtain an integrated and holistic view of the factors contributing to or inhibiting virtual team effectiveness. As "knowledge accumulation increasingly relies on the integration of previous studies and findings" (King & He, 2005, p. 666), this fragmentation has been identified as a major impediment to research on virtual work (Raghuram, Tuerstcher, & Garud, 2009; Schiller & Mandviwalla, 2007; Weisband, Thatcher, & Xu, 2005).

At this point, there is a need to synthesize the empirical evidence to provide a better understanding of how virtual team factors relate to one another and how they affect virtual team outcomes (Schiller & Mandviwalla, 2007). A generalized conceptual framework that maps the relationships among antecedents and outcomes can help us to map the complex relationships among virtual team dynamics and their direct and indirect links to virtual team effectiveness. For example, while there is no empirical evidence directly linking computer mediated communication (CMC) to output quality, an

integrated framework can map indirect paths and provide insights. CMC hinders the sharing and communication of information among team members (e.g. Chidambaram & Jones, 1993; Cramton, 2001, Hightower & Sayeed, 1996), which would otherwise positively impact output quality and satisfaction with team processes (e.g. Smith & Vanecek, 1990; Warkentin, Sayeed, & Hightower, 1997). An integrative framework can also help identifying gaps in our current understanding of virtual teams. For example, while unique expertise and shared understanding have been found to be positively correlated with outcome quality and innovation (Balthazard, Potter, & Warren, 2004; Majchrzak, Rice, Malhotra, King, & Ba, 2000; Malhotra & Majchrzak, 2004; Sole & Edmonson, 2002; Yoo & Kanawattanachai, 2001), the relationship between these predictors remains unclear. Thus, an integrative framework can be used to organize and synthesize prior findings and it can identify gaps in research and therefore guide future research.

Since 2000, there have been some reviews of research relevant to virtual teams. These reviews typically take a bottom-up approach to synthesizing research – they start with reviews of the empirical evidence and then build up models of virtual team dynamics (e.g. Martins, Gilson, & Maynard, 2004; Powell, Piccoli, & Ives, 2004). As such, these studies provide an excellent overview of what researchers have examined and how they have been linked to a set of outcomes. Also, numerous approaches have been used for reviewing the literature on virtual teams, ranging from narrative reviews to true statistical meta-analysis (Guzzo, Jackson, & Katzell, 1987; King & He, 2005). As shown in Table 1, to date, the majority of prior reviews on virtual teams (7/12) have been narrative in nature and four are descriptive. While these descriptive and narrative reviews on virtual teams are helpful to identify a wide range of phenomena relevant to virtual teamwork and map out the current state of knowledge on the topic, they do not rely on an objective and systematic set of procedures for structuring the empirical evidence. There is a need for an

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