

# Interpersonal Trust & Team Effectiveness in Manufacturing & IT Sectors

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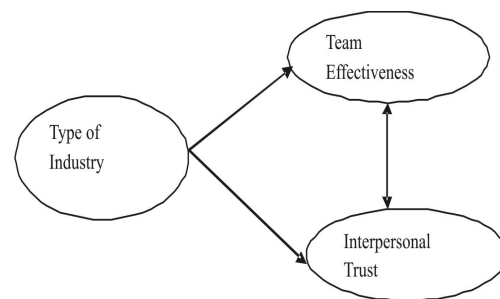
*Interpersonal trust and team effectiveness are two important aspects of human resource performance in organizations. Despite this, scant attention has been paid to finding out their interrelationship and how the constructs vary with respect to industry. This paper attempts to look at the two constructs with the perspective of information technology and manufacturing sectors.*

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## Introduction

Recent studies have proved that there is interrelationship between team effectiveness and trust (Langfred, 2004; Kirkman et al, 2006; Simons & Peterson, 2000). The present study focuses on finding out if there is significant difference in the perception of team effectiveness and interpersonal trust between employees of IT and manufacturing sectors. The study also attempts to find the extent and direction of interrelationship between the various dimensions of team effectiveness and interpersonal trust. The diagrammatical representation of the model we are going to test is given in Fig. 1.

**Fig. 1 Conceptual Model for Industry Type, Team Effectiveness & Interpersonal Trust**



## Team Effectiveness

Kozlowski and Bell (2003: 334) have defined team as: “collectives who exist to perform organizationally relevant tasks, share one or more common goals, interact socially, exhibit task interdependencies, maintain and manage boundaries, and are embedded in an organizational context that sets boundaries, constrains the team, and influences exchanges with other units in the broader entity.” McGrath (1964) and Mathieu et al. (2008) have described team effectiveness in terms of input-process and output analysis.

Time seems to play a significant role in input-process and output analysis of team effectiveness.

**Team work is largely dependent on coordination and backup system.**

Based on a study of 231 knowledge workers belonging to 27 work teams, Janz et al. (1998) found that design, process, and contextual support factors have important implications for team effectiveness. Positive relationship between team autonomy and team job motivation reduces as teams worked under more interdependent conditions. Several gaps remain in the current team effectiveness literature. Team work is largely dependent on coordination and backup system. Coordination implies the streamlining of the sequences and time of team activities (Marks et al., 2001). Backup implies providing coaching & mentoring to team members, by behaviorally helping mem-

bers in the team activities, by working in his/her place if required or assisting team member for completion of the team work (Marks et al. 2001).

Various theories explain the antecedents of team effectiveness. For example: Socio-technical theory (e.g. Pasmore, 1988; Pearce & Ravlin, 1987) and work design theory (Hackman & Oldham, 1976) have focused on the design of the group's task. Self-leadership theory (Manz & Sims, 1986; Matz, 1986) has identified the supervisory behaviors as determinant of effectiveness of self-managed team whereas theory of participative management (Lawler, 1986; 1992) has pointed out the various dimensions of organizational context for success of team. Campion et al (1993) recognized job design and group process variables as predictors of team effectiveness. Cohen and Bailey (1997) have perceived team effectiveness in terms of performance, attitudes, and behaviors. Performance can further be categorized as team performance and role based performance. Another emerging concept looking into team effectiveness is team empowerment both structural and psychological (Mathieu et al., 2006).

Cohesion, or the commitment of team members to the team's overall task or to each other is another important aspect of team performance (Goodman, Ravlin & Schminke, 1987). Collaboration has also been identified as important antecedent of team effectiveness (e.g., Levesque et al 2001; Mathieu et al., 2005). Most studies on team effectiveness are related to the blue-collared em-

ployees (e.g., Cordery, Mueller & Smith, 1991; Goodman, 1979; Kemp, Wall, Clegg & Cordery, 1983; Wall, Kemp, Jackson & Clegg, 1986; Wageman, 1995; Walton, 1972). Few studies have examined the effectiveness of teams comprising knowledge workers and even fewer studies on information systems teams (Campion, Papper & Medsker, 1996; Henderson & Lee, 1992). It is more intense for teams who performed intellectual or decision-making tasks as compared to more physical ones. Further performance of virtual team level largely depends on the frequency and intensity of communication, adaptability to modes of communication and finally trust. Task related knowledge and clarity about it is another significant predictor for team performance (Mathieu & Schulze, 2006).

