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Profiling Virtual Employees

The Impact of Managing Virtually

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Leaders in the age of virtual work require an understanding of how this affects their employees' relations with management. From a survey of employees working in a variety of virtual and conventional settings, an empirical profile of employee-manager relationships was completed using a multidimensional measure of virtual status. The profile identified distinct virtual characteristics for two types of virtual employment relationships—free agents and regular core employees who work virtually—and contrasting characteristics for conventional employment relationships. Further analysis of the identified groups suggests that trust in one's manager and perceived managerial support differ across types of employment relationships. Specifically, the findings indicate lower levels of trust and support within virtual as compared to conventional relationships, and lower levels of trust within free-agent versus regular-employee virtual relationships. Implications for future research and management practice are discussed.

Keywords: *virtual work; employee-manager relationships; leader-member exchange*

Virtual work arrangements have become pervasive across organizations, but the effect of these arrangements on the important relationship between manager and employee has received insufficient attention (Wallace, 2004; Wiesenfeld, Raghuram, & Garud, 2001). Research indicates that a virtual context affects relationships between team members and attitudes of employees toward their organization. For instance, cohesiveness and team identification are lower (Fjermestad & Hiltz, 2000) and performance evaluations among team members are based more on actual contributions (Weisband & Atwater, 1999) in virtual teams as compared to in conventional teams. Additionally, virtual employees tend to feel less connected to their organizations than do conventional employees (Kurland & Egan, 1999; Scott & Timmerman, 1999; Wiesenfeld, Raghuram, & Garud, 1999a). If virtual contexts also affect the quality of manager-employee relationships, leaders who fail to recognize and adapt to these differences risk alienating a growing segment of the workforce.

To consider the effects of virtual work arrangements on manager-employee relationships, one must

first identify and define the nature of virtual employment relationships. According to a survey conducted by The Dieringer Research Group in 2004, there are 24.1 million teleworkers in the United States who work at home during business hours at least 1 day per month—nearly one fifth of the American workforce. (The total number of virtual workers is even greater because many employees work virtually from locations other than their home.) Of that 24.1 million, 16.5 million are self employed. Although there is little consistency in how virtual work is actually defined in the extant literature, these statistics support a generally agreed upon definition that virtual employment relationships fall into two categories: (a) privileged core employees who are allowed to work virtually but are otherwise considered regular employees of the organization and (b) free agents who are employed on a contract basis (see Sparrow, 2000; Sparrow & Daniels, 1999). Similar trends are seen throughout much of the developed world. For instance, teleworkers in the United Kingdom comprised 8% of the working population as of early 2005, up from 4% in 1997, according to the United

Kingdom Office of National Statistics (Bird, Ruiz, & Walling, 2005).

Categorizing virtual employees by regular versus free-agent status is a start, but identifying more specific distinguishing characteristics of virtual employment relationships is necessary if one hopes to assess patterns in virtual employee behaviors or attitudes and, ultimately, determine best management practices for virtual contexts. This study, therefore, begins by clarifying a comprehensive definition of what makes work virtual. A major deficiency in the managerial and organizational literature to date is inconsistent and narrow definitions of *virtual* (Shin, El Sawy, Sheng, & Higa, 2000). The definitional issue is addressed in the following section by integrating existing definitions of *virtual* into a multidimensional definition of the construct.

With a comprehensive definition of virtual status established, employee–manager relationships are profiled to flesh out distinct virtual characteristics for the two types of virtual employment relationships described above and contrasting characteristics for conventional employment relationships. Finally, these groups are further discriminated by employee trust in manager and perceived managerial support.

The focus in this study is on the connection virtual employees have with their direct manager—instead of organization, coworker, or some other organization member—because the relationship between employees and their manager has been identified as critical to the success of working in virtual contexts (Raghuram, Garud, Wiesenfeld, & Gupta, 2001; Wiesenfeld, Raghuram, & Garud, 1999b). Wiesenfeld and colleagues (1999b) anecdotally found that managers directly influence the satisfaction and productivity of virtual employees through support and cooperation, which is not dissimilar from the influence managers have in conventional employment contexts. Empirically, Raghuram and colleagues (2001) found that virtual worker perceptions of mutual trust between themselves and their manager and organizational peers played an important role in the worker's adjustment to virtual work (assessed by a self-report of satisfaction with virtual work, job performance as a consequence of virtual work, productivity, commitment to virtual work, and ability to balance work and nonwork demands) in that greater perceptions of mutual trust were related to higher levels of adjustment to virtual work.

