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Assessing Managerial Impact in Virtual Teams: Possible Directions for Future Research

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Abstract

Virtual teams are touted as the cornerstone of successful organization of the 21st century. As viable technology to implement and support this novel organizational structure is now available, research attention should focus on the social and managerial challenges posed by this new form of teamwork. The wealth of findings generated by the Computer Mediated Communication literature points to potential issues in need of investigation. This paper reviews relevant research findings and their implication for exploration of virtual teams. Then it presents four propositions concerning virtual team management that future research should explore.

Introduction

The extraordinary development of Information Technologies (IT) in the last two decades is supporting the development of new organizational forms (Jarvenpaa and Ives, 1994). The new successful organizations are the ones that are organized in dynamic network form that allows them to adapt to ever-changing competitive landscapes and customer requirements (Jarvenpaa and Ives, 1994). Increased global competition, shortened product life cycles, need for mass customization and higher levels of responsiveness to customer demands are among the new environmental circumstances driving organizational change (Grenier and Metes, 1995; Miles and Snow, 1992, 1986).

IT and the ubiquity of new communication tools enable *anytime anyplace* connectivity and collaboration. Technical issues though important, represent a minimal fraction of the challenges to successful transition to these new organizational forms (DeSanctis and Poole, 1997). The development of individual competencies, the ability of the work force to adjust to the new environment, the ability to coordinate the individual skills of strangers to produce interdependent work and the ability of organizations to modify their culture to take advantage of the possibilities offered by the new environment are just a few of the unknowns that organizations must face as they enter the 21st century.

One novel organizational form that promises to deliver unique strategic flexibility and the building block of the virtual organization, is the *Virtual Team* (Townsend, et. al., 1998; Lipnack and Stamps, 1997).

Virtual teams are groups of geographically and organizationally dispersed knowledge workers that are brought together across time and space through information and telecommunication technologies on an "as needed basis" to cooperate on specific interdependent tasks or to fulfill specific customer needs (Yoo and Alavi, 1998; Jarvenpaa and Leidner, 1998; DeSanctis and Poole, 1997).

Virtual teams represent a powerful tool that organizations can use to remain competitive in the 21st century (Lipnack and Stamps, 1997; Jarvenpaa and Ives, 1994). On the other hand, new organizational forms engender a number of challenges and negative consequences that could lead to confusion in roles, high coordination costs, worker displacement, ambiguous communication and lack of accountability (DeSanctis and Poole, 1997; Victor and Stephens, 1994). The firms that implement virtual teams without understanding the radically different context in which they exist will likely harvest frustrated efforts rather than reap the benefit that this new organizational form can afford.

Some of the unexplored questions that merit attention can be grouped in four major categories:

- **Internal Issues:** Can an effective virtual team process be identified? How do they emerge? Are there consistent traits of successful virtual teams? What are they?
- **External Issues:** Is there a need for team boundaries in the virtual context? What is the role of gatekeepers and team sponsors? How can effective external communication be fostered?
- **Technological Issues:** What technologies are most effective in supporting virtual teams? What are the limitations of IT in enabling virtual teams?
- **Societal Issues:** What are the implications for society? What is the sociology of the virtual workplace? What are the demands imposed on the individual by the new environment?

This paper reviews the relevant findings of the CMC literature and distills some potential implications for virtual teams.

Computer Mediated Communication Literature: Relevant Findings

Research in the tradition of Media Richness Theory (Daft and Lengel, 1986), Social Presence Theory (Short, et al., 1976), Social Influence Model of Media Use (Fulk,

et. al., 1987; Fulk, 1993), and Social Information Processing Theory (Walther, 1992, 1995) has uncovered a number of interesting effects of technology on organizational communication, and it has accumulated a wealth of findings that can help us understand how virtual teams may differ from collocated, more traditional ones.

CMC imposes a number of restrictions on the communication process. Compared to face-to-face communication, electronic media and video conferencing are intrinsically leaner (i.e., transmit fewer cues and limit feedback) and reduce communicators' social presence. Thus, subjects using CMC devices are found to be more self-absorbed (Sproull and Kiesler, 1986), less attentive to status differences and general contextual cues (Lea and Spears, 1992; Sproull and Kiesler, 1986) and consequently display more uninhibited behavior and flaming (Weisband, 1992). Interaction in CMC groups has also appeared more impersonal, task-oriented, less friendly and more business like (Connolly, et. al., 1990; Rice and Love, 1987; Sproull and Kiesler, 1986). Further, discussion and group interaction in virtual environments is lengthier and leads to poorer comprehension and understanding when compared to traditional face-to-face interaction (see Bordia, 1997, for a review).

Recently, research has challenged earlier results providing evidence that, given enough time, CMC teams can achieve high levels of socioemotional exchange and communication quality and overcome the restrictions imposed by leaner media (Chindambaram, 1996; Walther, 1992, 1995). In other words, while CMC groups may be slower, due to typing and delayed feedback, the electronic medium does not seem to inherently constrain communication. These findings suggest that communication in virtual environments, albeit slower, may not be qualitatively inferior to face-to-face communication. Further, research on individuals' satisfaction, arguably the most important individual psychosocial outcome of teamwork (Hackman, 1990), has recently yielded conflicting evidence (Dennis and Kinney, 1998; Warkentin et al., 1997; Galegher and Kraut, 1994).

