The Impact of Transformational leadership, Climate and Trust in Cross-Functional Teams

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Abstract

Research on the effects of organizational leadership and trust in cross-functional teams has been neglected. Cross-functional teams are becoming the norm, especially, those firms that integrate resources from across the globe. Each team has a leader, not in a technical sense; rather, one who builds the climate and fosters trust to create a positive environment for work teams – with an outcome of increased performance, and innovation. The data was collected using survey instrumentation, while the analysis called for regression models to test the hypotheses. With there being a limited amount of literature that examined the effects of trust as [moderator] and climate as [mediator] on cross-functional teams, this paper bridged the gap by conducting a quantitative study that confirmed the positive effect that transformational leadership and trust both have on a cross-functional teams.

Keywords: Cross-Functional Team, Transformational Leadership, Org Climate, Trust
1. Introduction

Current research has overlooked the impact of leadership, climate, and trust in cross-functional teams (Schneider, Brief, and Guzzo, 2008; Holland, Gaston, and Gomes, 2000). The purpose of this quantitative study is to test the impact of transformational leadership on cross-functional teams. The independent variable, transformational leadership, is defined as members that display respect, loyalty, admiration towards the leader and members, which motivates members to do more than they expected to do; moreover, leaders engage members through charisma, individual consideration, and intellectual stimulation (Yukl, 2006; Bass, Waldman, Avolio, and Bebb, 1987). The dependent variable is cross-functional teams, which is defined as a group that works together on projects, or new development initiatives that span beyond the traditional boundaries of the organization (Zolin, Hinds, Fruchter, and Levitt, 2004; Jassawalla and Sashittal, 1999). This study is significant due to the advent of the internet, increasing competitive organizational pressures, that is of course, the effects of globalization and speedy innovation, organizations are using cross-functional teams more than ever.

The research conducted included a literature search on three variables which are presented in the study with (TL) as the independent variable; (PosCFT) as the dependent variable (OC) as the mediating variable; (Tru) as the moderating variable. The databases were searched using key words from the variables chosen for this study. This study acknowledged the lack of information concerning trust and organizational climate impact on cross-functional teams. Organizations use cross-functional teams to innovate new products, develop new product lines, and to gain greater comparative advantages; therefore, cross-functional teams are in demand, if organizations want to compete. Mayer, Davis, and Schoolman (1995) stated that “A diverse workforce is less able to rely on interpersonal similarity and common background and experience to contribute to mutual attraction and enhance the willingness to work together” (Berscheid & Walster, 1978; Newcomb, 1956, Mayer et al., 1995). Currently, the amount of literature that discusses the impact of leadership, climate and trust on cross-functional teams is sparse (Webber, 2002; Wei and Morgan; Dionne et al, 2004). Therefore, this study examined the literature on the foresaid variables through a positivist approach using quantitative data and survey instrumentation. Thus, the objective of this study was to determine if transformational leadership makes a positive impact on cross-functional teams when medicated by climate and moderated by trust. Put simply, the researcher wants to know if team members produce faster, efficiently, and are able to take on projects with increased production beyond what was originally thought by the team. This paper includes the following sections: literature review of the topic and variables. The researcher proposed a
theoretical model, hypothesis, methods, research design, sample respondents, instrumentation, procedure, analysis, results, and conclusion.

2. Literature Review

This literature review examined the body of literature relating to research conducted on cross-functional teams. In doing so, all the current literature on theories, frameworks, and empirical research about transformational leadership, organizational climate, trust, and the effect on cross-functional teams are presented in great detail. The literature was primarily found through a number of databases and books that have articulated these variables and their relation to cross-functional teams. Therefore, the researcher focused the search on the words: teams, climate, and trust to find more information. The studies that were found were related to cross-functional teams and transformational leadership, also studies that either directly or indirectly discussed how climate and trust affected cross-functional teams. As literature was found in the various databases, they were disregarded if there was a lack of sufficient research and analysis concerning the variables.

2.1 Cross-Functional Teams

Cross-functional teams are used for a number of reasons within organizations, such as: new product orientation, re-engineering, and making improvements to existing products or services. The members of cross-functional teams share common goals who must hold each other accountable, regardless if the cross-functional team is face-to-face or geographically dispersed (Zolin, Hinds, Fruchter, & Levitt, 2004). Upon meeting for the first time, cross-functional team members rely on perceived trustworthiness when evaluating how their co-members deliver (Zolin et al., 2004).

Troy, Hirunyaawipada, Paswan (2008) studied the relationship between integration of cross-functional teams and new product success. This research used variables such as product effectiveness, and market performance in determining key divers for organizational product success (p. 133). This study purports how cross-functional integration in an organizational sense has an advantage over non-integrated teams. Integrated teams have an advantage because of the increased frequency of communication between members, which helps when developing new products (p. 133). Communication in this study is called information sharing, where members of teams voluntarily share knowledge about products, this leads to greater product knowledge, consistency among decisions made throughout the product development phase (p. 133). The significance of this study revealed the importance for leaders of cross integrated teams to know that cross-functional integration can be more strongly or weakly related to success (p. 138) The researchers noted that “as we expected, the cross-functional integration–new product success relationship was stronger when integration occurred at the team level than when it occurred at the organizational level” (p. 138). Along the same lines,
cross-functional integration- new product success relationship was stronger when member shared information amongst the team (p. 138).

Love, Rooper, and Mangiarotti (2006) used a super modularity approach in capturing how cross-functional teams in Germany and the U.K worked through the innovative process in manufacturing plants (p. 1). While performing this research they found that cross-functional teams showed promise in areas of innovation, lean production, and continuous product improvement (p. 2). The researchers compared both countries because “The UK-German comparison is of particular interest both because of short comings in UK national innovation performance, differences in the nature of innovation activity in the two countries (e.g. Finegold and Wagner, 1998; Herrigel, 1996), and the marked institutional and organizational contrasts between the two countries (e.g. Finegold and Soskice, 1988; Dore et al., 1999; Culpepper, 1999; Love and Roper 2004) (p. 2).