**Team-level trust has a downward concave curve relationship with the level of monitoring within the team or team autonomy.**

Langfred (2004) provided evidence that team-level trust has a downward concave curve relationship with the level of monitoring within the team or team autonomy. When individual autonomy is high and monitoring is low, team performance is negatively affected. Trust was found to be a positive moderator of the relationship between team training proficiency and team performance (Kirkman et al, 2006) . It also appears to be a moderator within Top Management Team performance models in which it moderates the relationship between task and relationship conflict (Simons & Peterson, 2000).

## **Interpersonal Trust**

Zolen et al (2004) has found in geographical and cross-functional work environment initial perceived trustworthiness is of significance and influenced by commitment and follow-up carried during interaction. Rousseau et al. (1998) defined trust as “a psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or behavior of another, irrespective of the ability to monitor or control the other party.” They have studied trust at individual level, group level, firm level and inter firm level. Trust has also been found to be positively associated with revenue and profit at the organizational level of analysis (Davis, et al., 2000; Simons & McLean Parks, 2002). Antecedents of trust are teamwork, leadership, and organizational culture (Fairholm, 1994; Nicholas, 1993; Ryan, 1999). Matzler and Renzl (2006) have found strong relationship between interpersonal trust, job satisfaction and employee loyalty. Trust has been found to reduce conflicts, decrease transaction costs, facilitate rapid formulation of ad hoc work groups and promotes effective responses to crises. Brashear et al (2003) found that interpersonal trust is most strongly related to shared values and indirectly related to organizational commitment and turnover intention.

There are three guiding principles of cognitive trust described by Newell et al. (2007): ability, benevolence and integrity. Ability refers to trustor’s confidence on the knowledge base and competency of the trustee, benevolence is the trustor’s

faith on the goodwill and intention of the trustee. Integrity refers to trustee's reliability and dependability under the trustor's perspective.

Commitment trust is found at the initial stage when the entrepreneur commits himself to work for fulfillment of the objective mainly with motivation of reward of financial gain and challenge. Integrity is the dominant factor at this stage. This stage is soon to be followed by collaborative trust which is build over time, with employees and partners getting well aware of each other's competency. They have now developed a positive or a negative feeling for each other. This is the stage probably when they start preparing the succeeding generation. The ability factor is the key element at this stage of trust development. Finally, we have companion trust which is based on the feeling of benevolence. It is developed through special interaction outside the periphery of work. Trust emancipates individual's "expectation about those actions of others which have a bearing on her choice of the action, when the action must be taken before she can observe the actions of those others" (Dasgupta, 1988 : 312).

Trust incrementally develops over time depending upon other's choice to reciprocate cooperation and declines with same intensity when the other chooses not to reciprocate (Axelrod, 1984; Deutsch, 1958; 1973; Lindsfold, 1978; Pilisuk & Skolnick, 1968). Swift trust may be developed in moderate interdependent tasks between parties where there is role based interaction, conscious efforts for reducing inconsistencies, broad professional

standards laid out, recruitment of additional workforce from known labor pool lowering expectations for trust-destroying behavior (Meyerson et al., 1996). Ferrin (2003) defined multiple factors which determine level of trust are characteristics of the trustee and trustor, the kind of past and present relationship between the parties, mode of communication and structure of governance that define communication between the parties.

Abrahams et al. (2003) defined behaviors (e.g., discretion, consistency, collaboration) and practices (e.g., building shared vision, ensuring transparency in decision-making, holding people accountable for trust) that promote interpersonal trust in organizations. Measurement targets of trust vary from managers to subordinates, peers to team members etc. Various dynamics of trust include diary accounts and narratives (e.g., Baumeister, Stillwell & Wotman, 1990), critical incident techniques (e.g., Shamir & Lapidot, 2003), in-depth interviews (e.g., Butler, 1991), and case studies and communication analysis (e.g., Jarvenpaa & Leidner, 1999; Wilson, Straus & McEvily, 2006). High level of Trust may create a "blindness" that can allow the trustor to be exploited and taken advantage of (e.g., Deutsch, 1958; Elangovan & Shapiro, 1998; Kramer, 1996; Wicks, Berman, & Jones, 1999) and that a certain amount of "prudent paranoia" is appropriate in a relationship (Kramer, 1996).

