Impacts of Organizational Behavior on IT Project Teams: Leadership's Impact on Social Loafing

Completed Research Paper

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Abstract

This investigation focuses on antecedents impacting social loafing that would fall under the category of informal controls. Specifically, it investigates leadership aspects posited by the Collective Effort Model (Karau and Williams 2001) into the broader model for antecedents of social loafing. Leadership at the peer level and the supervisor level of an IT project could potentially be of significant importance, as they have been shown to influence project outcomes and other related social phenomena (Murphy et al. 2003; Roy et al. 2010). We find that adding both Peer Leadership and Supervisor Support to a model of factors already known to influence Social Loafing in project teams explains more of the variance in social loafing.

Keywords

IT project management, Collective Effort Model, social loafing, IT leadership, project teams

INTRODUCTION

Despite fifty years of IT project management, difficulties remain in keeping projects on time and within budget, and with the final product adding value to the organization. Several reasons have been studied that may contribute to these project breakdowns: requirements uncertainty (Nidumolu 1996); project risk not being properly assessed (Nidumolu 1995; Wallace et al. 2004); and a lack of project control, manifested in project misreporting (Iacovou et al. 2009; Smith et al. 2009) as well as other deleterious project member behavior.

Since the overwhelming majority of IT projects involve teams of workers, it should be possible to take advantage of insights drawn from related work within the referent discipline of organizational behavior, and more specifically from work that has focused on teams and team member behaviors. In team-based projects, a team member's propensity to withhold effort toward achieving the project goals can be a significant factor in poor project outcomes (Kerr and Bruun 1983) and has been found across several different types of tasks (Karau and Williams 1993). Kidwell and Bennett (1993) argued that the likelihood that an individual will give less than full effort on a job-related task is the underlying concept behind shirking, social loafing, and free riding.

Of particular interest to IT project management is social loafing, where a team member withholds effort as he or she moves from an individual performing alone to individuals performing in groups of increasing size (Latane et al. 1979). Social loafing in IT project management is worth exploring because IT projects are different from other types of teamwork as IT projects tend to be more dynamic and uncertain (Schmidt et al. 2001). Identifying threats to project success and mitigating them is more difficult as the nature and type of risk to software project outcomes is less clear (Wallace et al. 2004). Changes in IT project requirements increase uncertainty and risks more rapidly than less-dynamic requirements in many other project management scenarios. These conditions make it easier to cover up social loafing with biased status reporting (Iacovou et al. 2009). Antecedents to social loafing include team size and task visibility (George 1992; Williams et al. 1981). Team members may feel that they can hide in a crowd, as it is a collective task. In addition, when the individual's performance is less identifiable he/she may feel their contribution is more dispensable. These assertions are not surprising given that extensive research has demonstrated that social loafing is a phenomenon that is pervasive in teamwork settings (Hasan and

Ali 2007; Mahaney and Lederer 2010; McAvoy and Butler 2009). Indeed, these antecedents have been shown to have an influence on IT project outcomes. Larger team sizes have greater social loafing present (Alnuaimi et al. 2010; Chidambaram and Tung 2005), while project importance and task visibility have also been found to influence social loafing in IT project teams (Hasan and Ali 2007; McAvoy and Butler 2009).

Control theory has been used to propose both formal and informal control mechanisms for project teams (Kirsch 1997). Clan control is one type of informal control that is antecedent to team behavior (Chua et al. 2012), and internal integration (derived from a software project risk framework) is a second (Barki et al. 2001). These informal control factors have been shown to play a prominent role in IT project performance, providing a complimentary effort to the formal controls that are put into practice on a project.

This investigation focuses on antecedents impacting social loafing that would fall under the category of informal controls. Specifically, it investigates leadership aspects posited by the Collective Effort Model (Karau and Williams 2001) into the broader model for antecedents of social loafing. Expanding the nomological net of antecedents to social loafing in IT project teams has the potential to provide additional insight on which informal controls would have an impact on social loafing in IT project teams. Leadership at the peer level and the supervisor level of an IT project could potentially be of significant importance, as they have been shown to influence project outcomes and other related social phenomena (Murphy et al. 2003; Roy et al. 2010).