In this research the importance of communication and knowledge sharing is stressed. While the importance of participation in group’s communication and goals are equally stressed, because participation has a positive impact on innovative outputs (p. 5). However, one of the concerns of the research was effects of using a cross-functional team at different phases of the innovation process; moreover, this aspect has held much scrutiny in regards to the difference between the U.K and German manufactures (p. 6). German innovation and production systems have focused on (DQP) diversified quality production, mainly on generating improvements of existing products, rather than make new products (p. 5).

Love et al., stated that, “the UK innovation and production system has been characterized by its dependency on fickle capital markets, short-term business objectives and a more opportunistic (or entrepreneurial) approach to innovation (p. 6). Their research suggested that cross-functional teams in the U. K are more intense than those in Germany resulting in increased creative innovative outputs (p. 7). The cross-functional team pattern and system is different than that in Germany, mainly, due to the culture and social norms that hinder the adoption of a more flexible internal cross-functional system in the German social structure (p. 7). The U.K has a greater market orientation, which makes their innovative approach in cross-functional teams more flexible (p. 7). This study is significant because it explored how culture of a team and market orientation has bearing on the innovativeness of cross-functional teams.

2.2 Transformational Leadership

Webber (2002) stated that “very few researchers have tackled trust at the team level of analysis; rather, there is a robust amount of literature at the individual level (p. 201). Webber explained the production pitfalls that are inherent in cross-functional team building, because most CFT’s are not able to work collectively and are without effective leadership (p. 204). Webber (2002) noted how diversities such as gender, and different backgrounds, are
considered unknowns and treated within the CFT as such (p.205). In CFTs trust seems to be most relevant once a project has come to completion, which is a result of dependability between team members (p. 206). Leaders’ [in CFTs] actions are to be taken prior to the formation of the team, in order for the team to have the expectation to trust and develop working relationships (p. 207). Also, leaders of cross-functional teams have the ability to select team members, which is critical to harmonious relationship, which is often overlooked (p. 208). Leaders in teams are charged with responsibility of managing and resolving conflict, something that is apparent in new heterogeneous teams. Leaders in cross-functional teams are responsible in presenting a clear vision, one that each member can view their own contribution to the team’s success (p. 210).

Uhl-Bien and Graen (1992) created a team making model that purported the usefulness of mutual trust in developing inter-dependence and reliance with the leader and other team members (p. 239). The authors argued that “The increasing use of these project teams by modern organizations, however, calls for theory development in this area” (p. 2). Uhl-Bien and Graen noted that the team-making model, as a framework, described the influence of variables when team building has been achieved. This model does not include trust as a proponent to increase the team moral or effectiveness. The integration of trust means that the model of team making is changed from the traditional style of management, which operates as by authority only, but instead seeing the need of authority given to a project leader. The project leader does not need be a technical expert, rather a leader in the aspect of developing trusting relationships within the team. The researchers purport that “coordination and facilitation of these projects requires the use of “leadership,” where teamwork effectiveness is based on persuasion and incremental influence about the utility of achieving group goals (p. 227). Therefore, cross functional teams, out of necessity, requires leadership to alter the climate of CFT’s who are having trouble engaging in the otherwise risky dependence on other team members. What they have put together in this model showed that leaders build conditions for productive and trusting conditions in cross-functional teams by allowing openness and acceptance between group members (p. 238). Due to the complexities of problems that teams face, members must go beyond the simple interaction among the other participants. Teams are able to do this, by transforming the team at the team level, by instilling trust in each other and being committed to pursuing team goals not their individual goals (p. 231). Influential leaders, as Uhl-Bien and Graen puts it, are to invest in relationships that transforms self-interest to team interest, this is done by the use of leadership through influence. The researchers make it clear that the type of leadership used in cross-functional teams are those that have skills to persuade and influence (p. 238 ) The researchers refer to
the team making model when pointing out how the transformation of a cross-functional team develops over time. Uhl-Bien and Graen (1992) explained the following:

The model is based on the premise that effective leadership, which must ultimately occur at the group level, evolves over a life cycle and can transform a group of acquaintances performing only their role-specified duties into an integrated team of teammates (p. 236).

Effective leaders with influential abilities (Uhl-Bien and Graen, 1992) are considered strong traits when leading cross-functional teams. These traits bridge gaps in teams by fostering values in team trust and commitment (p. 236).

Jassawalla and Sashittal (1999) purported how critical implementation of trust-building in cross-functional teams is a benefit to the team, especially, when integrating skills and working collectively to pursue organizational goals (p. 50). What Jassawalla and Sashittal have uncovered in their research is the importance of forming high performance cross-functional teams. Leaders of teams are the driving force in the cohesiveness and collaboration between members, being that members come from different technical backgrounds. Therefore, it’s a challenge disassociating from old habits, developing new theories of work and team, and appreciating other member’s specialties (p. 52). Jassawalla and Sashittal (1999) explained that members are not individuals in a cross-functional team; rather, “members contribute equally to team decisions, share equally in the performance of new product task and take equal ownership of the teams outcomes” (p. 53). The researchers found in this study that bridging the gap between initiation and collaboration teams must transition by developing intense and productive exchanges between members. Not to mention, all members must have a shared understanding and take ownership in decision making. When the cross-functional team acculturate themselves, through transformation, the group’s adoption of new behaviors within the cross-functional team began to flourish (p. 55).

Morgeson, DeRue, and Karam (2010) focused on the role of the leader in fostering team success, and goal completion by satisfying critical team needs (p. 3). The role of the leader, as they explained, starts with team building activities, which they broke down into two terms: (1) transition phase, and (2) action phase (p. 3). According to Morgron et al., (2010) “In the action phase, teams perform work activities that directly contribute to goal accomplishment” (p. 3) The action phase is suitable for discussion in this paper, because, leaders who are able to implement trust results in members taking action, involving others in their work processes, and hold others accountable for group outcomes. Throughout the transition phase and action phase, members challenge each other with distinctive psychological needs that must be met. Morgeson et al., stated that “Needs arising during the transition phase include establishing a team charter where overall objectives are outlined, setting goals, developing positive team
norms, deciding on a task performance strategy, developing a shared understanding within the team, and becoming clear on the distribution of knowledge within the team” (p. 4).