Virtual Status Defined

Existing organizational research and writings distinguish between virtual and conventional status in

various ways. For instance, virtual may refer to non-temporal work relations, geographical dispersion, the intensity of communication processes through electronic means, or some combination of these elements (El-Shinnawy, 1999; Wallace, 2004). Although many studies assess virtual status on only one of these aspects, this study uses a multidimensional definition that incorporates all of the above-identified dimensions to sufficiently distinguish regular employees who work virtually from free-agent virtual employees and both types of virtual employees from conventional employees.

Often the distinctions between virtual and conventional are a function of the writers' particular level of analysis or interest (e.g. teleworkers, virtual teams, and virtual organizations). Virtual employees such as teleworkers are typically distinguished from conventional employees by their geographic dispersion—the amount of time members spend working away from central offices or production facilities (Belanger, 1999; Belanger & Collins, 1998; Gupta, Karimi, & Somers, 1995; Kurland & Egan, 1999; Scott & Timmerman, 1999; Wiesenfeld et al., 1999a; Zimmer, 1998). Thus the communication process for teleworkers is a means to allow geographic dispersion rather than an integral part of the definition of the virtual construct.

Virtual teams are often defined by their communication process—whether communication is in the conventional face-to-face mode (Dennis, Kinney, & Hung, 1999; Lind, 1999; Potter & Balthazard, 2002; Powell, Piccolo & Ives, 2004; Weisband & Atwater, 1999) or is temporally synchronous (Robey, Khoo, & Powers, 2000). Some researchers also specifically include geographic dispersion in their definition of virtual teams (Jarvenpaa & Leidner, 1999; Robey et al., 2000; Townsend & DeMarie, 1998). Specifically, Mohrman (1999) strongly stressed the importance of geographic dispersion by suggesting that a primary characteristic of virtual teams is the geographical separation of team members and that electronic communication is a consequence, not necessarily a defining attribute, of virtual relationships.

A primary attribute of virtual organizations is their flexible and temporary work alliances (Burn & Barnett, 1999; Chutchian-Ferranti, 1999; DeSanctis & Monge, 1999; Galbraith, 1995), something not often referred to at other levels. Geographic dispersion and electronic communication are also prevalent in the definitions of virtual organizations (Berendt, 1998; Chutchian-Ferranti, 1999; DeSanctis & Monge, 1999).

Although many of the studies presented above assess virtual status using a single aspect of virtuality,

a unidimensional definition of virtual status fails to sufficiently capture the richness and complexity of virtual employment relationships. For example, simply measuring the number of days worked outside the office does not distinguish free agents from regular virtual employees. Nor does it clearly distinguish virtual from conventional employees because employees may work at the same geographic location as their managers but have little direct communication or low employment permanence as temporary employees. Therefore, this study includes the following aspects of virtual status: (a) geographical dispersion, (b) communication process (encompassing both communication intensity and medium), and (c) employment permanence.

It is important to stress that the conventional or virtual status of an employee's work relationships can be quite different and more or less extensive at the same time. In other words, the virtual status of an employee's relationship with coworkers or other members of an organization is not necessarily the same as the virtual status of their relationship with the manager. Therefore, when defining employment relationships, care must be given to specify the parties of interest to the relationship. The definition of virtual employment relationships used in this study specifically addresses the dyad of manager–employee.

Trust and Support

The quality of manager–employee relationships has been linked to important work-related outcomes such as employee work performance, job satisfaction, and organizational commitment (Gerstner & Day, 1997; Liden, Sparrowe, & Wayne, 1997). Leader-member exchange (LMX) theory provides the framework for this dyadic level of analysis. LMX theory contends that managers do not interact in the same way with each subordinate and these unique interactions result in relationships of varying quality (Graen & Uhl-Bien, 1995). High-quality LMX relationships are often characterized by mutual support and trust. LMX relationships without these key elements are considered low quality and are associated with lower levels of desirable work-related outcomes.

The quality of LMX relationships is driven by and integral to the quality of interaction. Limited opportunity for interaction is considered a precursor to low-quality LMX relationships, and employees in low-quality LMXs are more likely to experience less satisfying communications and inferior rapport with

their manager (Campbell, White & Johnson, 2003; Mueller & Lee, 2002). What does this imply for virtual relationships in which interactions are constrained by the nature of a virtual context?

Employees in virtual contexts generally do not have as much opportunity for relationship-building exchanges as do more conventional members of the organization. Virtual employees often refer to a feeling of being out of sight, out of mind (Wiesenfeld et al, 2001). A widely accepted perspective, consistent with LMX theory, is that trust is embedded in personal relations, formed through the process of social exchange and based on a foundation of reciprocity (Blau, 1964; Granovetter, 1985). It is also during social exchange processes that employees form a belief regarding an organization's commitment to them (Eisenberger, Huntington, Hutchison, & Sowa, 1986). These perceptions of support, often attributable to managers as the liaison between employees and their organizations, are thought to encourage feelings of trust or, at the very least, are significantly correlated with trust (Eisenberger et al., 1986; Whitenor, 2001).