### **Sample**

The sample is constituted by 528 respondents of average age of 28 years.

265 respondents were from manufacturing sector and 263 respondents from IT sector (Table 1).

**Table 1: Sample Description**

	Manufacturing	Information Technology
<b>Male</b>	219	192
<b>Female</b>	46	71

### **Team Effectiveness Measurement**

For measuring Team effectiveness we have used 30-items bi-polar scale of Pareek and Purohit (2011: 672). It was developed by a team of health administrators based on literature review of team effectiveness and their own experiences and understanding of team effectiveness. The scale is measured in 5-point Likert scale. Half of the items are stated in positive and half in negative in order to avoid mental bias. Team effectiveness is broadly classified in two components: team functioning and team empowerment. Team functioning constitutes: cohesion, collaboration and confrontation. Team empowerment constitutes: task clarity, autonomy, support and accountability. Team Cohesiveness imply intensity of the interpersonal bonds between team members (Cook et al., 1997). It is linked to many positive outcomes e.g. problem awareness, acceptability to change, enhanced motivation, increased morale, better decision making and greater creativity (Budman et al., 1993; Chidambaram, 1996). Collaboration implies sharing of thoughts and ideas between members and collective action towards a common goal, in a

spirit of harmony and trust (D'Amour et al., 2005).

Confrontation or conflict is a part of any team task but contention of such issues effectively and action towards seeking the best possible ways to accomplish goals as well as relational issues such as social loafing and personal hostility (Druskat & Wolff, 1999; Wageman, 1995) is of significance in team effectiveness. Task clarity implies awareness, understanding and internalization of both the goal and processes involved in the task by the group members (Sawyer, 1992). Autonomy is the measure of the extent to which team members experience substantial freedom, independence, and discretion in their work (Hackman, 1987; Susman, 1976). Four distinct facets of autonomy identified by researchers are planning, product, people, and process-related.

Support implies availability of financial, information, and human resources for achievement of the task goals (Janz et al., 1997). Accountability is the willingness to take not only individual responsibility but team responsibility in completion of task and enhance incremental performance contributions requiring the combined work of two or more members (Katzenbach and Smith, 1993). The Chronbach's alpha-reliability of the scale for team effectiveness was found to be 0.879.

The internal consistency of various dimensions of team effectiveness, factor loadings of the items through Confirmatory Factor Analysis, p-value and RMSEA are given in Table 2.

**Table 2 Reliability & Factor Loadings of Various Dimensions of Team Effectiveness in the Sample**

Factors	Items	Factor Loadings	Chronbach's alpha	p-value for Chisq-Distribution at 2df	RMSEA
Task Clarity	The goals of this team are well defined.	0.542279	0.45	0	0.28
	There is confusion amongst members of the team about its main tasks.	0.221981			
	Each member knows what his/her role in the team is.	0.99			
	Members of the team are not clear how to work towards the team goals.	0.094637			
Cohesion	Members of this team generally feel that their concerns and views are ignored by other members.	0.163245	0.51	0	0.23
	Members support each other when required.	0.813492			
	This team does not function as a strong team.	0.347301			
	Members back the decisions taken by the group.	0.69733			
Autonomy	The team has enough freedom to decide its way of working.	0.171691	0.47	0	0.16
	The team only carries out the task given to it;it cannot decide its own priorities	0.62999			
	The members of the team have enough freedom in their own areas.	0.397696			
	The team does not have autonomy in vital aspects of its working.	0.720707			
Confrontation	Members generally avoid discussing the problems facing the team.	0.099179	0.34	0	0.85
	The team generates alternative solutions for a problem	0.327867			
	There is a lot of hesitation in taking hard decisions in this team.	0.135341			
	Members in this group do not hesitate to express their differences with each other.	0.263851			
Support	The team is given adequate resources to carry out its functions.	0.120498	0.48	0	0.9
	The team does not get adequate support needed to perform its tasks	0.306867			
	The team has enough competent persons needed for its work.	0.088953			
	There is lack of various resources (human and financial) required by the team.	0.473257			
Accountability	The sense of responsibility and accountability is pretty high amongst the team members.	0.14462	0.57	0	0.95
	No one cares to assess true extent of achievement of the goals of the team.	0.346047			
	The team uses appropriate ways of assessing its accountability.	0.223277			
	The team does not have internal mechanism of assessing its progress in achieving its tasks.	0.425039			