Transformational leaders appeal to followers’ moral values and ethics; they do this with a clear vision in reforming organizations (Yukl, 2006). Transformational leaders in cross-functional teams provide vision and direction for the team, by setting standards for relationships, and acknowledgment that everyone in the team is *beholding* to each other. Yukl explained through, “transformational leadership, the followers feel trust, admiration, loyalty, and respect toward the leader, and they are motivated to do more than they originally expected to do” (p.262). The three types of transformational behavior are described by (Yukl, 2006) as, idealized influence, intellectual stimulation, and individualized consideration (p. 262). Yukl (2006) the new addition to the three dimensions of transformational behavior: inspirational theory, where leaders influence through modeled behavior and the use of symbolism (p. 263). Modeled behavior is observable in face-to-face cross-functional teams; rather, in distant cross-functional teams the notion of observable influence diminishes. In geographically dispersed cross-functional teams, intellectual stimulation and symbolism are both ways to influence members in feelings of connectivity and trust. Intellectual stimulation increases creativity in followers, and increase self efficacy in members of cross-functional teams (Yukl, 2006, p. 264).

Podsakoff et al., (1990) study examined how impact of transformational leadership on citizenship behaviors in subordinate’s attitude results in trust in teams. The research measured six transformative leader behaviors that attribute to trust and citizenship behaviors:

1. Articulating a vision
2. Providing an appropriate model
3. Fostering the acceptance of group goals
4. High performance expectations
5. Individual support
6. Intellectual stimulation

A transformational leader in this study was viewed as positive and, thus is the catalyst that leads increased employee satisfaction. Podsakoff et al. (1990) stated “virtually all models of transformational leadership postulate that transformational leaders enhance followers’ work attitudes and satisfaction (p. 109). Enhanced positive satisfaction is displayed through extra-role behavior, which closely aligns with organizational citizenship behavior (p. 109). The structural equation model was used in examining the effects of trust, satisfaction and citizenship behavior; in order to determine whether they are directly or indirectly influence transformational leadership in organizations.
Dionne, Yammarino, Atwater, and Spangler (2004) posited that leader’s impact on teams duly influenced outcomes such as: motivation, intellectual stimulation, positive cohesion, and inspiration (p. 177). Not surprisingly, the researchers agreed that, “evidence suggests that transformational leadership and team performance may be a fruitful area for exploration” (Dionne et al., 2004, P. 178). However, this research rest upon literature of previous research, with an established linkage between transformational leadership and team performance. What is explained and investigated is the “black box, “described as the leadership as it is applied inside the team. The internal view of the effects of leadership, or the “black box” is the level of cohesion in a team. The teamwork process, stated in this research is said to be helpful with commitment, less absenteeism and high involvement in the group activities (p. 181). Cohesion mediates transformational leadership in relationships with relationship building between members and performance (p. 182). According to Dionne et al (2004) who suggested that influence and motivation on the part of the leader has a positive impact on the teams’ vision. This creates positive behaviors involving leaders and members in cross-functional teams.

**H1: The relationship between transformational leadership and cross-functional teams are stronger when there is a trusting relationship between members.**

### 2.3 Organizational Climate

Ekvall and Ryhammer (1998) generated and collected data from a Swedish University with results on climate and how it was influenced through leadership on campus with faculty and staff. The researchers explained that “it is almost self-evident and no surprise to common sense that leadership processes such as power, as it is a social process itself and the social climate develops as social process” (p. 126). On the Swedish University campus, the climate was based on creativity and innovation, but they found that climate was still influenced by leadership. The schools leadership did not increase productivity, or increase continuous improvement like some organizations outside of education, but showed that climate was still a major factor. The research purport that leadership style did not yield specific outcomes such as inputs and outputs, but there was a significant correlation when the climate was altered; therefore, leaders are essential climate builders within any organization (p. 127)

Wei and Morgan (2004) researched China’s market orientation success, which was conducted through qualitative fieldwork investigating climate supportiveness. The researchers noted that the drivers of success in new product orientation in a supportive climate was firms behaviors and employee perceptions, were the most important drivers of climate supportiveness that led to new product performance in Chinese firms. The researchers developed a hypothetical model that linked market orientation and organizational climate supportiveness resulting in new product performance (p. 374). Because of the link between
market orientation and climate supportiveness, the researchers were able to identify that supportiveness of climate was the most important link to new product success in China (p. 376). However, through their research, they were able to make a correlation between organizational climate and a firm’s performance (p. 376). Firms that have a supportive organizational climate, the peers view each other to be supportive of each other, which forms a strong connection between members in an organization (p. 378). Strong connections based on supportive climate enables employees to communicate across organizational functional areas. Wei and Morgan (2004) asserted that “supportiveness of organizational climate is not a factor that previously has been identified explicitly as an important driver of market orientation in a new product context in Western countries” (p. 385). Typically managers look at improving the flow of products and product performance, but the outcome of this research would suggest that managers pay closer attention to the organizational climate and the perceived supportiveness (p. 384).

Parker et al. (2003) research examined the relationship at the individual level – the employees’ psychology factors (p. 389). Also, they examined the individual level climate perceptions and their outcomes with regard to employee motivation, attitudes and performance (p. 389). The climate perception at the individual level can predict job related outcomes such as on the job accidents, financial performance, team performance and customer satisfaction. The researchers, in essence, relate that there are important effects of employee perceptions of organizational climate, such that perceptions of climate can be used as a diagnostic tool for organizational improvement (p. 391). Parker et al. (2003) stated the two approaches to organizational climate, which are subjective and objective (p. 391). From a subjective approach, the group members understand and share their experiences of organizational events. Thus, taken the objective approach, climate is then the property of the organization, as such; the employee perception is a description of either an organizations strategic or operational functioning (p. 391).