Accordingly, one would expect to find lower levels of trust toward managers and lower levels of perceived managerial support within virtual employment relationships as compared to conventional employment relationships. Decreased trust and support are representative of low-quality LMX relationships and consistent with reduced interactions. Formally stated, our hypotheses are as follows:

Hypothesis 1: Trust in manager will be significantly greater for employees in conventional employment relationships as compared to virtual employment relationships.

Hypothesis 2: Perceived managerial support will be significantly greater for employees in conventional employment relationships as compared to virtual employment relationships.

In addition to varying between conventional and virtual employment relationships, one would expect trust and perceived support to also differ between free-agent and regular types of virtual relationships. Research suggests that the frequency of communication plays a significant role in establishing interpersonal trust and organizational identification for virtual employees (Staples, 2001; Wiesenfeld et al, 1999a). Because trust is developed over time, employment permanence may also influence employee trust toward a manager. Essentially, any virtual conditions that further limit the development of a social exchange relationship between employees and their managers

will likely translate into lower levels of trust toward managers and less perceived managerial support. Formally stated,

Hypothesis 3: Trust in manager will be significantly greater for employees in regular virtual employment relationships as compared to free-agent virtual employment relationships.

Hypothesis 4: Perceived managerial support will be significantly greater for employees in regular virtual employment relationships as compared to free-agent virtual employment relationships.

Method

Sample

Data were collected with an online survey of a diverse sample of 559 full- and part-time employees to empirically identify specific distinguishing characteristics of the virtual employment relationships described earlier and how employees across these relationships differ in their feelings of managerial trust and perceived support. Responses were anonymous and recorded on a university server, providing assurance that a respondent's employer could not view the survey responses. Because missing data were minimal and randomly distributed across cases, pairwise deletion of missing data was used in the subsequent analyses.

The data were consistent with the goal of obtaining variance in employment contexts. A point was made to encompass varied types of virtual employees as well as conventional employees in the sample so as to have a basis of contrast. Accordingly, variance was sought with respect to the employment-permanence dimension. Approximately 60% of the respondents were employed less than full time and 30% of the respondents characterized themselves as temporary employees to some degree. The sample was also racially diverse (45% White or Caucasian, 33% Black or African American, 4% Hispanic or Latino, 13% Asian or Asian-American, less than 1% Native American, and 4% Other) and reasonably evenly split between gender (46% men and 54% women).

Measure of Virtual Status

The first step was to assess the virtual status of surveyed employees, information that would later be used to group respondents by common distinguishing characteristics into categories of employment relationships.

The measures presented below were developed following accepted scale development procedure (Hinkin, 1995, 1998) and capture the previously discussed aspects of virtual status (geographic dispersion, communication process—intensity and medium, and employment permanence) as applied to the employee's relationship with their manager. The measures are structured to assess virtual status along a continuum ranging from nonvirtual to highly virtual, in keeping with this study's definition of virtual status and other recent conceptualizations of the construct (e.g., Hertel, Geister & Konradt, 2005).

Geographic dispersion was measured by asking respondents if they "typically work at the same address as my immediate supervisor," rated on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Many studies focus only on days worked at home, relegating findings to home-based teleworkers and excluding, sometimes inadvertently, other virtual workers (Shin et al., 2000). By distinguishing geographic dispersion as any location removed from the employee's immediate supervisor, inadvertent exclusions are avoided.

Communication process refers to both communication medium and communication intensity, measured as two variables. The degree to which employees' communications were mediated by technology was determined by asking how often they communicate with their supervisor via teleconference, online conversation, videoconference, fax machine, voice mail, and e-mail. Respondents answered on a scale of 1 (*never*) to 5 (*almost always*). Communication intensity ($\alpha = .67$) was assessed with four scaled items. Respondents answered how often they communicate face-to-face with their manager, whether communications are typically lengthy, and whether communications are typically two way. Finally, respondents were asked how frequently they communicate with their manager.

Degree of employment permanence ($\alpha = .76$) was determined by asking respondents to respond to the following statements on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*): I work for my company full time. The company I work for considers me a regular full-time employee. The company I work for considers me a temporary employee (reverse coded).

Measure of Dependent and Control Variables

Employee trust in manager. Employee trust in manager ($\alpha = .88$) was assessed with a three-item scale addressing trust in interpersonal relationships that was developed by Roberts and O'Reilly (1974).

