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# EMERGENCE OF LEADERSHIP AND ITS IMPACT ON GROUP PERFORMANCE IN VIRTUAL TEAM ENVIRONMENTS: A FIELD STUDY

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In a virtual team environment, distributed team members work primarily through electronic communication channels across different time/geography for the duration of the project (Knoll and Jarvenpaa 1995; Yoo 1995). Effective leadership, among many others, is believed to play an important role in enhancing the effectiveness of virtual teams. Despite decades of leadership research, however, little is known about leadership in virtual team environments. This study is intended to fill this gap.

First, we investigate the process of leadership emergence in a virtual team environment. More specifically, we ask “Who will emerge as a leader in virtual team environments and do those leaders who emerge in a virtual team environment exhibit a similar set of leadership traits compared to those leaders who emerge in traditional face-to-face environments?” To answer this question, we advanced three research hypotheses based on a literature review of leadership and small group communication.

**H1:** Individuals’ talking behavior, power orientation, and task competence will be effective predictors of leadership emergence in face-to-face environments.

**H2:** The importance of talking behavior in predicting leadership emergence in virtual environments will be less significant than it is in face-to-face environments.

**H3:** Individual’s skill and usage frequency of electronic communication channel will be additional effective predictors of leadership emergence in virtual team environments.

Second, in this study, the impacts of different leadership styles exhibited by the emergent leader on effectiveness of virtual teams — measured by the quality of decisions and member satisfaction — are also investigated. According to leadership literature (House 1971; House and Mitchell, 1974; Pearce et al. 1995), when the environment is unstructured, *directive* leadership style is effective, whereas when the environment is structured, *empowering* leadership style is effective. In this study, two sources of structure are investigated: information technology (Lee and Treacy 1987) and group cohesiveness (e.g., Tuckman 1965). To examine these questions, we have advanced the following hypotheses.

**H4:** In virtual teams supported by a highly structured technology, directive leadership style is most effective, whereas in virtual teams supported by an unstructured technology, empowering leadership style is most effective.

**H5:** In low-cohesive virtual teams, directive leadership style is most effective, whereas in high-cohesive virtual teams, empowering leadership style is most effective.

To test these hypotheses, this study employs the field study methodology. Forty, six-person teams of senior executives of a government agency recruited from different regions of the United States are working on a realistic consulting project for a small town in the mid-Atlantic region over ten weeks in virtual team environments. Twenty teams are assigned into a highly unstructured environment supported by electronic mail and list-serve systems and the other twenty teams are assigned into a highly structured environment supported by a groupware system which has workflow automation and discussion database capability.

Leadership emergence is measured using a five item questionnaire used by Anderson and Wanberg (1991) and Lord (1977). Individual's talking behavior is measured by ten items from the Assertion Questionnaire (Lewinson 1978) and eleven items from the Public Speaking Behavior Measure (Lang 1976). Individual's power orientation is measured by nine items from the Power Orientation Scale (Goldberg, Cavanaugh, and Larson 1983). Individual's own perceived computer skill is measured by ten items adopted from Kinzie, Delcourt and Powers (1994). Group cohesiveness is measured by six items from Smith et al. (forthcoming). Process and solution satisfaction is measured by ten items from Green and Taber (1980). The quality of group decisions will be judged by a panel of experts.

## REFERENCES

- Anderson, S. D., and Wanberg, K. W. "A Convergent Validity Model of Emergent Leadership in Groups." *Small Group Research*, Volume 22, Number 3, 1991, pp. 380-397.
- Goldberg, A. A.; Cavanaugh, M. S.; and Larson, C. E. "The Meaning of 'Power'." *Journal of Applied Communication Research*, Volume 11, Number 2, 1983, pp. 89-108.
- Green, S. G., and Taber, T. D. "The Effects of Three Social Decision Schemes on Decision Group Process." *Organizational Behavior and Human Decision Performance*, Volume 25, 1980, pp. 97-106.
- House, R. J. "A Path-Goal Theory of Leader Effectiveness." *Administrative Science Quarterly*, Volume 15, 1971, pp. 321-338.
- House, R. J., and Mitchell, T. R. "Path-Goal theory of Leadership." *Journal of Contemporary Business*, Volume 3, 1974, pp. 81-97.
- Kinzie, M. B.; Delcourt, M. A. B.; and Powers, S. M. "Computer Technologies: Attitudes and Self-Efficacy Across Undergraduate Disciplines." *Research in Higher Education*, Volume 35, Number 6, 1994, pp. 745-768.
- Knoll, K., and Jarvenpaa, S. "Learning to Work in Distributed Global Teams." *Proceedings of the Twenty-Eighth Annual Hawaii International Conference on Systems Science*, Volume 4, 1995, pp. 92-101.
- Lee, S., and Treacy, M. E. "The Impact of Information Technology on Control: A Leadership Theory Perspective." Working Paper, Center for Information Systems Research, Massachusetts Institute of Technology, 1987.
- Lord, R. G. "Functional Leadership Behavior: Measurement and Relation to Social Power and Leadership Perceptions." *Administrative Science Quarterly*, Volume 22, 1977, pp. 114-133.
- Pearce, C. L.; Sims, Jr., H. P.; Cox, H. P.; Scully, J.; Ball, G.; Schnell, E.; Smith, K. A.; and Trevino, L. "Transactors, Transformers, and Beyond: A Multi-Method Analysis of Leadership Archetypes." Working Paper, University of Maryland at College Park, 1995.
- Smith, K. G.; Smith, K. A.; Olian, J. D.; Sims, Jr., H. P.; O'Bannon, D. P.; and Scully, J. A. "Top Management Team Demography and Process: The Role of Social Integration and Communication." *Administrative Science Quarterly*, forthcoming.
- Tuckman, B. W. "Developmental Sequence in Small Groups." *Psychological Bulletin*, Volume 63, 1965, pp. 384-399.
- Yoo, Y. "An Investigation of Group Development Process in 'Virtual' Project Team Environments." In J. I. DeGross, G. Ariav, C. Beath, R. Hoyer and C. Kemerer, Editors, *Proceedings of the Sixteenth International Conference on Information Systems*, Amsterdam, 1995, p. 345.