Figure 1: The effects of climate perception and work outcomes

Source: Adopted from Parker et al 2003
Parker et al. stated that, “the effects of psychological climate perceptions on effort and performance were mediated by job involvement” (p. 394). What provided the strongest relationship between employee and job is the perception of the employee of their job and perceptual view of their leaders’ capabilities. Parker explained that, “Overall, it appears that employees’ psychological climate perceptions have stronger relationships with their work attitudes than with their motivation and performance” (p. 403).

**H2: The relationship between transformational leadership and Cross-functional teams is stronger when mediated by positive organizational climate.**

**2.4 Trust**

Zolin et al., (2003) research explained and advocated for the need for trust in geographically dispersed, face-to-face, and virtual teams (p. 2). In this research trust is defined 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 that other party “(p. 2). They explained that more than ever before, organizations together are working on projects and procuring talent from across the globe to find diverse skill sets that are not found internally (p. 3). Also, it’s probable that cross-functional and geographically dispersed teams only meet face-to-face once throughout the duration of the project or work assignment. Zolin et al. (2003) explained that, “initial perceptions of trustworthiness are particularly important in cross-functional, geographically distributed work, although research is needed to draw comparisons with traditional work environments” (p. 5). Members of cross-functional teams are often working individually on sub-task, which other members of the team are relying on experienced members to be able to complete their task. There are times where members on the same team have conflicting task, goals, skills, and professional loyalties that have the ability of causing role conflict within the team (p. 5).

Geographically dispersed teams that use technology as their only median of interaction, are aware that it has its disadvantages, such as communication barriers, and opposing perspectives. Unfamiliar with members’ abilities and motives can possibly create a level of risk between members, especially, when the incentive to trust another is based on the completion of projects and task (p. 6). While risk is a huge factor involved in building a trusting environment, it is the members to accept the inherent risk. Zolin et al. (2003) stated that “many scholars argue that risk is a necessary pre-condition for trust” (p. 5). In conclusion, Zolin et al., (2003) explained that more research is needed to examine how trust impacts cross-functional, face-to-face and geographically dispersed teams (p. 21). The results stemming from this research that leaders should note is that trust can be increased by building rapport early in the forming stage of the cross-functional team (p. 22) Also, Zolin et al. (2003)
noted to create an environment conductive for member to assess and evaluate trustworthiness (p. 22).

Costa (2002) conducted research in a social care institute in the Netherlands that focused on measuring and analyzing trust within teams relating to team performance (p. 1). Continuance with an organization rests on employee’s commitment and satisfaction often times resulting in trust within teams (p. 2). Costa (2002) purport “Attitudinal commitment is viewed as a positive attitude towards the organization, since it reflects the extent to which individuals come to identify with the goals and values of the organization and want to maintain their membership to the organization” (p. 3). However, on the other hand, Costa (2002) speaks of continuance commitment, which is explained as, calculative attitude that is based solely on economic reasons and is the overwhelming reason for working in the team (p. 4). In the same vein, it is explained that low levels of trust results in members sharing less information and ideas with one another. A low level of trust in cross-functional teams is less personable, and a control over work task tends to increase (p. 4). In this study it was revealed that “High trust within teams indicates lack of stress between members, high satisfaction with the team, commitment to the team, and high perceptions of task performance” (p. 9). This study have shown that trust is a determining factor and important in a functioning organization; therefore, trust is not the solution to all problems in the organization, but does help increase production and decreases absenteeism (p. 9).

Sako (2006) explored the concept of trust in relation to motivating for increased and quality performance from team members, but unwittingly, posed a question that asked; if there is no trust in an organization, how can a leader create it. The research was conducted through the framework of an automotive parts supplier in countries such as United States of America, Europe, and Japan (p. 2). Sako infer that trust is a big proponent in building partnership, strategic alliances, and trading networks (p. 3). This study attributed trust to the success of many institutions in Japan and Germany, mainly for implementing trust into the climate or the organization. Implementing organizational climate changes, such as: goodwill trust and competence trust, instead of contractual trust, is said to be of more benefit, thereby, creating a sense of trust and connectidness (p. 3). This research related trust to a form of hierarchy in an organizational system, which has the propensity to create opportunistic behavior. Opportunistic behavior causes organizations and teams to produce safeguards, in order to force a trusting climate. More often, trust decreases the need for safeguards; therefore, organizations are able to incorporate inter-organizational trust, which creates continuous learning (p. 4). Sako (2006) explained how trust is a governance tool as well, and the effects of trust have created costs reduction activities in some organizational cross-functional teams (p. 10).
Braun et al. (2013) study fills a partial gap in the team-based literature by analyzing (TL), trust as it relate to team performance [see figure 1]. They gathered a sample of 360 employees from 39 academic teams. This study purport that (TL) has an impact at the team level of analysis (p. 271). It is also expressed by Braun et al. that, “while research on trust in leader-follower relationship flourished, effects of trust among team members have been ignored,” according to (Lau & Linden, 2008, p. 1130). It was explained in this study that trust originates from three factors: ability, benevolence, and the integrity of the trustee (p. 273). The researchers posited that (CFT) that have a (TL) will achieve higher level of performance, and the perception of the leader has an impact as well (p. 273). Data was collected by an instrument called the MLQ 5x short developed by (Bass & Avolio, 2000) that consist of a 5-point Likert scale ranging from 1 (not at all) to 5 (frequently, if not always). The study concluded with a confirmation that all hypotheses were tested and found to be significant. It was noted that they agree that (TL) was positively correlated with trust amongst team members (p. 279).

**H3: The relationship between transformational leadership and Cross-functional teams is stronger when moderated by trust.**
The proposed model represents the outcomes based on the moderating and mediating variables and their relationship with the independent (TL) and dependent variable (CFT). The model suggests the moderating variable, trust, and the mediating variable organizational climate does positively impact cross-functional teams.