### **Interpersonal Trust Scale**

The instrument for interpersonal trust is a 24-items bipolar scale adapted from Pareek and -Purohit (2011: 236). The response on each item is to be given on a 4-point Likert scale, where 1 stands for totally disagree and 4 stands for totally agree:

The dimensions of interpersonal trust taken into consideration are: communication, openness, professional support and managerial competence. Communication implies willingness to listen and share; i.e., to get involved and talk things through. Openness provides the trusting partners the confidence to be open with each other, knowing that information shared will not be used against them. Professional support refers to the extent to which employees can count on their colleagues to help and support them when needed. Supportive peer relationships in the workplace can be defined as deep associations with peers grounded on a sense of intimacy and trust, the sharing of thoughts and feelings, and the sense that one is able to seek help from the others. The Chronbach's alpha- reliability of the scale for interpersonal trust was found to be 0.609.

### **Test of Differences**

We used t-test to compare the various dimensions of team effectiveness and interpersonal trust. It was found that there were no significant differences in the mean scores of various dimensions of team effectiveness between the IT and manufacturing industries. However sig-

**Significant differences in mean scores were found in interpersonal trust between the two industrial sectors with mean scores of IT industries significantly lower than the manufacturing industries.**

nificant differences in mean scores were found in interpersonal trust between the two industrial sectors with mean scores of IT industries significantly lower than the manufacturing industries for all the four dimensions, i.e., communication, openness, professional support and managerial competency (Table 3).

### **Correlation Analysis**

From the correlation analysis we can find a significant positive correlation between organizational support and task clarity; managerial competence and task clarity; and finally managerial competence and confrontation. There is a significant negative correlation of accountability with communication and openness (Table 4). There was however no difference found in the scales of team effectiveness and interpersonal trust with respect to age or gender.

### **Discussion**

There were no significant differences found in perceived team effectiveness in the samples of employees drawn from IT & manufacturing sectors but cohesion and autonomy were found to be two weaker dimensions of team effectiveness. Tekleab et al. (2009) have found that team cohesion is positively related

**Table 3 t-test for Difference of Means for Dimensions of Team Effectiveness and Interpersonal Trust**

Variables	Industry Sector	Mean Standard	Deviation	t-statistics	p-value
Task Clarity	IT	62.33365019	17.2283895	0.00699	0.994425
	Manufacturing	63.79385965	19.080083		
Cohesion	IT	60.02851711	17.6391454	0.021091	0.983181
	Manufacturing	55.54824561	19.2966349		
Autonomy	IT	55.10931559	16.5054403	0.002153	0.998283
	Manufacturing	55.54824561	18.8903456		
Confrontation	IT	55.15684411	15.3382776	0.017097	0.986366
	Manufacturing	58.22368421	15.880737		
Support	IT	60.90779468	16.670336	0.008177	0.993479
	Manufacturing	59.29824561	17.580952		
Collaboration	IT	60.05228137	16.2754022	0.000	0.999948
	Manufacturing	60.06578947	19.7286013		
Accountability	IT	59.41064639	17.7942707	0.736509	0.461749
	Manufacturing	58.22368421	19.2050809		
Communication	IT	52.34410646	12.3530459	3.729549	0.000213***
	Manufacturing	56.3490566	12.3219074		
Openness	IT	333.3355513	72.2421996	4.26948	0.0000***
	Manufacturing	360.0216981	71.3817479		
Professional Support	IT	64.01330798	14.0456866	3.546849	0.000425***
	Manufacturing	68.38679245	14.2857876		
Managerial Competence	IT	58.72243346	16.1231825	4.063602	0.0000***
	Manufacturing	64.17358491	14.6723063		

\*\*\*Significant at 1% level

to perceived performance, satisfaction with the team, and team viability. Cohesiveness can increase financial performance (Smith et al., 1994) and improve team decision making under time pressure (Zaccarro et al, 1995). Similarly, in a knowledge intensive industry, autonomy and external knowledge can complement each other for teams to reap the benefits of both and mitigate the risks. Özaralli (2003) has concluded that a transformational leader or a competent manager can enhance subordinates' self reported empowerment & autonomy and that the more a team's members experience team empowerment, the more effective the team will be. All the six dimensions of

team effectiveness are significantly and positively correlated with each other, the correlation coefficient ranging from 0.46 to 0.65. Hence, any intervention to increase one of the dimensions of team effectiveness is likely to increase the other dimensions too.