A sample item is “I have trust and confidence in my supervisor regarding his/her general fairness.”

Perceived managerial support. Perceived managerial support ($\alpha = .88$) was measured with a three-item scale developed by Eisenberger, Fasolo, and Davis-LaMastro (1990). A sample item is “My immediate supervisor really cares about my well-being.”

Control variables. Because a prior relationship could influence the nature of the exchange relationship, it was important to control for whether subordinates “have had a face-to-face work relationship” with their direct managers before working virtually, measured on a scale of 1 (*strongly disagree*) to 5 (*strongly agree*). Preliminary consideration was also given to the potential confounding effect of gender and race because they are commonly specified as control variables in research pertaining to exchange relationships. Results were essentially identical to the demographic controls included, and there was no specific theoretical or empirical reason for inclusion, so they were not included in the reported results.

Results

The data were first analyzed using cluster analysis to group employees with common virtual characteristics into categories of employment relationships. The resulting groups were then compared using analysis of variance (ANOVA) and analysis of covariance (ANCOVA) to identify differences across the groups in trust toward manager and perceived managerial support. The result of each analysis follows.

Cluster Analysis

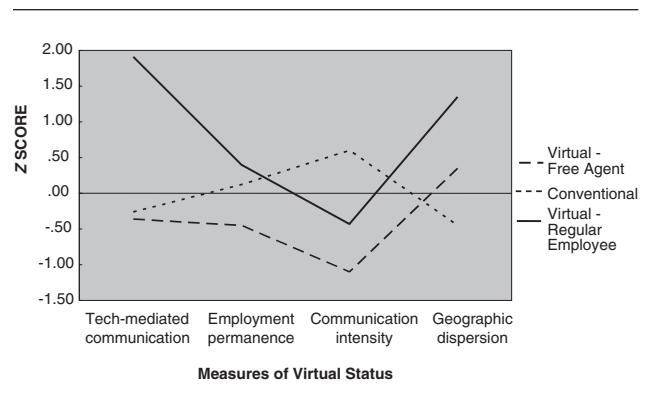
Cluster analysis was conducted using a K-means cluster technique to group employees based on their responses across the four measures of virtual status. The K-means cluster technique selects well-separated, nonmissing values to represent initial centers with which to begin classifying cases among the specified number of clusters. As cases are added to each cluster, the program updates the selection criteria to the value means for the cases thus far placed in a cluster. The program uses a squared Euclidian distance measure to assign each case to its nearest cluster. Essentially, this process divides employee respondents into mutually exclusive groups so that employees within a group are as similar as possible and as different as possible from employees

Table 1
Final Cluster Centers for Employment Relationship Profiles (in z-Score Values)

Variable	Cluster		
	1	2	3
Tech-mediated communication	-0.36	-0.26	1.91
Employment permanence	-0.45	0.12	0.40
Communication intensity	-1.10	0.60	-0.43
Geographic dispersion	0.35	-0.45	1.35
Number of subordinates	153	333	73

Note: Cluster 1 = free-agent virtual relationships; Cluster 2 = conventional relationships; Cluster 3 = regular-employee virtual relationships.

Figure 1
Cluster Profiles



within other groups, leaving a distinct profile for each group.

A three-cluster solution was supported, reflecting the previously described conceptual dichotomy of virtual employees as either free agents with flexible employment contracts or privileged core employees with autonomy to work virtually as well as a cluster representing conventional relationships. Coherence and stability of the cluster solution were confirmed by repeating the cluster analysis on randomly selected subsamples of the data (Kabanoff & Waldersee, 1995). The final cluster centers that distinguish each group across the virtual dimensions are reported in Table 1. Figure 1 presents a graphic illustration of the three clusters.

Cluster 1 represents characteristics associated with a free-agent form of virtual employment relationship. Employees in this cluster are relatively low on employment permanence, meaning they tend to be temporary or part-time employees, and they are above the mean

Table 2
Analysis of Variance Results by Cluster

Dependent Variable	Cluster			ANOVA <i>F</i>	Significance
	1	2	3		
Perceived managerial support					
<i>M</i>	3.36 _a	4.13	3.63 _a	47.18	***
<i>SD</i>	0.97	0.76	0.81		
<i>N</i>	152	332	72		
Trust toward manager					
<i>M</i>	3.29	3.97	3.60	34.92	***
<i>SD</i>	0.99	0.77	0.81		
<i>N</i>	153	332	73		

Note: Cluster 1 = free-agent virtual relationships; Cluster 2 = conventional relationships; Cluster 3 = regular-employee virtual relationships. Means with the same subscript are not significantly different from one another.