3. Methodology

This research used survey design to obtain data from respondents. The rationale for using survey methodology is to generalize from a sample to a population. Participants were protected with confidentiality; therefore, participants’ responses in no way have their names match up with their survey. The researchers made it mandatory to mail their informed consent forms separately from their questionnaires (Caban et al. 2011). The researcher wanted to ensure the instrument was reliable and valid, so there was a pilot study for the questionnaire. The pilot consisted of the first phase of ensuring construct validity. The pilot respondents were located in the United States and comprised of face-to-face teams of both male and female employees. The sample is administered by using the random sampling technique.

3.1 Research Design

The research used a quantitative survey design method to generalize to a sample and make inferences about the attitudes and behaviors of the general team populations (Creswell, 2009; p. 146). The designs used determined correlation and relationship between independent, dependent, moderating and mediating variables. The survey collected data using a questionnaire consisting of questions that were presented to members in cross-functional teams in two international organizations. The researcher has access to names of the participants for the survey, which will allow for single-stage sampling (Creswell, 2009; p. 148). The email that was sent to the participants went out once from the researcher’s computer. In the body of the email the description of the study which was being conducted and why; plus, a statement given from the teams management agreeing to conduct the study. This design of the email indicated and explained to participants how the surveys were to stay anonymous. In addition, no responders were dialed to their telephone number and

3.2 Sampling

This study used a simple random sample technique. The locations of the sample participants used in this research are from the same organization that had multiple locations throughout three continents: North America, and Europe which ensured a global perspective in the sample, being that this research issue is apparent in most organizations. The gender, ethnicity did not play a major role in our sample; however, respondents must be an active cross-functional team member with a minimum of five years with the organization. Half of the participants were leaders of cross-functional teams and the other half were team members. The sample had no age requirements, with the exception that employees were the legal
working age and able to work in an organization. In some instances, the legal working requirements varied, so this standard working age is based on United States workplace legal requirements.

The surveys were in the native language of the participants, with a non-English option only in paper form of the survey. The non-responding participants were notified by email two days after the due date asking for a response to the survey. The research data sample followed a single stage sampling procedure, because the researcher had access to a list of employees as they were assigned to their cross-functional teams, and the team leaders (Creswell, 2009; p. 148). The obtained sample respondents were not stratified, only because, the study focused on team and transformation of the organizational climate, and trust; thus the gender women and men were of no importance. The researchers anticipated at least a 70% response rate, which would be the acceptable survey amount for this study. Valle and Avella (2003) conducted a similar study involving leadership and cross-functional teams, they received a sample of 125 usable surveys, but their goal was 1,139. Hair et al. (2010) informed how sample size has the direct impact on the statistical power of multiple regressions, and that fewer than 30 observations are appropriate for a simple regression analysis with a single independent variable (p. 174). However, since this study had only one independent variable, and required more than 30 observations, it is feasible to require a sample size of 60-70 respondents at the significance level $\alpha = .01$ (Hair et al. p. 174). Of course, Hair et al. (2010) informed that the desired level of observations is approximately 15 to 20 observations (p. 175).

### 3.3 Instrumentation

The MLQ was used in Avolio, Bass, and Jung (1999) when developing the Bass six-factor leadership model (p. 448). Added to the questionnaire is the Organizational Climate Measure (OCM) an instrument derived from (Quinn and Rohrbough1981, 1983) competing values model (p.384). The (OCM) instrument measured organizational climate of the cross-functional team. The scale of the (OCM) contains “acceptable levels of reliability” and the “instrument has sound psychometric properties and provides researchers with a robust means for assessing 17 dimensions of employee perceptions of their work environments” (Patterson et al., 2005; p 398). Trust is measured using a self-reporting 7-point likert scale used by Costa (2002). The instrument has 7 scales ranging from (1) completely disagree to (7) completely disagree. Trust is measured with four scales: propensity to trust (7 items); perceived trustworthiness (8 items); cooperative behaviours (8 items); measuring monitoring behaviours (3 items) (p. 5).

Bass, Waldman, Avolio, and Bebb (1987) used five scales from the MLQ to measure transformational leadership, which is adopted in this study. This instrument shows the
frequency they observed in behavior of the designated leader in scale ratings from 0 = “not at all” to 4 = “frequently.” The following questions were adapted to measure transformational leadership:

1. Transformational Leadership
   - Individualized Consideration “Gives personal attention to neglected members”; “gives newcomers a lot of help.”
   - Charisma “I am ready to trust his/her capacity to overcome any obstacle”, Makes me feel good to be around him/her.”
   - Intellectual Stimulation “Enables me to think about old problems in new ways”, “has forced me to rethink some of my own ideas which I had never questioned before.”

The organizational Climate measure (OCM) was used in a study conducted by Patterson et al (2005). This instrument consists of seventeen scales, response scales range from 1=“Definitely false”, 2=“Mostly false”, 3=“Mostly true”, 4=“Definitely (p. 405). This scale has been tested with large samples from 55 manufacturing organizations. In previous research the OMC was conducted in six organizations with more than 500 employees, which a random sample was implemented. The researchers received 60 percent of the workforce to complete this questionnaire (p. 388).

2. Organizational Climate
3. Reflexivity “There are regular discussions as to whether people in the organization are working effectively together.”

Supervisor Support “Supervisors show an understanding of the people who work for them.”

Integration “Collaboration between departments is very effective. Cook and Wall created an instrument in their research that maintains construct validity and had a pilot study. The questionnaire was administered to 390 participants in study number one, and 260 participants in study number two. All three scales were reduced in length after analysis of the first pilot study, then trust and organizational commitment scales received their second standardization run in the second study (p. 43). The scoring is an un-weighted sum of responses for each item in the scale and subscale, while the response scale for trust ranges from 1 – 7.