Our research question focuses on whether the organizational behavior factors of peer leadership within IT project teams and supervisor support of the team have an impact on social loafing on the part of the individual team member in an IT project team. We find that they do, adding a significant contribution to our growing understanding of how best to influence project processes and outcomes.

Theoretical Background

Two theoretical lens in IT project management literature are commonly used to explain informal antecedents to social loafing in groups. The first, clan control, originates in IT project control literature (Chua et al. 2012). Clan control aims to direct, influence or regulate others to achieve project goals. Unlike outcome controls that are based on formal, organizational power, clan control is based on peer monitoring and sanctions to spread shared values, beliefs and norms of the group. Chua et al. (2012) view clan control as groups with high social capital "where members develop social ties to the point they share common beliefs, values and norms" (p. 276), reconciling the views of clan creation and leveraging clan norms for goal achievement.

Internal integration, the second lens, comes from the contingency perspective and risk literature. In the IS literature, similar to general risk literature, the terms "uncertainty" and "risk" describe project characteristics that tend to raise the likelihood of IT project failure (Barki et al. 1993). To lower the risk profile of a project, Barki, Rivard and Talbot (2001) posit internal integration as "management practices that enhance cohesion among team members" (McFarlan 1981), similar to the concept cited by Zmud (1980) as "the mutual interaction among members of the task force" (p.48). Both clan control and internal integration describe attributes of a group based on the actions of the individual members that are impacted by their very membership in that group.

Understanding individual motivation (or lack thereof) in groups has long been studied in the fields of social and applied psychology. Karau and Williams (1993) performed a meta-analysis on studies of social loafing and provided a theoretical integration of individual motivation in groups. This theoretical integration resulted in the Collective Effort Model (CEM). This model integrates traditional expectancy-value models of effort with theory on social identity and self-evaluation processes in groups. CEM is primarily based on group phenomena, and it predicts group level outcomes that have implications for an individual's self-evaluation. It suggests that group project settings that provide clear information relevant to self-evaluation, whether from one's self, one's group members, one's boss, important referent groups, or others, should have stronger implications for motivation than situations that do not provide such information or that make it ambiguous. Under the CEM, both clan control and internal integration would impact the effort exerted on a project because both present self-evaluation information from group members that is valued by the individual.

RESEARCH MODEL

The Collective Effort Model can be used to hypothesize the impact of potential antecedents on social loafing in group IS projects (see Figure 1). The CEM suggests that group IS projects are highly susceptible to social loafing because individuals' outcomes frequently depend less on their efforts when working collectively than when working individually simultaneously (Karau and Williams 2001). This has been found in prior IT project research (Alnuaimi et al. 2010; Chidambaram and Tung 2005; Hasan and Ali 2007; McAvoy and Butler 2009). However, the CEM also posits that individuals will work harder on group project when they expect their effort to be instrumental in obtaining valued outcomes.

Control Variables

As noted previously, prior research (from Organizational Behavior as well as Information Systems) has found that team size influences social loafing, with larger teams resulting in more loafing (Alnuaimi et al. 2010). Task visibility and project importance have both been found to influence social loafing in IT project teams (Hasan and Ali 2007; McAvoy and Butler 2009), where greater task visibility results in lower social loafing and greater project importance results in increased social loafing. Trust in a direct supervisor has been shown to reduce misreporting in project status reports within IT project teams (Iacovou et al. 2009). While not the same as social loafing, both are deviant behaviors relating to IT projects, and we believe it is reasonable to assume that if trust in a supervisor reduces misreporting, it could also reduce social loafing. We also included gender as a final control variable.