*** $p < .001$

with respect to geographic dispersion. They also have a relatively low degree of communication with their managers in terms of both intensity and technology-mediated forms.

Cluster 2 represents characteristics typical of conventional employment relationships. Employees largely work at the same location as their managers and have a relatively high degree of employment permanence. They have relatively high levels of communication intensity with their manager and low use of technology-mediated communications with their manager.

Cluster 3 represents characteristics associated with a privileged, core employee form of virtual employment relationship. Employees in this cluster are above the mean in employment permanence but tend to work and communicate with their manager remotely as indicated by the high level of geographic dispersion and high degree of electronic communication. Their relatively low level of communication intensity, in spite of high employment permanence, suggests a level of autonomy associated with trusted core employees.

ANOVA and ANCOVA Analyses

The analysis now turns to how employees in each of the three identified employment relationships differ in their feelings of trust toward manager and perceived managerial support. As previously discussed, it is expected that employees in conventional employment relationships will have higher feelings of trust and support than will employees in virtual employment relationships, and this is primarily because of the opportunity for greater social exchange. Furthermore,

employees working in free-agent virtual employment relationships are expected to have lower levels of trust toward their manager and lower levels of perceived managerial support than do regular virtual employees, and this is primarily because of their lower levels of communication with their manager and lower level of permanence.

First, the relationships were tested using a one-way ANOVA with Scheffe's multiple comparison and range test to review differences in the mean scores of each dependent variable across the three groups. Then the control variable of prior manager-employee relationship was included using ANCOVA to estimate the effect of the employment relationship type on each dependent variable after accounting for the effect of a prior relationship.

Table 2 presents the mean score for each dependent variable by employment relationship type. The ANOVA *F* test is significant for trust towards manager ($F = 34.92$; $p < .001$) and perceived managerial support ($F = 47.18$; $p < .001$), indicating that both dependent variables are significantly related in some way to type of employment relationship. Post hoc tests of mean differences determine if hypotheses are supported.

Hypothesis 1 predicted trust toward manager would be greater for employees in conventional versus virtual employment relationships. Indeed, the mean for trust toward manager was highest for employees in conventional employment relationships and significantly greater than both free-agent ($p < .001$) and regular ($p < .01$) virtual employment relationships ($M_s = 3.97, 3.29, \text{ and } 3.60$, respectively). This provides support for Hypothesis 1.

Hypothesis 2 predicted perceived managerial support would be greater for employees in conventional versus virtual employment relationships. As found above with trust, the mean for perceived managerial support was highest for employees in conventional employment relationships and significantly greater than both free-agent ($p < .001$) and regular ($p < .001$) virtual employment relationships ($M_s = 4.13, 3.36, \text{ and } 3.63$, respectively). These findings provide support for Hypothesis 2.

Hypothesis 3 predicted trust toward manager would be greater for virtual employees in regular virtual relationships as compared to free-agent virtual relationships. The mean for trust toward manager was higher for employees in regular virtual relationships and significantly greater than free-agent virtual relationships ($M_s = 3.60 \text{ and } 3.29$, respectively; $p < .05$). This provides support for Hypothesis 3.

Hypothesis 4 predicted perceived managerial support would be greater for virtual employees in regular virtual relationships as compared to free-agent virtual relationships. The mean for perceived managerial support was higher for employees in regular virtual relationships as compared to free-agent virtual relationships, but this only approaches significance ($M_s = 3.63 \text{ and } 3.36$, respectively; $p < .079$). Thus Hypothesis 4 was not supported.

Table 3 presents the main effect of the employment relationship after the effect of the control variable—prior relationship between employee and manager—is removed. The direction and significance of the results were consistent with the ANOVA findings. The control variable was also significantly associated with the dependent variables. A prior face-to-face relationship between employee and manager has a positive relationship with perceived managerial support ($p < .001$) and trust toward manager ($p < .001$).

Discussion

This study empirically develops a multifaceted description of two distinct types of virtual employment relationships, free agent and regular (core) employee, and distinguishes these from conventional employment relationships. This was accomplished by profiling employee relationships using four measures of virtual status: degree of technology-mediated communication, degree of communication intensity, permanence of employment, and geographic dispersion (how often subordinates work at the same location as their direct managers). The measure and profiles developed in this

Table 3
Analysis of Covariance Results (in F values)

Variable	Dependent Variables	
	Perceived Managerial Support	Trust Toward Manager
Control variable		
Prior relationship	40.18***	48.46***
Employment relationship (eta squared)	23.41*** (0.08)	15.78*** (0.05)
R^2 for overall effect	0.20	0.18
n	552	554

*** $p < .001$.

study provide a more comprehensive and integrated framework for future research than is found in the extant literature, addressing a call for consistency in defining virtual status (Shin et al., 2000).