4. Trust at Work
   “I can trust the people I work with to lend me a hand if I need it.”
   “Most of my workmates can be relied upon to do as they say they will do.”
   “I have full confidence in the skills of my workplace.”

Ghobadi and D’Ambra (2012) used the coopetitive model of knowledge sharing to explain forces behind high quality knowledge sharing in cross-functional teams. Each item has multi-item scales derived from previous pilot studies. Seven point Likert Scale was adopted with anchors ranging from strongly disagree (1) to strongly agree (7) and a semantic differential scale was incorporated from very low (1) to very high (7). Prior to using this
study, the researchers tested the conceptual basis in the target sample; also the content was validated in previous studies (Haas & Hansen, 2007; Joshi et al., 2007; Li & Hsieh, 2009).

Cross-Functional Team(s)

High-Quality Knowledge Sharing “…s were satisfied with the quality of knowledge being shared among themselves”

Cooperative Task Orientation “…Integrated their activities to ensure better attainment of the project outcomes.”

Cooperative Communication “…representatives regularly discussed common problems.”

3.4 Procedure

The participants are not compensated for completing the survey. The survey questionnaires are emailed to each employee with the permission of the acting leader of the team. The samples surveys were thus collected randomly, where the researcher had a list of names in an excel file. Emails were sent to the participants through random selection of names in the name database of leaders and team members who met the sampling criteria. Included in the email containing the survey, are instructions listing: how to return the email to the researchers email; Instructions for submitting consent form separately from questionnaire; and verbiage on the reasons for the study (Whittington, Goodwin, and Murray, 2004; p. 597).

The surveys did not need coded for matching, because this study did not examine for a dyadic relationship; rather, team interaction. Being that there were no time zone differences, the time of the study last for twenty four hours eastern pacific time. This research procedure used cross-sectional surveying because the data from all participants were captured within two days.

The researcher could have reinforced non-respondents by pulling other random participants until there is enough of a sample to generalize to a population. The 24 hour turn-around for participants to return their surveys decreased the amount of non-responsive participants. The researchers estimated that out of the list of 100 hundred willing participants, that they receive 100 fully completed surveys. As surveys are returned to the researcher, they are checked for completeness. The email that is sent to participants had a direct phone number to a translator to answer questions regarding transferability of languages [only if they were unable to read or speak English]. Non-responders were emailed with a short survey; and a message that asks questions to generate an idea as to if their responses would have made an impact to the overall study. Once surveys were collected, the researchers sent respondents thank you letters, and information describing the reason for conducting the study.

4. Analysis

The research used the hierarchical moderated regression and provided descriptive research data with an addition of moderated and mediated variables with predictive outcomes.
According to Frazier, Baron, and Tix (2004) who study had similar moderating and mediating variables, in which, this study the researcher used this unique effect of the independent variables to be determined ahead of time such as (Girden, 2001; Frazier, 2004), and can add variables in the particular order (p. 130). They also stated that the R² changed when effects of different variables are added to the regression analysis. Therefore, Frazier et al. (2004) explained in their study, the outcome variables are regressed on the predictor variable establishing an effect on the mediator. It is suggested that, the outcome variables are regressed on both the moderator and predictor variable- to test if the relatedness of the mediator on outcome. This study takes it a step further in showing the relation between predictor and outcome by exploring the Z score. The z score, when tested should be 1.96 (Frazier et al, 2004, Girden, 2001) which the effect is significant at the .05 level (p. 128). This study has one independent variable; thus no concern about multicollinearity, because of over correlated variables (Girden, 2001, P. 132). There are two types of analysis proposed for his study: Regression Model and Pearson Coefficient (r). The data that is derived from the respondent’s surveys are entered in the SPSS software. The SPSS software is statistical software that allowed the researcher to run test on the interval data by inserting them in a data tabulation sheet. The SPSS software has functions for the researcher to use regression models.

The research data is analyzed for relationships between variables. To find the relationship of the variables, the researcher conducted a hierarchical multiple regression, which test the effects of both moderating and mediating variables. To find the strength in relationship, the Pearson’s correlation coefficient (r) measures the closeness between the independent and dependent variables. Once the survey data has been entered into SPSS, the coefficient correlation gives numerical output ranging from 0 to +1. If a coefficient is -1 then the variables are negatively correlated, and a relationship of +1 the variables are positively correlated, and no correlation when the data shows 0. Using the technique, hierarchical regression analysis (Pallant, 2010) explained when adding variables to a regression analysis, add in steps and blocks in a predetermined order. Starting with the dependent variables then add the independent variable. Therefore, the researchers can see if the block of (IV) is able to explain the dependent variables. The output, however, shows the R2 value, R2 change value, sig value, and lastly, the ANOVA table, which explains the model as a whole (p. 166).

The data displays consist of all the variables and statistical outcomes on a table which is readable and logical. Mean standard deviation of all variables along and the correlation matrix to show the testing of the variables, are also to be displayed on a table. The researchers are expecting a score on Cronbach alpha of at least .70 (Nunally & Kline, 1999). However, the study conducted by Ucar et al. (2012) had an alpha over .70 and the study was found to be
valid and reliable (p. 204). Pihie, Sadeghi, and Elias (2011) also employed Cronbach alpha for testing reliability and stated that .93 score shows reliability.

5. Results

The questionnaire was completed by 100 employees resulting in a 100% response rate, which was above the researcher’s expectation and of those responses collected in previous literature. The sample size can be justified at 100 useable responses to run the needed analysis, based on studies that had similar amount of samples that ran similar statistical analysis (Mehra et al. 2006; Valle and Avella, 2003; Charles, Wearing & Mann, 2000) The pilot test was conducted with the questionnaire to a group of employees who worked in teams within a large manufacturing organization in the Raleigh, North Carolina area. The pilot test respondents pointed out two questions that were difficult to answer, so the researcher removed them from the instrument. The questions were sent to the pilot teams via email, and were returned via email to the researcher. The researchers compared the responses from those of the pilot study. Where the pilot study received a response rate of 85% which was what the researchers expected because of the cyclical nature manufacturing. There were no significant differences between the pilot responses and the study responses; however, the researchers were able to confirm the questions on the measure were valid and reliable. The variables were then tested for correlation amongst each other by using the bivariate correlation test in SPSS.