Hypotheses

Leadership antecedents of peer leadership and supervisor support would be expected to have an impact on social loafing based on the Collective Effort Model. Social loafing should be reduced (and group members should be willing to work harder) when individuals work on tasks that are important to valued reference groups, such as the project team, and when individuals work with respected people or in a situation that activates a noticeable group identity.

While team cohesiveness is one way to consider group member's actions on the behavior of fellow group members, another is to study peer leadership (Taylor and Bowers 1972). If group members do not perceive the quality of their relationships with their peers as important to getting the job done and meeting the group's goals, social loafing is likely to increase. A focus on project outcomes and the presence of leadership among group members is, therefore, likely to decrease social loafing on the part of individual group members.

H1: Social Loafing will be less pronounced in teams with stronger Peer Leadership.

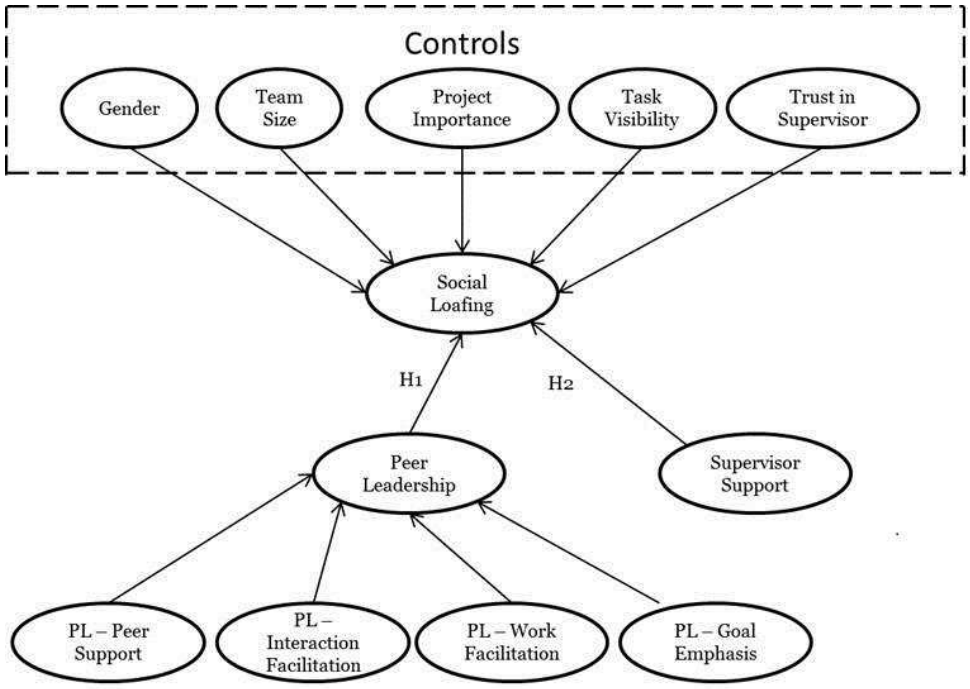

Figure 1: Research Model

Supervisor Support is a team member's perception that their project manager values their contribution and cares about their well-being (Eisenberger et al. 1986). This form of leadership is different than peer leadership, to the extent that the project manager is not viewed as a member of the group. Several studies have found that supervisor support has an impact on project team performance. Faraj and Sambamurthy (2006) found that empowering project team leadership has an important impact on team performance, but only under conditions of high task uncertainty or team expertise. Han et al. (2008) also indicated that management support is beneficial to the information system development interaction process. Supervisor support is a distinct construct from Trust in Supervisor, which focuses on the extent to which the project member believes that the supervisor can be trusted with respect to fairness and decision-making capabilities on behalf of the team (Roberts and O'Reilly 1974). CEM maintains that all other factors held constant, group members that perceive supervisor support are less likely to exhibit social loafing as the group member perceives his/her contribution to the effort to have an impact on their individual evaluation by the project manager.

H2: Social Loafing will be less pronounced in teams with stronger Supervisor Support.

