

Leadership, Trust, and Participation in Virtual

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As business continues to be conducted internationally, managers are expected to work in multinational environments (Early & Peterson, 2004). Technology and travel costs have caused organizations to rely more heavily on virtual teams (dePillis & Furumo, 2007). Virtual teams have been used extensively for IT projects and particularly software development. In this study, three leadership conditions were analyzed. Preliminary results show that virtual teams led by Supportive leaders had higher levels of participation and trust among members than teams led by Commanding leaders. These findings are important for managers and faculty who prepare students for the work world.

INTRODUCTION

Virtual teams can be defined as geographically or organizationally dispersed groups of individuals that communicate via information communications technology in synchronous or asynchronous modes (Powell, et al., 2004). Teams communicating asynchronously in an electronic environment face special challenges which threaten the performance of the virtual team. The flow of communication may be interrupted and confusion about the message cannot be clarified immediately. The lack of media richness (i.e., limited exposure to body language, gestures, and voice tone) also increases the likelihood of the communication being misunderstood.

These challenges increase the likelihood of conflict and poorly managed conflict can be detrimental to the performance of the team (McGrath, 1991; Barki & Hartwick, 2001; dePillis & Furumo, 2007). Extant research of traditional teams shows that the output of teams is often superior to that of an individual because of the synergy that comes from individuals sharing ideas and functional expertise. However, in virtual teams there is the chance that the technology will negatively impact performance.

LITERATURE REVIEW

Trust

Trust is necessary for human interaction (Kodish, 2017). Trust has been defined as “the willingness of a party to be vulnerable to the actions of another party based on the expectation that the other will perform a particular action important to the trustor, irrespective of the ability to monitor or control that other party” (Mayer, et. al., 1995). A lack of trust exists when one party does not have faith in the competencies of another or questions the motivation of the other to take the promised action as seriously (van der Smagt, 2000). So, trust can be seen as a relationship between two or more individuals in which

one perceives that the others are involved, are competent, will complete their fair share of the work, and will make an honest effort to meet commitments.

Trust is important in teams because it lowers transaction costs (Watson-Manheim & Belanger, 2002). Individuals who do not trust fellow team members are more likely to monitor or double check each other's work to insure the quality of the team's output. This self-protective activity increases the amount of time and resources needed to complete a project. In virtual teams, trust becomes an important component in preventing psychological distance (Snow, et. al., 1996) and it increases confidence in relationships by promoting open information exchange (Hinds & Bailey, 2000). Trust is often referred to as the glue that holds the virtual team together.

Not surprisingly, trust has been identified as a determinant of effectiveness in virtual teams (Jarvenpaa & Leidner, 1999; Walden & Turban, 2000). Individuals who trust each other are likely to be more satisfied with the team experience since they perceive that their best interests are being served, while only having to complete their fair share of the team's task. Individuals who trust each other may be more likely to bring problems forth in an effort to resolve them effectively.

Leadership Style

Formalized leadership studies date back to the 1950s when Leadership was defined in terms of production (task) and employee (people) dimensions by the Ohio State University and the University of Michigan. University of Southern California professors Alan Rowe, Kathleen Reardon and Warren Bennis (Reardon & de Pillis, 1996) developed the Leadership Style Inventory (a typology of four leadership styles, which they called Commander, Logical, Inspirational, and Supportive), designed to measure an individual's preference for a given leadership style.

Of the four styles of leadership, two stand out as somewhat opposite in approach. This first, the Commander style, describes a leader who is straightforward and sometimes authoritarian. Many entrepreneurs and executives incline toward a Commander style which focuses on task or production. A Commander makes decisions quickly and sticks to them, and is focused on results. The Supportive manager, on the other hand, strives to achieve consensus, and is concerned with the well-being and satisfaction of employees. This type of leader focuses on facilitating work.

Studies have shown that teams using a structured decision making process were able to make more accurate decisions than teams in which formalized procedures were not in place (Cordes, 2016). This may suggest that commanding leaders, who focus on task, may have better success in the virtual team environment. However, another study showed that for teams that did not have an assigned leader, task behaviors were associated with leader emergence in the later phases of a project team but social-oriented leadership early on is also very important (Bergman, et. al., 2014).

In this study, the impact of a virtual team leader's leadership style on participation and trust levels in the virtual team was explored. Study participants, were surveyed to identify their predominant leadership style. Those scoring high in the Commander and Supportive styles were selected and assigned as leaders of virtual teams. As a control, a group of teams did not have a leader formally assigned.