By distinguishing these classifications of employment relationships, it is possible to analyze how employees in each type of relationship differ with respect to perceived managerial support and trust toward manager. The findings indicate that employees in both types of virtual employment relationships have significantly lower perceptions of managerial support and significantly less trust in their managers than do those in nonvirtual, conventional relationships. Between the two types of virtual relationships, free agents hold significantly lower trust in their managers than do employees in regular virtual relationships. These findings lend support to the argument that virtual work arrangements—lower levels of communication and employee permanence in particular—detract from building social exchange relationships and forming social capital. Extant literature suggests this conceptually (e.g., Wiesenfeld et al., 1999b) but has not empirically demonstrated the contrast between virtual and conventional relationships, nor has it empirically explored the distinct varieties of virtual relationships.

Recommendations for Future Research

Future research is encouraged to continue exploring the finer grade distinctions between types of virtual employment relationships, shifting away from the more typical, generalized or dichotomous (virtual vs. nonvirtual) view of virtual employees. Specifically, future studies should consider other types of virtual employment relationships that currently or in the

future may exist as virtual work continues to evolve. The multiple dimensions of virtual status identified within this study might also be explored in their distinct (noncomposite) and continuous forms to shed further light on how varying degrees of virtual status relate to variables of interest. Finally, collecting data from managers in addition to their virtual employees is suggested to more fully explore the dynamics of this important relationship.

Managerial Implications

The findings of this study also have several important practical implications for management. Management practice must adjust to accommodate the differences between virtual and conventional employees or risk encouraging inferior work performance and alienating a growing segment of the workforce. A lower level of employee trust in manager, as found with virtual as compared to conventional employment relationships, may lead to control issues for management because high levels of trust can replace explicit control such as personal surveillance and monitoring of activities (Creed & Miles, 1996). Reduced trust also erodes work performance, increases turnover intentions, reduces employees' support for management, and hinders employees' overall adjustment to work in virtual contexts (Brockner, Siegel, & Daly, 1997; Raghuram et al., 2001; Robinson, 1996). Managers should consider more frequent communication, electronic or otherwise, as a means to increase trust with their virtual employees because communication has been empirically linked with higher levels of interpersonal trust (Staples, 2001). There is some evidence that cognitive trust, based on feelings of professionalism and competence, rather than affective trust, drawing from emotional investments and caring, is most important in virtual relationships (Staples & Ratnasingham, 1998). This suggests that managers in virtual contexts should focus more on encouraging employee trust related specifically to business concerns than on developing a personal relationship of trust.

On a related note, employee perception of less managerial support in virtual relationships is also a potential problem for management. Researchers Tsui, Pearce, Porter, and Tripoli (1997) found that a mutual investment employment relationship, in which employers show concern and support for subordinates, encourages greater levels of work performance and better work attitudes as compared to an economic or transactional exchange relationship. One way to

encourage greater feelings of managerial support with virtual employees may be to balance the high level of autonomy and flexibility associated with virtual work with a clear understanding of responsibilities, expectations, project priorities and performance measures, and continuity of other conventional work practices—meetings, training, regular feedback, and other ways of typically supporting nonvirtual employees.

Limitations

The results of this study must be viewed in light of the study's limitations. The sample included subordinates from various organizations, differing widely in their work contexts. Although this allowed for greater variance in virtual status and makes the findings more generalizable, it can also be considered a limitation because there was no specific control for potential confounding factors such as industry or organizational culture. Also, given the cross-sectional design of the research, caution must be used in inferring causality. A final potential limitation is that the data were collected from a single source and using the same method. To address this issue, we conducted a Harman's one-factor test, which involved factor analyzing the independent and dependent variables in the study to determine if one common factor emerges or if one factor explains the majority of the covariance between independent and dependent variables (Podsakoff & Organ, 1986). Either result would suggest method bias. In the test, four factors emerged, with the first factor explaining only about 22% of the factor variance, suggesting that common method variance is not a problem for this study.

Conclusion

In conclusion, this study makes several contributions. It conceptually and empirically develops a multidimensional classification scheme of virtual employment relationships. In doing so, it provides a more comprehensive measurement and vocabulary of virtual employment relationships than is currently found in the literature. Using a cross-sectional sample of employees ranging from conventional to highly virtual, this study finds that trust in one's manager and perceived managerial support differ across type of employment relationship. It is most important that differences occur not only between virtual and conventional relationships but also between types of virtual relationships. A simplistic, single-category view

of virtual relationships would not capture the more complex dynamics found in this study. Given the profound changes being wrought by communication technology in the workplace, discovering the subsequent relational effects is necessary to understand changing organizational dynamics and maintain management effectiveness.