METHODS

To test the research model and hypotheses, we conducted a survey. Respondents were solicited through a panel research company (Empanel). The following criteria were used for screening potential respondents:

1. Currently working on (or recently worked as) a member of an Information Systems project team.
2. Have worked on (or did work on) the project for at least 3 months.
3. The project team has (or had) at least 5 team members.

The survey was conducted online. All of the questions used for the survey were taken from previously tested measurement scales. The nine items used to measure social loafing were taken from Kidwell and Robie (2003). Items measuring Peer Leadership came from Taylor and Bowers (1972). They comprise eleven items in four subcategories of Peer Support, Interaction Facilitation, Work Facilitation, and Goal Emphasis. Supervisor Support was measured with eight items, adopted from Eisenberger et al. (1986). The three items measuring Trust in Supervisor came from Roberts and O'Reilly (1974), while the three

measures of Project Importance were taken from Iacovou (1999). Task Visibility was measured with six items that were adopted from George (1992). Where necessary, wording of items was modified to be consistent with the context and scale anchors that were employed.

After preparing the initial version of the questionnaire, it was pilot tested with five individuals. After each volunteer completed the questionnaire, one of the researchers followed up with a conversation to obtain detailed feedback. The questionnaire was modified based on this feedback. For example, the respondents who answered 'yes' to all three of the screening questions (above) were then asked to enter the name of the project they were thinking of. This project name was subsequently displayed on all remaining screens for the questionnaire, to ensure that the respondent was thinking of the same project while answering the survey questions. In addition, the supervisor roles were clarified to ensure the respondents were clear as to the target for their beliefs and opinions (e.g., using the term Project Task Supervisor rather than the more generic Project Manager). Final wording of the measurement items is displayed in the Appendix.

We received 193 responses to the survey. Five respondents indicated they had fewer than five members in their project team, so they were removed (leaving a sample size of 188). The demographic information concerning the respondents is shown in Table 1.

FINDINGS

The data were analyzed using SmartPLS 2.0 (Ringle et al. 2005). As is customary when employing PLS, we first examined the measurement model.

Test of Measures:

As an initial test, we examined the item loadings on the constructs they were intended to measure. For adequate item reliability, ideally we would like to see loadings greater than .707 (since the squared loading would indicate that the item shares more than 50% of its variance with the construct). When we examined the loadings, we observed several potential weaknesses. Specifically, four of the items that were intended to measure Supervisor Support displayed low loadings. These four items were ones that were worded negatively and had been reverse-scored. We decided to run an exploratory factor analysis on the eight Supervisor Support items, and discovered that they loaded onto two factors; one with the positively-worded items, and one with the negatively-worded items. Rather than attempting to force these items to measure a single construct, we decided to remove the negatively-worded items (leaving four items to measure Supervisor Support). We had a similar situation with the six items that were intended to measure Task Visibility. When an exploratory factor analysis was conducted, the three positively-worded items loaded on one factor, and the three negatively-worded items loaded on a second. We removed three of the items. The item weights and loadings for the final set of items are shown in the Appendix.

		Frequency	**Percent**
Gender	Male	112	59.6
	Female	75	39.9
	No Response	1	0.5
Age	< 31	44	23.4
	31 - 40	93	49.5
	> 40	50	26.6
	No Response	1	0.5
Education	2-year degree (Associate's) or less	28	14.9
	4-year degree (BA, BS)	113	60.1

	Master's, Ph.D. or professional (JD, MD)	45	24.0
	No Response	2	1.1
Job Tenure	< 2 years	36	19.2
	2 yr. – 3 yr., 11 mths.	60	31.9
	4 yr. – 5 yr., 11 mths.	37	19.7
	6 yr. – 7 yr., 11 mths.	14	7.4
	> 8 years	39	20.7
	No Response	2	1.1