METHODS

In this study, a quasi-experimental design approach was used. Participants in the study were upper- and graduate-level college students enrolled in business courses at two different universities, the University of Hawaii at Hilo and Niagara University. Students spent the semester working on three deliverables including an icebreaker activity and two cases in which students were asked to provide written recommendations of how they would handle a business problem.

At the onset of the project, students were asked to complete the Leadership Style Inventory, which measures individual leadership style. This twenty-item instrument was designed to analyze how managers in organizations prefer to lead. One's primary style can be Commander, Logical, Inspirational, or Supportive. The scale is designed so that a fixed number of points are divided among four leader styles, forcing the participant to indicate a preference. Students who rated extremely high on the Commander or

Supportive leadership style, as opposed to having an evenly divided preference, were chosen as leaders of virtual teams. These leaders were initially assigned and then the remaining study participants were randomly assigned to teams. Approximately one-third of the teams were led by a Commander style leader, one-third led by a Supportive style leader and in one-third of teams no leader was assigned.

Students were asked to complete three deliverables throughout the semester. The first was an icebreaker activity intended to get team members acquainted with each other and the technology used for the virtual team project. Students used the Google Wave product to communicate with team members.

Prior to the start of the experiment all participating students were provided orientation about Google Wave, the technology product used for communication in teams. They were required to use a Gmail account sign-on to access the system. Students were free to use existing Gmail accounts or create new ones for the purposes of the virtual team. A dedicated technician was available to answer questions and walk participants through the registration steps. Once the students were registered, the icebreaker activity allowed them to familiarize themselves with the technology while getting to know fellow team members. In the icebreaker activity, students were asked to name five things the team had in common and five things they differed on.

The second activity involved a case in which team members had to analyze costs and recommend an advertising strategy. The data provided for the case required that students work together to assess costs and benefits of various advertising options. If students analyzed the financial data correctly, the team could arrive at a correct answer. Teams were required to develop a report that provided a recommendation, along with the justification, for the decision that was reached.

In the third activity, students were given very little information and told to research the workings of the grocery industry and to recommend ways to improve bottle line profits through technology utilization. For this deliverable, there was no single correct answer and project grading was based on the justification for the recommendations provided.

After completion of both the second and third deliverables, participants completed an additional survey designed to measure their level of trust in the team. They were also asked to provide open-ended feedback about what they liked and did not like about the team experience. In addition, the communication threads were collected and the number and types of posts made by team members were recorded.

To assess perceived trust levels, a scale developed by Jarvenpaa, Knoll, and Leidner (1998) was used. Their scale is based on previous instruments developed by Mayer, Davis, and Schoorman (1995) and Pearce, Sommer, Morris, and Frideger (1992) to measure the level of trust in dyads. Jarvenpaa, Knoll, and Leidner (1998) modified these instruments to reflect the team rather than a dyad by testing the two instruments at two different time points and across cultures. Both measures of trust were correlated but the instrument developed by Pearce and colleagues had higher reliability ($\alpha = .92$) and thus it was used as the basis of their modified survey. After testing, the instrument was reduced to a 6-item instrument with a five-point Likert-type response scale anchored on one end with strongly agree and the other with strongly disagree. They reported Cronbach's alpha for the scale at .92.

RESULTS

Of the original 115 subjects assigned to teams, five were eliminated from the study because they dropped the course in which the virtual team activity was being completed. Table 1 provides a summary of the breakdown of males and females that were assigned to the different leadership conditions.

**TABLE 1
PARTICIPANT COUNTS**

Sex	Leadership Condition			Totals
	Commanding	Supportive	No Leader	
Male	14	12	22	48
Female	21	23	18	62
Totals	35	35	40	110

To measure the significance of the relationships, ANOVA analyses were performed. In Table 2, participants were grouped according to the leadership condition of their team. Comparison of the groups showed that there was a significant relationship between the number of posts in each of the three different team leadership conditions. Members in teams in which a supportive leader was assigned, posted 31.47 messages on average, while members in teams with a commanding style leader posted an average 21.54 messages, and those in teams without an assigned leader posted 16.08 messages on average.

Trust which could range from 1 (no trust) to 5 (complete trust) was also significantly different for the leadership conditions after completion of the first case activity but not after the second. Trust was highest for the members in teams with an assigned supportive leader (averaged 3.79) while it was lowest for members in teams with commanding leaders (3.43). Trust levels decreased after the second case was completed for members in the supportive leadership condition and the no leader condition but remained about the same for those in the commanding leadership teams.