References

- Belanger, F. (1999). Communication patterns in distributed work groups: A network analysis. *IEEE Transactions on Professional Communication*, 42, 261-275.
- Belanger, F., & Collins, R. W. (1998). Distributed work arrangements: A research framework. *Information Society*, 14, 137-152.
- Berendt, A. (1998). The virtual enterprise gets real. *Telecommunications*, 32, 32-36.
- Bird, G., Ruiz, Y., & Walling, A. (2005). Home-based working using communication technologies. *Labour Market Trends*, 113, 417-426.
- Blau, P.M. (1964). *Exchange and power in social life*. New York: John Wiley.
- Brockner, J., Siegel, P. A., & Daly, J. P. (1997). When trust matters: The moderating effect of outcome favorability. *Administrative Science Quarterly*, 42, 558-583.
- Burn, J., & Barnett, M. (1999). Communicating for advantage in the virtual organization. *IEEE Transactions on Professional Communication*, 42, 215-222.
- Campbell, K. S., White, C. D., & Johnson, D. E. (2003). Leader-member relations as a function of rapport management. *Journal of Business Communication*, 40, 170-195.
- Chutchan-Ferranti, J. (1999). Virtual corporation. *Computerworld*, 33, 64.
- Creed, W. E. D., & Miles, R. E. (1996). Trust in organizations: A conceptual framework linking organizational forms, supervisory philosophies, and the opportunity costs of controls. In R. M. Kramer & T. R. Tyler (Eds.), *Trust in organizations: Frontiers of theory and research* (pp. 16-38). Thousand Oaks, CA: Sage.
- Dennis, A. R., Kinney, S. T., & Hung, Y. C. (1999). Gender differences in the effects of media richness. *Small Group Research*, 30, 405-437.
- DeSanctis, G., & Monge, P. (1999). Introduction to the special issue: Communication processes for virtual organizations. *Organization Science*, 10, 693-703.
- Eisenberger, R., Fasolo, P., & Davis-LaMastro, V. (1990). Perceived organizational support and employee diligence, commitment, and innovation. *Journal of Applied Psychology*, 75, 51-59.
- Eisenberger, R., Huntington, R., Hutchison, S., & Sowa, D. (1986). Perceived organizational support. *Journal of Applied Psychology*, 71, 500-507.
- El-Shinnawy, M. (1999). Introduction to the special issue: Communication in virtual organizations. *IEEE Transactions on Professional Communication*, 42, 213-214.
- Fjermestad, J., & Hiltz, S. R. (2000). Group support systems: A descriptive evaluation of case and field studies. *Journal of Management Information Systems*, 17, 115-160.
- Galbraith, J. R. (1995). *Designing organizations*. San Francisco: Jossey-Bass.
- Gerstner, C. R., & Day, D. V. (1997). Meta-analytic review of leader-member exchange theory: Correlates and construct issues. *Journal of Applied Psychology*, 75, 51-59.
- Graen, G.B., & Uhl-Bien, M. (1995). Relationship-based approach to leadership: Development of leader-member exchange (LMX) theory of leadership over 25 years: Applying a multi-level, multi-domain perspective. *Leadership Quarterly*, 6, 219-247.
- Granovetter, M. (1985). Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, 91, 481-510.
- Gupta, Y. P., Karimi, J., & Somers, T. M. (1995). Telecommuting: Problems associated with communications technologies and their capabilities. *IEEE Transactions on Engineering Management*, 42, 305-318.
- Hertel, G., Geister, S., & Konradt, U. (2005). Managing virtual teams: A review of current empirical research. *Human Resource Management Review*, 15, 69-95.
- Hinkin, T. R. (1995). A review of scale development practices in the study of organizations. *Journal of Management*, 21, 967-988.
- Hinkin, T. R. (1998). A brief tutorial on the development of measures for use in survey questionnaires. *Organization Research Methods*, 1, 104-121.
- Jarvenpaa, S. L., & Leidner, D. E. (1999). Communication and trust in global virtual teams. *Organizational Science*, 10, 791-815.
- Kabanoff, B., & Waldersee, R. (1995). Espoused values and organizational change themes. *Academy of Management Journal*, 38, 1075-1104.
- Kurland, N. B., & Egan, T. D. (1999). Telecommuting: Justice and control in the virtual organization. *Organization Science*, 10, 500-513.
- Liden, R. C., Sparrowe, R. T., & Wayne, S. J. (1997). Leader-member exchange theory: The past and potential for the future. In G. R. Ferris (Ed.), *Research in Personnel and Human Resources Management*, Vol. 15 (pp. 47-119). Greenwich, CT: JAI.
- Lind, M. R. (1999). The gender impact of temporary virtual teams. *IEEE Transactions on Professional Communication*, 42, 276-285.
- Mohrman, S. A. (1999). The contexts for geographically dispersed teams and networks. *Journal of Organizational Behavior*, 20, 63-80.
- Mueller, B. H., & Lee, J. (2002). Leader-member exchange and organizational communication satisfaction in multiple contexts. *Journal of Business Communication*, 39, 220-245.
- Podsakoff, P. M., & Organ, D. W. (1986). Self-reports in organizational research: Problems and prospects. *Journal of Management*, 12, 531-544.
- Potter, R. E., & Balthazard, P. A. (2002). Virtual team interaction styles: Assessment and affects. *International Journal of Computer-Human Studies*, 56, 1-21.
- Powell, A, Piccoli, G., & Ives, B. (2004). Virtual teams: A review of current literature and directions for future research. *Database for Advances in Information Systems*, 35, 6-36.
- Raghuram, S., Garud, R., Wiesenfeld, B., & Gupta, V. (2001). Factors contributing to virtual work adjustment. *Journal of Management*, 27, 383-405.
- Roberts, K. H., & O'Reilly, C. A. (1974). Measuring organizational communication. *Journal of Applied Psychology*, 59, 321-326.
- Robey, D., Khoo, H. M., & Powers, C. (2000). Situated learning in cross-functional virtual teams. *Technical Communication*, 47, 51-66.