Table 1: Respondent Demographics

We computed the Composite Reliability (CR) and Average Variance Extracted (AVE) for each of the measurement scales, which are shown in Table 2. All of the CR values exceeded .80, and all of the AVE values exceeded .60, indicating very good scale reliability. In addition, we compared the square root of the AVE to the correlations among constructs (shown in Table 2). For adequate discriminant validity, the square root of the AVE should be higher than the correlations on the related columns and rows. From Table 2, we see one potential weakness; the correlation between Peer Leadership (PL) and Supervisor Support (SS) is .83, which is higher than the square root of AVE for PL (and very close to the square root of AVE for SS). We also checked the cross-loadings of items on constructs (not shown here for space reasons). All of the items loaded more highly on their own construct than on other constructs. Having said that, the items intended to measure Supervisor Support also loaded highly on Peer Leadership, and vice versa. In examining the items for these two constructs, we noted that they refer to different objects (team members for Peer Leadership and project task supervisor for Supervisor Support), so it does not appear they should be measuring the same construct. Nevertheless, these results indicate that multicollinearity may be an issue, and we address this potential later in this paper.

Construct	Composite Reliability	Cronbach's Alpha	Average Variance Extracted	SL	PL	SS	TR	PI	TV
SL	.97	.97	.77	.88					
PL	.95	.94	.63	.14	.79				
SS	.91	.87	.71	.30	.83	.84			
TR	.88	.81	.70	.26	.64	.71	.84		
PI	.85	.75	.65	.18	.69	.64	.49	.81	
TV	.91	.85	.77	-.58	-.15	-.17	-.18	-.15	.88

Notes: Team size and gender were measured with single items, and hence composite reliability and average variance extracted (AVE) are not applicable. Shaded cells indicate the square root of AVE. SL – Social Loafing; PL – Peer Leadership; SS – Supervisor Support; TR – Trust in Supervisor; PI – Project Importance; TV – Task Visibility.

Table 2: Tests of Reliability and Discriminant Validity

Since we were interested in measuring the incremental influence of Supervisor Support and Peer Leadership on Social Loafing, we initially ran a base model that excluded these two factors (but included all of the control variables). The base model explained 37% of the variance in Social Loafing, and the only control variable that had a statistically significant path estimate was Task Visibility (with a path estimate of -.55). We then added both Peer Leadership and Supervisor Support to the model, and the amount of variance explained increased to 43%. The results for the base model and full model are shown in Table 3.

		Base Model		Full Model	
Hypothesis	**Path**	**Estimate**	**t-stat**	**Estimate**	**t-stat**
H1	Peer Leadership to Social Loafing			**-.40**	**2.79****
H2	Supervisor Support to Social Loafing			**.45**	**2.78****
Controls:					
	Gender to Social Loafing	-.07	0.83	-.04	0.52
	Team Size to Social Loafing	.06	0.95	.08	1.02
	Project Importance to Social Loafing	.03	0.29	.05	0.47
	Trust in Supervisor to Social Loafing	.13	1.26	.07	0.39
	Task Visibility to Social Loafing	**-.55**	**7.47****	**-.54**	**7.22****
Variance Explained in Social Loafing:		.37		.43	

** **p < .01** (2-tailed test)

Table 3: Results for the Base and Full Models

Of the control variables, only Task Visibility exerted a statistically significant influence on social loafing. This was somewhat surprising, in that previous studies have found that team size, for example, typically does influence social loafing. The influence of Task Visibility was very strong in both the base and full model, however. It appears that this was so strong it overshadowed whatever influence the other control variables might have.

Both Peer Leadership and Supervisor Support exhibited statistically significant path coefficients. Counter to our hypotheses (H1 and H2), however, the sign on one path coefficient was positive and the other was negative. Returning to our earlier observation, Peer Leadership (PL) and Supervisor Support (SS) are highly correlated (at .83), which raised the possibility that multicollinearity could be an issue. The results from our PLS analysis seems to confirm this possibility. In the correlation table, the sign of the correlations between PL and Social Loafing and SS and Social Loafing are the same. Since the sign on one path estimate changed, it confirms that multicollinearity is present. Because of this, we can't interpret the individual path estimates from PL to Social Loafing and from SS to Social Loafing. What we can do is examine the increase in the amount of variance explained between the base model and the full model. The full model explained 43% of the variance in social loafing, while the base model explained 37%. We used an F-test to see if this difference was statistically significant. The F-value was 9.47, which is statistically significant at the $p < .01$ level. From these results, we conclude that adding both Peer Leadership and Supervisor Support to a model of factors already known to influence Social Loafing in project teams explains more of the variance in social loafing.

