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Leadership and Organizational Citizenship Behavior in E-Collaborative Teams

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INTRODUCTION

The rapid evolution of networked organizations has led to a rise in global and virtual teams. An organization's success is highly dependent on the use of such teams in projects focused on new product development, application software development, supply chain integration, and many other activities. Further, globalizing the innovation process using virtual resources has become an important way to access diverse sets of knowledge and has become an imperative for companies seeking to succeed in a global market (Santos, Doz & Williamson, 2004). Advances in communication technology have reshaped the manner and frequency of daily interactions between coworkers and customers. Telephones, videoconferencing, e-mail, and groupware have made it possible for people to collaborate without meeting face-to face (FTF) (Zaccaro & Bader, 2002).

Research on virtual teams has identified three basic characteristics: members are geographically and/or organizationally dispersed, collaboration and communication occur through the use of information technologies, and interactions are more likely to be temporally displaced or asynchronous (e.g. Townsend, deMarie, & Hendrickson, 1998; Zigurs, 2002). Much of the literature assumes that teams are either virtual or FTF. Although some (e.g., Arnison, 2002), contend that it is virtually impossible to distinguish a virtual team from a traditional team due to the pervasive nature of technology and communications. We have taken an expanded perspective in our research. First, "virtualness" is not necessarily a dichotomous phenomenon (Pauleen, 2003). Most teams today, whether global, virtual or co-located, can be described by a mix of virtual and FTF interactions. The key characteristics used to define a "virtual team" are best thought of as contributing to a continuum (Zigurs, 2002, Griffith, Sawyer & Neale, 2003) of virtualness. For example, many co-located teams use e-mail or web-based collaboration or design tools. Second, the commonly cited characteristics of virtual teams are not the only factors influencing the attitudes, behavior, and innovativeness of team members. For example, global virtual teams engaged in new product development and other innovative activities are challenged by a number of different issues including building trust and motivating one another, cultural diversity and lack of goal clarity (Barczak & McDonough, 2003). Collaboration, whether FTF or computer mediated, occurs within a much broader context or climate, which includes interpersonal, social, organizational and technical factors, all of which have important implications for the attitudes and behavior of team members and their ability to succeed and innovate (O'Leary & Cummings, 2005).

To be effective, leaders must promote a climate that supports innovation and business success (Harborne, 2003). This can only be accomplished when managers understand the issues that virtual team members face in the globalized workplace. Although there are clearly new sets of issues that present themselves to the 21st century networked workforce, the virtual team research to date has reported relatively few outcome differences between virtual teams and FTF teams (Powell, Piccoli and Blake, 2004). In most cases, these studies have treated virtualness as a dichotomous phenomenon, with FTF or "traditional" teams as a control group or comparator (e.g. Arnison, 2003; Aubert & Kelsey, 2003). Moreover, they have looked at the defining constructs of temporal, technological and geographic displacement in isolation from other potentially important variables (e.g. Montoya-Weiss, Massey & Song, 2001; Jarvenpaa & Leidner, 1998).

We sought to examine the role of leadership in e-collaborative teams that differed in their "virtualness". In previous research (Reilly, Sobel Lojeski, Dominick, 2005) we operationalized a broad set of variables that might more fully explain behavior, success, and innovation in workplace teams. We drew from both the recent virtual team research, which stresses computer-mediated interaction along with temporal and geographic displacement as well as more general concepts related to group dynamics and social interaction. We tried to understand how these variables, considered together, impacted trust, goal clarity and organizational citizenship behavior (OCB); all of which should be predictors of project success and innovation performance.

Most global virtual team research considers geographic distance as a fundamental characteristic. But distance can also be used to describe the emotional or psychological gap between team members who work in the same building and regularly meet FTF. For a team working primarily in virtual space the socio-emotional "distance" may be a function of other factors, in addition to the obvious ones of geography and computer mediation. Our work will address two relatively unexplored issues in virtual team research: organizational citizenship behavior and leadership. Specifically, we sought to better understand the extent to which OCB occurs as teams become more virtual and how leadership influences OCB under differing conditions of virtual distance. We hypothesized that virtual distance would have a negative influence on OCB and that leadership would have a positive relationship to OCB. We also hypothesized that the influence of leadership on OCB would be stronger on collaborative teams with lower virtual distance.

METHOD

Procedure

All respondents completed a web-based questionnaire describing their organization, current position and their experiences with a recently completed project. Scales measuring each of the hypothesized distance components were included in the questionnaire as were scales assessing OCB and leadership.

Sample

The sample included data from 147 respondents. We had additional data from over 100 respondents that did not contain the leadership scale and consequently these cases could not be included. Most of the respondents worked in technology-related fields in a variety of organizations with headquarters in the Northeastern corridor and held positions ranging from Vice-president to programmer. Seventeen different organizations were represented and included financial services, manufacturing, healthcare, government, software, and outsourcing industries. The largest functional areas included Information Technology (33%) and

Table 1. Means, Standard Deviations and Intercorrelations

Variable	Mean	SD	VDM Index	Leadership	OCB
VDM Index	0.00	0.53	(.89)	-.34**	-.49**
Leadership	3.69	0.68		(.87)	.49**
OCB	3.50	0.48			(.82)

Notes: all coefficients were significant at p<.01. Reliabilities for all variables are shown in the diagonal.

Cronbach's alpha shown for all variables except VDI. VDI reliability was estimated as 1 - SVE_i/V_i; where VE is the error variance for each of the eight components and V is the variance for VDI

Engineering (15%). Respondents' organizations varied considerably in size with half having less than 5,000 employees and half more than 5,000 employees.