- Robinson, S. (1996). Trust and the breach of psychological contract. *Administrative Science Quarterly*, 41, 574-599.
- Scott, C. R., & Timmerman, C. E. (1999). Communication technology use and multiple workplace identifications among organizational teleworkers with varied degrees of virtuality. *IEEE Transactions on Professional Communication*, 42, 240-249.
- Shin, B., El Sawy, O. A., Sheng, O. R., & Higa, K. (2000). Telework: Existing research and future directions. *Journal of Organizational Computing & Electronic Commerce*, 10, 85-101.
- Sparrow, P. R. (2000). New employee behaviors, work designs and forms of work organization: What is in store for future work? *Journal of Supervisory Psychology*, 15, 202-218.
- Sparrow, P. R., & Daniels, K. (1999). Human resource management and the virtual organization: Mapping the future research issues. In C. L. Cooper & D. M. Rousseau (Eds.), *Trends in Organizational Behavior* (Vol. 6, pp. 45-61). New York: John Wiley.
- Staples, D. S. (2001). A study of remote workers and their differences from non-remote workers. *Journal of End User Computing*, 13, 3-14.
- Staples, D. S., & Ratnasingham, P. (1998). Trust: The panacea of virtual management? *Proceedings of the International Conference on Information Systems*, 19, 128-144.
- Townsend, A. M., & DeMarie, S. M. (1998). Virtual teams: Technology and the workplace of the future. *Academy of Management Executive*, 12, 17-29.
- Tsui, A. S., Pearce, J. L., Porter, L. W., & Tripoli, A. M. (1997). Alternative approaches to the employee-organization relationship: Does investment in subordinates pay off? *Academy of Management Journal*, 40, 1089-1121.
- Wallace, P. (2004). *The Internet in the workplace: How new technology is transforming work*. New York: Cambridge University Press.
- Weisband, S., & Atwater, L. (1999). Evaluating self and others in electronic and face-to-face groups. *Journal of Applied Psychology*, 84, 632-639.
- Whitener, E. M. (2001). Do "high commitment" human resource practices affect employee commitment? A cross-level analysis using hierarchical linear modeling. *Journal of Management*, 27, 515-535.
- Wiesenfeld, B. M., Raghuram, S., & Garud, R. (1999a). Communication patterns as determinants of organizational identification in a virtual organization. *Organizational Science*, 10, 777-790.
- Wiesenfeld, B. M., Raghuram, S., & Garud, R. (1999b). Supervisors in a virtual context: The experience of self-threat and its effects on virtual work organizations. In C. L. Cooper & D. M. Rousseau (Eds.), *Trends in organizational behavior* (Vol. 6, pp. 31-34). New York: John Wiley.
- Wiesenfeld, B. M., Raghuram, S., & Garud, R. (2001). Organizational identification among virtual workers: The role of need for affiliation and perceived work-based social support. *Journal of Management*, 27, 213-229.
- Zimmer, D. A. (1998). Telecommuting. In N. A. Cox (Ed.), *Handbook of electronic messaging* (pp. 461-500). Boca Raton, FL: CRC.

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