IMPLICATIONS and CONCLUSION

Research

The results from our study strongly suggest that Peer Leadership and Supervisor Support influence Social Loafing in IT project teams. At the same time, we see plenty of opportunities for future research efforts. First, our study contains limitations, including the apparent multicollinearity between measures of Peer Leadership and Supervisor Support. From a face validity perspective, it isn't immediately obvious why this occurred. The measures of Peer Leadership refer to "people on my project team," while those measuring Supervisor Support refer to "my project task supervisor." One possibility is that respondents may have mentally included the supervisor with "people on my project team," which could have resulted in some overlap in responses. If that is the case, perhaps more definitive anchoring (e.g., "people on my project team other than my project task supervisor") might help. Another possibility is that both Peer Leadership and Supervisor Support tap into a higher-order construct. Regardless, future research is needed to help identify a more appropriate way of modeling and measuring these constructs.

To the best of our knowledge, this is the first study examining these constructs (Peer Leadership and Supervisor Support) within this context (IT projects). It would be very helpful for future work to replicate

the study (to ensure the findings hold across other samples). In addition, we believe it would be useful to consider additional potential antecedents to social loafing that arise from the Collective Effort model and include them in future studies. Along these same lines, it would be useful to expand the nomological net by including other constructs from the IT project management literature, such as requirements uncertainty. In addition, it is possible that the results demonstrated here could generalize to contexts other than IT projects, and it would be useful to test this conjecture.

Practice

This line of research may help guide practitioners to examine their project portfolio and identify projects that are prone to social loafing (those with low perceived task visibility, and/or weak leadership at the peer level and lack of demonstrated supervisor support). To reduce the potential for social loafing, it would be helpful to try and engender both demonstrated supervisor support and peer leadership in the project group, as both together have a significant impact on curbing social loafing.

Supervisor Support might be addressed by being selective when assigning task supervisors (in the sense of matching those with proven leadership skills to projects that may be prone to low task visibility). It would also be useful to include training for project managers on the importance of genuinely supporting project team members (e.g., taking pride in their accomplishments) in addition to the typical control aspects of project management training. Peer Leadership may be fostered through on-going team-building and group socialization efforts, as well as genuine recognition offered for important team accomplishments.

Conclusion

In conclusion, our work represents an initial attempt to draw insights from the Collective Effort model and apply them to the context of IT project teams. While acknowledging limitations with our study, we believe that the demonstrated influence of Peer Leadership and Supervisor Support on Social Loafing provides a promising starting point for research aimed at expanding our understanding of important influences that go beyond those identified through the control theory and project risk research streams.