**The more a team's members experience team empowerment, the more effective the team will be.**

Further, task clarity has been observed to be closely linked with professional support and managerial competency. Fauske and Schelble (2002) have

Table 4 Correlation Analysis between the Variables under Study

	Team Effectiveness						
	Task Clarity	Cohesion	Autonomy	Confrontation	Support	Collaboration	Accountability
Communication	-0.00576	-0.05598	-0.039125	-0.06099638	0.016383	-0.035613766	-0.0914**
Openness	0.011306	-0.04179	-0.028692	-0.047896881	0.015293	-0.033535737	-0.10141**
Professional Support	0.1192***	0.040851	0.05514	0.04912127	0.10698**	0.033194759	-0.01085772
Managerial Competence	0.09544**	0.053382	0.04728	0.09178**	0.00499	0.033687329	-0.05140045

\*\*\*Significant at 1% level of significance, and \*\* significant at 5% level of significance

found in their study that lack of task clarity results in the loss of almost one third of valuable team meeting time. Our finding on the linkage between professional support and task clarity converges with the results of Conley et al. (2004) who have also found interrelationship between organizational support, task clarity and work team effectiveness in the context of teaching profession. Managerial competency is the capability of a manager to craft organization vision, communicate the vision to employees and empower and lead them for its attainment (Westley & Mintzberg, 1989)

This also include creation of a beneficial work environment ( Hambrick and Mason, 1984). Competent manager provides task clarity to team members. Ringer (1999), for instance, postulated that in a team environment there should be role clarity between leaders, co-leaders and other team members, otherwise, during the task-performing act the focus will be more in achieving role clarity than the task itself. Confusion and ambiguity of role clarity affect adversely team effectiveness. He also emphasized that ability in establishing with the group the primary task is the core competency of a leader or manager. We have also found that confrontation as a dimension of team effectiveness is related to managerial competency. Vilkinas and Cartan (1993) have identified that one of the core competencies of a manager is the role of a facilitator who builds a team, encourages participative decision making and manages conflict. Conflict management has a direct, positive effect on team cohesion (Tekleab et al., 2009)

**Conflict management has a direct, positive effect on team cohesion.**

Surprisingly, communication and openness were found to have inverse relationship with ac-

**The main problem in virtual team is the de-contextualization of communication which sometimes disrupts cultural convention.**

countability. One of the reasons can be that many of the contemporary teams are virtual working teams especially in the case of IT sector. Interpersonal trust was found to be lower for this sector in all the four dimensions, including communication and openness. In the case of virtual community the internet or the online media also becomes a significant social actor (Friedman et al., 1999). Online media has increased the frequency of communication over space and time. But, in the absence of face to face interactions, onus is on the leader or manager to facilitate the development of good will among individuals and institutions in the virtual team (Friedman et al., 1999). The main problem in virtual team is the de-contextualization of communication which sometimes disrupts cultural convention. Further, Jarvenpaa and Leidner (1998) have found that virtual team working in projects may develop swift trust which does not last longer. Trust, cohesion, team identity have been identified as the challenging factors for virtual teams by many researchers (Kirkman et al., 2002). Wilson et al. (2006) have concluded through content analysis of literature that computer-mediated teams can develop same level of trust as face-to-face team over a span of time. Richer media such as audio-video media can enhance the intensity of trust,

but there would still be delayed trust and fragile trust (Bos et al., 2002).

### Conclusion

Team effectiveness and interpersonal trust are of paramount importance to an organization even more than the financial performance. There is no significant difference in the perceived team effectiveness between the information technology and manufacturing sectors. However, cohesiveness and autonomy were reportedly lower in both the sectors, which can be increased with higher managerial competency, organizational or professional support and task clarity. With intervention of computer aided media, there is increased level of communication and openness but decreased level of perceived accountability and security. Though the dimensions of interpersonal trust were reported to be lower in the case of employees from IT sector, for better understanding of trust level of teams, future researchers may consider task features of the teams such as level of interdependency, complexity of the task, autonomy, quality expectation, work cycle, procedural requirement as well as team structure and team composition. Other important factors that can be considered are organizational culture, tenure of the team since formation and tenure of the members in the team and in the organization.

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