The wealth of findings described above suggests a multitude of social and communication challenges that may hinder effective implementation of new IT enabled organizational forms. In the wake of the recent popularity of virtual teams, research interest has grown. Initial findings suggest that self-directed virtual teams (Cohen and Ledford, 1994) are indeed capable of developing high levels of trust and successful cooperation (Jarvenpaa and Leidner, 1998). Notably, early interaction and confidence in the teams' ability to accomplish its goal appears to be crucial for the development of trust. Further, members of teams that reported high cohesiveness and trust were found to be more involved and willing to respond to communication

initiated by other team members (Jarvenpaa and Leidner, 1998).

Yoo and Alavi recently explored leadership emergence and individual learning in self-directed virtual teams (1998; Alavi and Yoo, 1998). They found that individuals who wish to assume a leadership role in self-directed virtual teams must master the use of electronic communication media. Further, emergent leaders must be competent and contribute extensively to the team task (Yoo and Alavi, 1998). These findings are in line with previous research on electronic teams that points to the impersonal and task oriented character of CMC (Connolly, et. al., 1990). Further evidence suggests that collaborative learning in virtual teams is possible (Alavi and Yoo, 1998). This result is particularly important because the success of new organizational forms is dependent on the ability to continuously learn and solve unique problems (Daft and Lewin, 1993).

While these findings substantially contribute to our understanding of virtual teams, it is important to recognize that the focus of the extant experimental literature has been the self-directed virtual team. Many important questions concerning the role of managerial direction and control in virtual environments still await investigation.

Future Research Directions

Virtual teams have the ability to diverge from formal structures and traditional reporting requirements. As a consequence, they may be granted high degrees of autonomy and may not have to follow formalized rules and procedures (DeSanctis and Poole, 1997). Very little research has examined the role of control mechanisms on virtual team effectiveness. Most empirical research in IS has focused on teams that retain control over the task and can independently organize their work. In traditional collocated teams of knowledge workers, autonomy has appeared to have detrimental effects on team performance (Cohen and Bailey, 1997). Similarly, teams' effectiveness in virtual environments may be hindered by excessive autonomy coupled with exclusive reliance on electronic communication and lack of face-to-face interaction. Under these circumstances, managerial control mechanisms may limit confusion and coordination problems.

P1: Managerial control mechanisms will enhance virtual team effectiveness.

Traditional control theories suggest three primary mechanisms of managerial control: outcome control, behavior control and clan control (Ouchi, 1979). Outcome control refers to the extent that managers can monitor and evaluate a team's output when objective

measures are available. Behavior control refers to the extent that managers can monitor and evaluate team members' behavior. The most common mechanisms of behavior control are project plans, progress reports, work assignment, meetings, procedures (Kirsch, 1997; Henderson and Lee, 1992). Clan control is a form of informal control that necessitates extensive socialization, rituals and ceremonies. Clan control creates an environment where individuals internalize the values of the organization. Virtual teams are generally zero-history, cross-functional or cross-organizational. They are assembled for a relatively short period of time and assembled on an "as needed basis" to provide a specific service or produce unique output (Jarvenpaa and Leidner, 1998; Ives and Jarvenpaa, 1994). Under these circumstances, establishing procedures and prescribing expected behaviors might represent the only viable managerial control option.

P2: Managerial behavior control will be the control mechanism best suited for virtual teams.

Communication in electronic teams has been found to lead to poor comprehension and to be slow and uncoordinated (Bordia, 1997). Great uncertainty remains with respect to the role that team leaders can play in mitigating these problems. Snow, Miles and Coleman (1992), in their work on network organizations management, suggest that once a network has been established, responsibility for its support and maintenance should shift to *ad hoc* managers. These individuals, named *caretakers*, are responsible for engaging in nurturing and disciplinary behavior (i.e., network maintenance), for sharing scheduling information (i.e., network coordination) and information about the network's inner workings (i.e., communication of norms). While Snow's and colleagues' perspective is a macroscopic one, the notion of the caretaker seems applicable to a team-centered perspective. Due to their short life and heterogeneous membership, virtual teams may be unable to quickly reach the critical mass of communication and information sharing crucial to the team's success (Brown and Eisenhardt, 1995; Keller, 1986). Further, their ability to efficiently share information, plan a concerted course of action and resolve conflict while enhancing mutual relationships may be curtailed by the exclusive reliance on CMC.

Under these circumstances, the appointment of a caretaker who engages in team maintenance behavior and coordination may be instrumental in ensuring successful virtual team implementations.

P3: Virtual teams will benefit from the contribution of a caretaker.

Previous research suggests that early communication and interaction have lasting effects on trust and cohesiveness in virtual teams (Jarvenpaa and Leidner,

1998). Thus, contribution of caretakers is likely to "jump start" virtual teams when it occurs early in their life.

P4: The addition of the caretaker will be more beneficial when it occurs early in virtual team interaction.

Conclusions

Virtual teams represent an exciting new organizational form that can provide organizations with the flexibility and responsiveness necessary to succeed in the competitive landscape of the 21st century. While the technical infrastructure to support this new organizational form is in place, little is known about the social and managerial challenges engendered by widespread implementation of virtual teams. The many important findings reported in the CMC literature provide a valuable knowledge base upon which to begin the investigation. This paper builds on existing research and suggests future directions of inquiry.

References available upon request from author