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Appendix: Measures

Item	Mean	Standard Deviation	Loading	Weight	Item Wording
NOTE: unless otherwise noted, all items used the scale anchors of (1) Strongly Disagree to (7) strongly agree (with (4) as Neither Agree nor Disagree).					
Social Loafing:					
Please indicate your level of agreement with each of the following statements. Please remember that your individual responses will not be revealed to anyone, nor will they be included in any of our reports.					
SL1	3.99	1.99	.84	.12	While at work in this project, I daydream.
SL2	3.62	2.16	.87	.12	At work for this project, I pretend to be busy.
SL3	3.79	2.19	.91	.13	While at work in the project, I fail to report trouble.
SL4	4.18	2.08	.84	.12	While at work in this project, I leave extra work for others.
SL5	3.76	2.26	.93	.13	I come to work late when working on this project.
SL6	3.62	2.25	.91	.13	I put forth less effort in my project work when others are around to do the work.
SL7	3.72	2.18	.90	.13	I give less effort than other members of the project team.
SL8	4.28	2.11	.85	.13	I take it easy if other team members are around to do the work.
SL9	3.71	2.19	.87	.13	I do not do my share of the project team's work.
Peer Leadership (PL)					
Peer Leadership – Peer Support (PS)					
PS1	5.65	1.28	.87	.40	People on my project team are friendly and easy to approach.
PS2	5.60	1.30	.88	.39	People on my project team pay attention to what I am saying.
PS3	5.39	1.36	.84	.37	People on my project team are willing to listen to my problems.
Peer Leadership – Interaction Facilitation (PF)					
PF1	5.48	1.35	.87	.42	People on my project team encourage each other to work as a team.
PF2	5.49	1.31	.85	.38	People on my project team emphasize a team goal.
PF3	5.67	1.20	.85	.37	People on my project team exchange opinions and ideas.
Peer Leadership – Work Facilitation (WF)					
WF1	5.51	1.22	.82	.40	People on my project team help me find ways to do a better job in my project work.
WF2	5.43	1.25	.86	.38	People on my project team provide the help I need so that I can plan, organize and schedule my project work ahead of time.
WF3	5.57	1.17	.87	.39	People on my project team offer new ideas for solving project-related problems.
Peer Leadership – Goal Emphasis (GE)					
GE1	5.56	1.29	.88	.59	People on my project team encourage each other to give their best effort.
GE2	5.62	1.17	.86	.55	People on my project team maintain high standards of performance.

Item	Mean	Standard Deviation	Loading	Weight	Item Wording
Supervisor Support (SS)					
SS1	5.50	1.37	.82	.24	My project task supervisor values my contribution to my organization's well-being.
SS2	5.35	1.38	.91	.40	My project task supervisor really cares about my well-being.
SS3	5.42	1.44	.87	.28	My project task supervisor cares about my general satisfaction at work.
SS4	5.66	1.22	.77	.25	My project task supervisor takes pride in my accomplishments in this project.
SS5	Removed				My project task supervisor fails to appreciate any extra effort from me on the project (reversed).
SS6	Removed				My project task supervisor would ignore any complaint from me (reversed).
SS7	Removed				Even if I did the best job possible, my project task supervisor would fail to notice (reversed).
SS8	Removed				My project task supervisor shows very little concern for me (reversed).
Trust in Project Manager (TR)					
TR1	5.54	1.46	.74	.24	I feel free to discuss with my project task supervisor the problems and difficulties in my job without jeopardizing my position or having it held against me later.
TR2	5.52	1.25	.91	.59	Project task supervisors at times must make decisions that seem to be against the interests of project team members. When this happens to you as a project team member, how much trust do you have that your project task supervisor's decision was justified by other considerations? (Scale of (1) No No Trust at All to (7) Total Trust
TR3	5.61	1.36	.85	.33	I have trust and confidence in my project task supervisor regarding his/her general fairness.
Project Importance (PI)					
PI1	5.79	1.03	.80	.33	The project is of strategic importance to the user organization.
PI2	5.64	1.13	.76	.33	The project will significantly improve the operations of the user organization.
PI3	5.71	1.12	.86	.56	The image of the user organization will be significantly enhanced by the project.
Task Visibility (TV)					
TV1	Removed				My project task supervisor is generally aware of when a Project member is putting forth below average effort.
TV2	Removed				My project task supervisor is aware of the amount of work I do.
TV3	Removed				My project task supervisor usually notices when a project member is slacking off.
TV4	3.52	2.01	.93	.46	It is generally hard for my project task supervisor to figure out how hard I am working (reversed).
TV5	3.93	1.86	.74	.22	It is difficult for my project task supervisor to determine how hard we are working (reversed).
TV6	3.51	2.00	.94	.43	It is hard for my project task supervisor to determine how much effort I exert on the job (reversed).