![Fig 4: Correlation of variables (Moderating Effects)](chart.png)

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Cross-Functional Teams</th>
<th>Transformational Leadership</th>
<th>Trust</th>
<th>med</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>1.00</td>
<td>.561</td>
<td>.493</td>
<td>.549</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>.561</td>
<td>1.00</td>
<td>.721</td>
<td>.928</td>
</tr>
<tr>
<td>Trust</td>
<td>.489</td>
<td>.721</td>
<td>1.00</td>
<td>.899</td>
</tr>
<tr>
<td>med</td>
<td>.548</td>
<td>.929</td>
<td>.999</td>
<td>1.00</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>.</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>.000</td>
<td>.</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Trust</td>
<td>.000</td>
<td>.000</td>
<td>.</td>
<td>.000</td>
</tr>
<tr>
<td>med</td>
<td>.000</td>
<td>.000</td>
<td>.000</td>
<td>.</td>
</tr>
</tbody>
</table>

The correlation table shows the correlation between the Independent variable (Trans L) and Moderator (Trust) variables. The chart show the variables that were significantly correlated at p>.005. Pallant (2010) stated that the regression analysis explored the predictive ability of a set of independent variables on dependent measures (p. 104). The researcher used the method called hierarchical multiple regression analysis where the variables are entered in
sequential steps, listed as: (IV) Transformational Leadership, (DV) Cross-Functional Teams, (Mediator) Organizational Climate, and (Moderator) Trust. As the researcher put them into the SPSS system we can see from figure two a number of outputs.

Fig 5: Descriptive Statistics

<table>
<thead>
<tr>
<th>Model</th>
<th>R</th>
<th>R Square</th>
<th>Adjusted R Square</th>
<th>Std. Error of the Estimate</th>
<th>Change Statistics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>R Square Change</td>
</tr>
<tr>
<td>1</td>
<td>.561</td>
<td>.315</td>
<td>.308</td>
<td>.7835</td>
<td>.315</td>
</tr>
<tr>
<td>2</td>
<td>.574</td>
<td>.330</td>
<td>.316</td>
<td>.73404</td>
<td>.015</td>
</tr>
<tr>
<td>3</td>
<td>.580</td>
<td>.336</td>
<td>.316</td>
<td>.73429</td>
<td>.006</td>
</tr>
</tbody>
</table>

a. Predictors: (Constant), Transformational Leadership
b. Predictors: (Constant), Transformational Leadership, Trust
c. Predictors: (Constant), Transformational Leadership, Trust, mod

According to the model summary, the R2 on the first model showed the first block is 31% of the variance. The second bloc has an R2 as making up 33% of the variance. The second block variable organizational climate was added, therefore, making up 32% of the variance. Also, see the sig F change of model one and model two showing the significance level: model 1 F(df) 1, Sig .000>.05 and model 2 F(df) 2, Sig .145<.05 which is not significant. However, the researcher was able to show further variable non significance once the addition of the moderators and mediators were added to the regression model.

Figure 6: ANOVA

<table>
<thead>
<tr>
<th>Model</th>
<th>Sum of Squares df</th>
<th>Mean Square</th>
<th>F</th>
<th>Sig.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Regression Total</td>
<td>24.575</td>
<td>1</td>
<td>24.575</td>
<td>45.078</td>
</tr>
<tr>
<td>Residual Total</td>
<td>53.425</td>
<td>98</td>
<td>0.545</td>
<td></td>
</tr>
<tr>
<td>2 Regression Total</td>
<td>25.735</td>
<td>2</td>
<td>12.867</td>
<td>23.881</td>
</tr>
<tr>
<td>Residual Total</td>
<td>52.265</td>
<td>97</td>
<td>0.539</td>
<td></td>
</tr>
<tr>
<td>3 Regression Total</td>
<td>26.239</td>
<td>3</td>
<td>8.746</td>
<td>16.221</td>
</tr>
<tr>
<td>Residual Total</td>
<td>51.761</td>
<td>96</td>
<td>0.539</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>78.000</td>
<td>99</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a. Dependent Variable: Cross-Functional Teams
b. Predictors: (Constant), Transformational Leadership
c. Predictors: (Constant), Transformational Leadership, Trust
d. Predictors: (Constant), Transformational Leadership, Trust, mod

The ANOVA was applied to the variables in the study (TL, CFT, OC, and Trust) to determine significance. ANOVA was run by using one independent and dependent variable, and moderating and mediating variables. The variables were all gathered from the same
“source” organization and all were active employees. The ANOVA tested for significance, the researchers concluded with a coefficient table that explained.

**Figure 7: Coefficients Chart**

<table>
<thead>
<tr>
<th>Model</th>
<th>Unstandardized Coefficients</th>
<th>Standardized Coefficients</th>
<th>t</th>
<th>Sig</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Constant)</td>
<td>.823</td>
<td>.90</td>
<td>4.327</td>
<td>.000</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>.647</td>
<td>.096</td>
<td>.561</td>
<td>6.714</td>
</tr>
<tr>
<td>(Constant)</td>
<td>.661</td>
<td>219</td>
<td>3.023</td>
<td>.003</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>.500</td>
<td>138</td>
<td>.434</td>
<td>3.619</td>
</tr>
<tr>
<td>Trust</td>
<td>.224</td>
<td>153</td>
<td>.176</td>
<td>1.467</td>
</tr>
<tr>
<td>(Constant)</td>
<td>.101</td>
<td>.619</td>
<td>.104</td>
<td>.870</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>.819</td>
<td>.367</td>
<td>.711</td>
<td>2.292</td>
</tr>
<tr>
<td>Trust</td>
<td>.513</td>
<td>.325</td>
<td>.403</td>
<td>1.529</td>
</tr>
<tr>
<td>N</td>
<td>-148</td>
<td>153</td>
<td>-4.74</td>
<td>-.967</td>
</tr>
</tbody>
</table>