**TABLE 2
ANOVA RESULTS: IMPACT OF LEADER STYLE ON PARTICIPATION AND TRUST**

Dependent Variable	Style of Leader	Mean	F	df	Sig.
Number of Posts	Commanding	21.54	3.852	F _{2,110}	.024*
	Supportive	31.47			
	No Leader	16.08			
Trust (after 1 st assignment)	Commanding	3.43	3.137	F _{2,110}	.047*
	Supportive	3.79			
	No Leader	3.61			
Trust (after 2 nd assignment)	Commanding	3.45	0.199	F _{2,110}	.820
	Supportive	3.55			
	No Leader	3.48			

*significantly different at p<0.05

These results provide some evidence that the style of the leader does impact initial trust and participation in virtual teams. Individuals in teams led by Supportive leaders were more likely to participate and reported higher levels of trust than members in teams led by Commanding leaders. Commanding leaders are straightforward and authoritarian, a quality that may impede trust development and participation in virtual teams. Since the benefit of teamwork is the synergy that comes from different points of view, leaders with a commanding style may be limiting the free exchange of ideas with their leadership style.

Supportive leaders strive to achieve consensus and are concerned with the well-being and satisfaction of team members. Members may feel more comfortable sharing ideas and seem to participate more possibly at the urging of the leader. While the supportive leaders seem to get members participating more quickly, there is no evidence that trust levels continue to remain high or that the output of the team is any better. Previous studies have identified composition of the team as another factor which may impact

interaction in virtual teams. Age variability was limited in this study, since all participants were college students; however studying gender differences was possible.

Table 3 provides a summary of means for the dependent variables by leadership condition and gender. The number of posts represents the number of times a participant posted an online message for the virtual team. While some of the messages were longer than others, this indicator provides some measure of the participation of team members. Males, regardless of the team leadership condition they were assigned to, posted fewer messages than the females.

TABLE 3
MEANS FOR GROUPS BY GENDER AND LEADERSHIP CONDITION

		Leadership Condition (Leadership Style of the Assigned Leader)		
		Commanding	Supportive	No Leader
Males	# Posts	12.57	9.50	12.86
	Trust 1	3.63	3.88	3.47
	Trust 2	3.58	3.81	3.37
	n	14	12	22
Females	# Posts	27.52	43.45	20.00
	Trust 1	3.30	3.74	3.77
	Trust 2	3.37	3.41	3.61
	n	21	23	18

TABLE 4
IMPACT OF LEADER STYLE ON PARTICIPATION AND TRUST FOR FEMALES

Dependent Variable	Style of Leader	Mean	F	df	Sig.
Number of Posts	Commanding	27.52	3.787	F _{2,62}	.028*
	Supportive	43.45			
	No Leader	20.00			
Trust (after 1 st assignment)	Commanding	3.30	3.740	F _{2,62}	.030*
	Supportive	3.74			
	No Leader	3.77			
Trust (after 2 nd assignment)	Commanding	3.37	0.579	F _{2,62}	.564
	Supportive	3.41			
	No Leader	3.61			

*significantly different at p<0.05

Specific gender group ANOVA tests results can be found in Tables 4 and 5. Females posted more communications than males in all of the leadership conditions, with females in the Supportive leader groups communicating the most. Of interest is the fact that males communicated the least in the supportive led teams but reported higher trust levels than females in the supportive led teams. Perhaps they were comfortable with the tasks being completed and felt less of a need to communicate.

Trust levels generally declined as the teams progressed through the semester. Females reported the lowest levels of trust in the Commander led groups while males reported the lowest levels of trust in the no leader group condition.

TABLE 5
IMPACT OF LEADER STYLE ON PARTICIPATION AND TRUST FOR MALES

Dependent Variable	Style of Leader	Mean	F	df	Sig.
Number of Posts	Commanding	12.57	.461	F _{2,48}	.634
	Supportive	9.50			
	No Leader	12.86			
Trust (after 1 st assignment)	Commanding	3.63	2.146	F _{2,48}	.129
	Supportive	3.88			
	No Leader	3.47			
Trust (after 2 nd assignment)	Commanding	3.58	2.547	F _{2,48}	.090
	Supportive	3.81			
	No Leader	3.37			

DISCUSSION

These results provide some evidence that the style of the leader does impact initial trust and participation in virtual teams. Individuals in teams led by Supportive leaders were more likely to participate and reported higher levels of trust than members in teams led by Commanding-style leaders. Commander leaders are straightforward and authoritarian, a quality that may impede trust development and participation in virtual teams. Since the benefit of teamwork is the synergy that comes from different points of view, leaders with a commanding style may be limiting the free exchange of ideas. Supportive leaders strive to achieve consensus and are concerned with the well-being and satisfaction of team members. Members may feel more comfortable sharing ideas and seem to participate more, possibly at the urging of the leader. While the supportive leaders seem to get members participating more quickly, there is no evidence that trust levels continue to remain high or that the output of the team is any better.

