Technological Collaboration and Trust in Virtual Teams

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INTRODUCTION

A hypercompetitive environment of global competition, reduced product cycle times, and rapid change has forced organizations to seek new structures and practices that allow them to react with speed and agility. One structure that has gained increasing support among organizations seeking to improve organizational agility has been the virtual team (Mowshowitz, 1997). Virtual teams are the application of virtual organization concepts to team environments. Virtual teams use information technology (IT) to remove barriers of time, location, and organizational boundaries to allow the integration of skills through collaborative relationships based on trust and professionalism to meet specific objectives. Despite the growing popularity of virtual teams among businesses, more needs to be known about the nature of these teams (Bell & Kozlowski, 2002). For example, some research has found virtual teams to outperform traditional face-to-face teams (e.g., Majchrzak, Malhotra, Stamps & Lipnack, 2004; Schmidt, Montoya-Weiss & Massey, 2001), while other research indicates otherwise (Cramton, 2002). It is important that organizations understand the implications of these virtual teams so that they may be used in the most effective manner, and under the most appropriate circumstances.

BACKGROUND

Virtual teams appear to exhibit many of the same characteristics of virtual organizations. These common characteristics include opportunism, excellence in technology, excellence in skills, borderlessness, and reliance on trust (Goldman, Nagel & Preiss, 1995). Opportunism indicates that the virtual team is created to meet a specific need or leverage a specific opportunity. Once the objective has been met, the virtual team is typically disbanded (Jarvenpaa, Knoll & Leidner, 1998). While it is the nature of virtual teams to be temporary, they can exist as long as the opportunity that they were created to exploit exists, which can result in practical applications of virtual teams that last for decades. Excellence in technology is achieved by the contribution of the best technologies ("best" in this case meaning the most appropriate for the needs of the team) from each of the virtual team members. This contribution of technologies is not only critical to the functioning of the virtual team, but is also of interest to business researchers as virtual teams place a greater reliance on technology for the completion of team tasks and activities than previously experienced. Excellence in skills refers to the manner in which participants in the virtual team are selected. Typically, each virtual team member is selected to participate on the team because that member has, in a high degree, a skill that will be needed by the team. Borderlessness refers to the manner in which virtual teams tend to cross traditional, functional, and even organizational boundaries. Often, individuals performing in these teams may be internationally dispersed and include constituents from other firms. These geographically and organizationally dispersed teams are made viable through the use of information technology (Dube & Pare, 2001; Townsend, DeMarie & Hendrickson, 1998). The interorganizational and international aspects of the virtual team interfere with, and often invalidate, traditional mechanisms for control of team members. Dube and Pare (2001) report that global virtual teams rarely, if ever, meet in a face-to-face environment. As a result, trust is believed to become a critical component in effective virtual team operation (Larsen & McInerney, 2002; Jarvenpaa & Leidner, 1998).

The reliance on trust is dictated due to the lack of authoritative controls found in virtual structures. In place of traditional command-and-control authority structures, virtual teams rely on trust and professionalism to create interdependent, collaborative relationships. Given the importance of establishing and maintaining control with the organization, it is understandable that the departure

from traditional control structures to a trust-based environment has generated interest among researchers and practitioners alike. Unlike the other characteristics of virtual structures, such as duration, and geographical and organizational dispersion that can be directly observed and controlled, the reliance on trust as a characteristic of virtual teams is a logical conclusion that is being explored in the research literature (Majchrzak, Rice, Malhotra, King & Ba, 2000). Researchers have already recognized that the unique characteristics of virtual teams will require the re-examination of existing theories and have called for additional research into areas such as trust, organizational context, and team norms (Bell & Kozlowski, 2002; Majchrzak et al., 2000; Townsend, DeMarie & Hendrickson, 1998; Warkentin, Sayeed & Hightower, 1997).

TRUST IN VIRTUAL TEAMS

Trust has frequently been assumed to be one of the key ingredients necessary for a virtual organization or team to be successful (Suomi, 1988; Konsynski, 1993; Duffy, 1994; Handy, 1995; Cohen, 1997). Currall and Judge (1995) defined trust as "an individual's behavioral reliance on another person under a condition of risk" (p. 153). Empirical research into the role of trust in the virtual team setting, however, is just emerging.

The role of trust, or the lack of trust, in human behavior as it pertains to the development of organizations and teams can be clarified using transaction cost economics (TCE) (Williamson, 1975). TCE explains the development and growth of organizations and teams as a solution to the costs of conducting transactions in a market. The principle components of TCE are opportunism, bounded rationality, small-numbers bargaining, and uncertainty. Opportunism is the behavioral tendency of an entity, either an individual, a team, or an organization, to act in its own self-interest, even at the expense of another entity. Bounded rationality describes the limitations placed on an entity in determining behaviors that are in its self-interest due to limited or imperfect knowledge. Small-numbers bargaining refers to a shift in negotiating power that occurs when only a small number of entities in a market can meet the needs of another entity. Uncertainty is defined as the inability to predict relevant future events (Williamson, 1975).

Transaction cost economics posits that there are costs associated with conducting transactions in a market, such as searching costs, transportation costs, and communication costs (Gurbaxani & Whang, 1991). These costs are complicated by the presence of uncertainty so that entities have difficulty in predicting future demand and supply. To reduce transaction costs, entities may create standing relationships with each other in the form of contracts. Even though transaction costs are associated with the creation and enforcement of the contract, use of the contract may still be more economical than transactions in a market. Because each entity in the relationship has limited knowledge of the activities of the other entity, the potential for opportunistic behavior still exists. That is, the entity is restricted by its bounded rationality, so its transaction costs increase while the other entity enjoys greater profit. To prevent this opportunistic behavior, the contract must account for contingencies, causing an increase in the costs of writing and enforcing the contract (Perrow, 1986; Gurbaxani & Whang, 1991). Opportunistic behavior may also occur if either entity in the relationship must deal with uncertainty in a fluctuating industry. To prevent opportunistic behavior, contractual costs are increased as contingencies are taken into account.

During the course of the relationship, entities make investments in the relationship, such as time spent learning procedures and the development of communication channels. If these investments are significant, they can be a catalyst for small-numbers bargaining at the time of renegotiations. Small-numbers bargaining allows one entity to act opportunistically against the other to achieve greater profit, while still engaging in a relationship that is more economical to both entities than leaving the relationship.

In order to reduce the costs of opportunistic behavior, and the costs of protecting against opportunistic behavior, one party of the relationship may assume authoritative control over the other through acquisition. While opportunism, bounded rationality, uncertainty, and small-numbers bargaining still exist as influences within the organization created by that acquisition, they can be curbed through the exercise of authority.

In terms of transaction cost economics, virtual organizations and teams represent the transition from large hierarchical structures to flatter, collaborative structures (Drucker, 1988). By losing the authoritative control of the hierarchical structure, the members of the virtual organization and team must deal with greater risks of opportunism from the individuals that they must collaborate with and rely upon. Researchers have proposed that the environment created by a virtual structure will force its members to rely more heavily on trust instead of relying on control structures to ensure the performance of others (Clemons & Row, 1992; Konsynski, 1993; Bleecker, 1994; Handy, 1995; Barner, 1996; Cohen, 1997).

In addition to the application of TCE to the issue of trust, research efforts have begun investigating trust in virtual teams. Larsen and McInerney (2002) looked at inter-university virtual teams developing information products and found that team performance was closely related to issues of trust. Lurey and Raisinghani (2001) found that

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