*Dependent Variable: Cross-Functional Teams*

**Figure 8: Mediator Effects**

<table>
<thead>
<tr>
<th>Correlations</th>
<th>Cross-Functional Teams</th>
<th>Transformational Leadership</th>
<th>Organizational Climate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pearson Correlation</td>
<td>Cross-Functional Teams</td>
<td>1.000</td>
<td>.561</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>0.561</td>
<td>1.000</td>
<td>.295</td>
</tr>
<tr>
<td>Organizational Climate</td>
<td>.275</td>
<td>.295</td>
<td>1.000</td>
</tr>
<tr>
<td>Sig. (1-tailed)</td>
<td>Cross-Functional Teams</td>
<td>.000</td>
<td>.000</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>.000</td>
<td>.000</td>
<td>.001</td>
</tr>
<tr>
<td>Organizational Climate</td>
<td>.003</td>
<td>.001</td>
<td>.001</td>
</tr>
<tr>
<td>N</td>
<td>Cross-Functional Teams</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Transformational Leadership</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
<tr>
<td>Organizational Climate</td>
<td>100</td>
<td>100</td>
<td>100</td>
</tr>
</tbody>
</table>

The correlation chart from the hierarchy regression displays the effects of the mediator on the IV. The sig value is showing to be significant at P > .003. The scales in this study were deemed by Cranach’s alpha .626 not to be reliable after deleting two items from the scale. This is according to a similar study conducted by (Podsakoff, Mackenzie, Moorman, and Fetter 1990), where Cronbach’s reliability score was .78 to .92 respectfully. From the statistical analysis, both the ANOVA and the correlation matrix that trust is a factor that has impact on cross-functional teams; however, the statistical charts showed that organizational climate does not correlate with the independent variable, therefore resulting in low correlation.
6. Conclusion

The objective of this paper was to show impact on transformational leadership on cross-functional teams, mediating role of organizational climate, and the moderating role of trust. In order to meet this objective, the researchers used instrumentation (MLQ and OCM) that measured the effects of transformational leadership when moderated and mediated by trust and climate. The data supported the notion that Cross-functional teams are impacted by transformational leadership at the team-level. Transformational leadership enhances the underpinning of team cohesiveness at the team level and it creates the ability to produce efficiently multiple projects, or to enhance the team’s creativeness when working on new product development with members that have many specialties. The data suggest that climate has bearing on team ability to increase cohesiveness with members and leaders of all cultures. Thus, lead to the fact that, some of the cultures in the sample respondents, come from countries that are considered either individualistic or collectivist, which could have implications of the effects of transformational leadership to emerge within cross-functional teams. Cultural impact indeed had an effect on the work and team attitudes, which can be found in the research as (Parker et al. 2003) pointed out.

Thus, it should be acknowledged that cross-functional teams must embrace leadership to emerge as it is needed to set the pace for further project completion and team longevity. Without the addition of trust and transformative leadership styles engaging with members, the team becomes unfocused and moves along without a clear direction (Zaccaro & Marks, 1999; Marquarot & Horvath; 2001). Surprisingly, in this study climate was not a major factor in considering the overall effectiveness and cohesiveness of leading a cross-functional team. But, however, climate does have impact on the individual level that allows members to be more creative and innovative, which is an indication of effective leadership. Under the roof of a strong and positive climate, members have to trust each other – which mean understanding ones capabilities, work ethic, personality and such. Trust can be cultivated by many techniques, one of which is knowledge sharing and personal integrity.

Teams are able to implement trust into the team by knowledge sharing with one another on various points of either interest or skills. The other is for member to meet with each other periodically, thus creating an informal or formal relationship between members, that way they are familiar with each other’s styles of work. In order for these actions to take place, it is the leaders’ responsibility to create an atmosphere that fosters the achieving of group team goals. Transformational leaders have such impact in cross-functional teams because; they are able to increase members’ job satisfaction which is helpful for team development (Long et al. 2014). Transformational team leaders display to followers the challenges of work, and inspire members to increased participation by engaging them and thus showing the meaning of work.
In the Long et al. (2014) study it was confirmed that transformational leadership was positively related to job satisfaction during change within the organization. Cross-functional teams are people grouped together to work on some change project and thus reliant on each other to stay for the duration of the completion of the project. Therefore, if a member is unhappy with group members it could cause contention or the replacement of a new member midstream. The importance of leadership in cross-functional teams, are there to continuously inspire a shared vision to cross-functional members. The data in this study aligns with thought, based on the evidence that leaders of cross-functional teams do: lead and encourage members; enable other to act; and motivate to produce new ideas (p. 121).

6.1 Discussion

This study brought to light how cross-functional teams are needed as organizations have pressure to produce faster, efficient, and globally. The response from the sample respondents would suggest that working with other members who do not understand all specialties from each member on their team, need to develop trust in a climate that supports team development and togetherness. Organizations need these global networks [CFTs] to form to coordinate and perform complex problem solving (Yukl, 2002, p. 320). That is why there is an increased need amongst cross-functional teams for a transformational leader who can build trust with the other members and project a vision for plans from start to finish. However, according to the results this study was significant in that it showed empirically that transformational leadership and trust are two correlating variables in forming a positive cross-functional team. Secondly, this is a vital area of study, because geographically dispersed teams [that could be cross-functional] are in demand due the surge of global business, and global hotspots connected via the internet. On that same global note, the researcher can attest that cross-functional teams are able to seamlessly engage in new product success and increase financial performance. According to recent literature, a new paradigm shift has occurred where leaders carry out leadership functions through a collective social process. Perhaps, an informal style of leading cross-functional teams is in order, which could shape and reinforce trust amongst members where the work is shared (Cullen, Francis, and Yammarino, 2014, p. 181).

References