While this study provides some guidance related to leadership condition, trust and participation seem to be impacted by a complex set of factors including gender and possibly gender mix within the team. In future studies the impact of a male versus female leaders on the participation and trust of team members should be explored. Team composition may also have an impact on team participation and trust. Comparing trust and participation for gender-homogenous versus gender-heterogeneous groups would also be beneficial.

The results of this study are important for business managers and educators. Most faculty who assign group work, are aware of problems that often exist in student work teams. This research provides the foundation for additional research that will help clarify what factors impact trust and participation in work teams. If there is a better way to structure work teams, productivity and output may be improved.

REFERENCES

- Barki, H., & Hartwick, J. (2001). Interpersonal Conflict and its Management in Information System, Development. *MIS Quarterly*, 25(2), 195-228.
- Bergman, S.M., Small, E.E., Bergman, J.Z., & Bowling, J.J. (2014). Leadership Emergence and Group Development: A Longitudinal Examination of Project Teams. *Journal of Organizational Psychology*, 14(1), 111-126.
- de Pillis, E.G., & Reardon, K.K. (1997). Leadership Styles in the MBA Pipeline: The Vanishing Supportive Woman. *Proceedings of the Western Academy of Management Annual Meeting, Squaw Valley, CA*.
- de Pillis, E.G., & Furumo, K. (2007). Counting the Cost of Virtual Teams. *Communications of the ACM*, 50, 93-95.

- Cordes, S. (2016). Don't Even Think: Virtual Team Process for Flexible Decision Making. *Journal of Organizational Psychology*, 16(1), 24-32.
- Early, P.C., & Peterson, R.S. (2004). The Elusive Cultural Chameleon: Cultural Intelligence as a New Approach to Intercultural Training for the Global Manager. *Academy of Management Learning & Education*, 3(1), 100-115.
- Hinds, P.J., & Bailey, D.E. (2000). Virtual Teams: Anticipating the Impact of Virtuality on Team Process and Performance. *Academy of Management Proceedings*.
- Jarvenpaa, S. L., Knoll, K., & Leidner, D.E. (1998). Is Anybody Out There? Antecedents of Trust in Global Virtual Teams. *Journal of Management Information Systems* 14(4), 29-64.
- Jarvenpaa, S.L., & Leidner, D.E. (1999). Communication and Trust in Global Virtual Teams. *Organization Science*, 10(6), 734-791.
- Kodish, S. (2017). Organizational Trust Online: A Discursive Perspective. *Journal of Organizational Psychology*, 17(4), 36-50.
- Mayer, R.C., Davis, J. H., & Schoorman, F.D. (1995). An Integrative Model of Organizational Trust. *Academy of Management Review*, 20(3), 709-734.
- McGrath, J. (1991). Time, Interaction, and performance (TIP): A Theory of Groups. *Small Group Research*, 22, 147-174.
- Pearce, J.L., Sommer S. M., Moris, A., & Frideger, M. (1992). *A Configurational Approach to Interpersonal Relations: Profiles of Work Place Social Relations and Task Interdependence*. Graduate School of Management, Irvine, CA.
- Powell, A., Piccoli, G., & Ives, B. (2004). Virtual Teams: A Review of Current Literature and Direction for Future Research. *DATA BASE for Advances in Information Systems*, 35(1), 6-36.
- Reardon, K. K., & de Pillis, E. (1996). Multichannel leadership: Revisiting the false dichotomy. *Integrating Theory and Research in Communication*, 399-407.
- Snow, C. C., Snell, S.A., & Davison, S.C. (1996). Use Transactional Teams to Globalize Your Company. *Organizational Dynamics*, 24(4), 50-67.
- van der Smagt, T. (2000). Enhancing Virtual Teams: Social Relations vs. Communication Technology. *Industrial Management & Data Systems*, (3/4), 57-80.
- Waldon, P. & Turbin, E. (2000). Working Anywhere, Anytime and with Anyone. *Human Resources Management*, 19, 213-222.
- Watson-Manheim, M. B., & Melanger, F. (2002). Support for Communication-Based Work Processes in Virtual Work. *e-Service Journal*, 61-82.