Variables

Our measure of virtual distance, the VDM Index, was a simple linear composite of each of the following variables: Spatial (geographic) Distance, Temporal Distance, Relational Distance, Cultural Distance, Social Distance, Relationship History, FTF Interaction, Team Size, Multitasking and Technical Skill. Each of these factors is more fully described in(Sobel-Lojeski, Reilly et al. 2006). The factors described above were taken together to form the multi-dimensional construct, Virtual DistanceÒ. Each of the variables in the model was first converted to a standard score and all scores were averaged with appropriate positive or negative sign so that higher average VDM Index scores indicated greater virtual distance. Leadership was measured with a brief six-item scale representing a mix of transformational and transactional items (Avolio, Bass, 1999). OCB was measured with 10 items taken from scales in Podsakoff, Ahearne & MacKenzie (1997).

Analyses and Results

Reliabilities, means and standard deviations and intercorrelations were calculated and are shown in Table 1. Reliabilities for the three measures are all above .8 and intercorrelations are all significant (p<.01). Virtual distance correlated negatively with both OCB and Leadership and Leadership correlated positively with OCB.

A hierarchical regression analysis was used to test the three hypotheses. Measures of leadership and virtual distance were entered in the first step and the cross product of the two variables was entered in the second step. Results are shown in Table 2. Both virtual distance and leadership contributed significantly to the prediction of OCB in Step 1. The cross-product, added in Step 2, resulted in a significant increase in the multiple correlation (F=7.864; df=1/143; p<.01) suggesting that the influence of leadership differs depending upon the virtual distance of the team member. In this case, contrary to our hypothesis, leadership had a stronger influence on OCB when virtual distance was high.

DISCUSSION

Organizational citizenship behavior is an important antecedent to the overall success of organizations and projects (Sobel Lojeski, Reilly et al. 2006; Podsakoff, Ahearne, MacKenzie, 1997), but there has been limited research on the influence of leadership on OCB in general and specifically in e-collaborative teams. Increasingly, teams are multifunctional, geographically dispersed and include a diversity of backgrounds and cultures among team members. These structural characteristics of virtual teams' present challenges for leaders in building the kinds of member relationships that can lead to extra-role behaviors such as mentoring, helping and coaching (Powell, et al, 2004). Our results suggest that virtual distance – a combination of physical and social factors – directly impacts the extent to which team members are likely to engage in such extra-role behaviors. The level of OCB decreases as virtual distance increases. One variable that may mediate the influence of virtual distance on OCB is trust. Other research has shown that virtual distance negatively influences trust and trust influences OCB (Reilly, Sobel Lojeski, et al. 2005). Both physical and cultural factors should make many organizational citizenship behaviors more difficult. For example, mentoring another team member is certainly possible through electronic communication but with differences in cultural values and communication styles the challenge becomes much more formidable. Leaders can help to encourage and stimulate OCB in several ways. Helping to set a clear vision that allows all team members to clearly understand their roles and how their roles are connected to other team members, recognizing and rewarding OCB behavior and creating a model for some OCB behavior such as coaching and mentoring.

Table 2. Hierarchical Regression Analysis

	Betas (Step 1)	Betas (Step 2)
VDM	-.365**	-.244**
Leadership	.370**	.306**
VDM x Leadership		.239**
Df	144	143
R2	.361	.394

Based on our findings the role of a leader becomes more important, not less, as virtual distance increases. This finding has potentially important implications for managing diverse, global project teams. Specifically, leaders should be trained to create and maintain the conditions that allow OCB among team members to develop and flourish. What is not entirely clear is how leaders can most effectively create these conditions as virtual distance increases. This will be the subject of further research.

REFERENCES

Aubert, B.A. & Kelsey, B.A. (2003). Further understanding trust and performance in virtual teams, Small Group Research, *34(5)*, 575-618.

Avolio, B. J., B. M. Bass, et al. (1999). "Re-examining the components of transformational and transactional leadership using the multifactor leadership questionnaire." Journal of Occupational and Organizational Psychology **72**: 441.

Barczak, G., & McDonough, III, E. F. M. 2003. Leading global product development teams. Research Technology Management, 46(6): 14.

Jarvenpaa, S.L., Leidner, D.E. (1999). Communication and trust in global virtual teams Organization Science. 10, 791-815.

Pauleen, D. J. 2003. Lessons learned crossing boundaries in an ICT-supported distributed team. Journal of Global Information Management, 11(4): 1.

Podsakoff, Philip M.; Ahearne, Michael; MacKenzie, Scott B. (1997) Organizational citizenship behavior and the quantity and quality of work group performance. ; Journal of Applied Psychology, Vol 82(2), 262-270.

Powell, A., Piccoli, G., & Ives, B. 2004. Virtual Teams: A Review of Current Literature and Directions for Future Research. The DATA BASE for Advances in Information Systems, 35(1).

Reilly, R.R., Sobel Lojeski, K., Dominick, P. (2005). Virtual distance and team performance: A preliminary study. 20th Annual SIOP Conference, Los Angeles, April.

Santos, J., Doz, Y., & Williamson, P. 2003. Is Your Innovation Process Global? MIT Sloan Management Review, 45(4): 31.

Sobel-Lojeski, K., R. Reilly, et al. (2006). The Role Of Virtual Distance in Innovation and Success. HICSS 39th Annual Conference. Kauai, HI., HICSS.

Townsend, A.M.; deMarie, S.M.; and Hendrickson, A.R. (1998) "Virtual teams and the workplace of the future", Academy of Management Executive, 12, 3, 17-29.

Zaccaro, S.J., & Bader, P. (2002). E-Leadership and the challenges of leading e-teams: Minimizing the bad and maximizing the good. Organizational Dynamics *31(4)*, 377-387.

Zigurs, I. (2002). Leadership in virtual teams: Oxymoron or opportunity. Organizational Dynamics *31(4)*, 339-351.