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Authors:

Dr. Gretchen A. Mosher,
Dr. Nir Keren,
Dr. Charles R. Hurburgh, Jr.

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ATMAE
1390 Eisenhower Place
Ann Arbor, MI 48108

www.atmae.org





Dr. Gretchen A. Mosher is an assistant professor in the Department of Agricultural and Biosystems Engineering at Iowa State University, where she earned

her BS, MS, and PhD degrees. Dr. Mosher's research focuses on the role of humans in quality and safety systems and best methods of measuring the risks humans bring to such systems. Currently, Dr. Mosher teaches courses in quality management, occupational safety, and senior capstone. Dr. Mosher was recently appointed Vice-President of the ATMAE Safety Division for a two-year term through the fall of 2014. Dr. Mosher may be reached at gamosher@iastate.edu.



Dr. Nir Keren is an Associate Professor of Occupational Safety at the Department of Agricultural and Biosystems Engineering and a Graduate Faculty in the Human

Computer Interaction program at Iowa State University. His research interest fall into two broad categories: safety decision making and harnessing incident databases to enhance loss prevention. In safety decision making, his interest is in developing naturalistic decision making models; more specifically, in developing predictive models for emergency responders' decision making under a variety of domains such as environmental constraints, organizational climates and cultures, and personal propensities. In the incident databases area, his interest is in quantitative risk assessment, risk analysis of transportation of hazardous material, and assessment of industrial safety performance.

Dr. Keren received his Ph.D. at Texas A&M University, College Station, Texas. He earned his B.S. in Mechanical Engineering and M.S. in Management and Safety Engineering, both from the Ben Gurion University, Beer-Sheva, Israel.

Employee Trust and Its Influence on Quality Climate at Two Administration Levels

By Dr. Gretchen A. Mosher, Dr. Nir Keren, Dr. Charles R. Hurburgh, Jr.

ABSTRACT

Quality and continuous improvement are important organizational goals for businesses which strive for excellence, yet the role of human perceptions in the success of such systems has been largely unexplored by previous research. Several factors are thought to influence the employee's viewpoint on quality climate within a work environment. One of these factors is the level of trust employees have in their management (organizational) and supervisory (group) personnel. This paper discusses the concept of quality climate and examines the relationship between perceptions of trust and quality climate at two administrative tiers. Employees from three facilities completed electronic questionnaires on perceptions of trust and quality climate at the organizational and group tiers. A positive significant relationship was noted between organizational trust and organizational quality climate and between trust at the organizational and group tiers. No significant predictive relationship was observed between group trust and group quality climate. Nor were quality climate perceptions from facilities with existing quality management systems found to be significantly different from those facilities without quality management systems in place. Data from the project suggest that perceptions of trust and quality climate are clearly related as are the trust perceptions at both organizational and group tiers. However, another observation was that the connection employees make with quality management is not evident at the group tier. Additionally, data collected in this project showed a clear disconnect between established quality management systems and employees' thoughts about quality. The role of employees in the development and implementation of quality management systems is not well understood, particularly as they relate to the relationship between supervisors and employees. Successful implementation of quality management systems will depend on increased knowledge of this area.

INTRODUCTION

Quality is an important operational goal for many firms. As quality processes improve, benefits such as reduced waste, lower costs, and increased firm performance are often noted (Sroufe & Curkovic, 2008). Although several researchers have noted the important role of employees in the effective imple-

mentation of quality systems, little research has examined whether human perceptions influence the successful implementation of workplace quality initiatives (Gadenne & Sharma, 2009; Fotopoulos, Kafetzopoulos, & Psomas, 2009).

Several factors are believed to influence the employee's relationship with a quality management system. Two of these factors will be explored in this research. The first factor is the level of trust employees have for their management (organizational trust) and supervisor (group trust). Little research has explored the relationship between employee perceptions of management or supervisors and quality outcomes (Evans, Michael, Wiedenbeck, & Ray 2005; Chrusciel & Field, 2003). Furthermore, quality management expert Deming (2000) placed much of the responsibility for quality within a firm on the management, viewing quality as a system controlled by management. Peterson (1998) and Gadenne & Sharma (2009) also suggest that trust and perceived management commitment to quality are central to building a system that promotes continuous improvement in quality processes.

The second factor to be examined in this research is the concept of quality climate. The factor is based on the safety climate measurement, which measures the shared perceptions employees have of the relative importance of safety policies, procedures, and practices as compared with other business goals (Zohar 2008). Safety climate has been explored extensively in the safety literature, particularly with regard to its relationship to employee performance (Cooper & Phillips 2004; Johnson 2007). Quality climate and its impact on employee behavior have been largely ignored by researchers even though employee participation, commitment, and training are considered substantial predictors of improved organizational quality (Gadenne & Sharma, 2009; Chrusciel 2004; Jackson, 2004).

This project examines the level of employee trust at two tiers of administration (the management and the supervisor) at three facilities which handle and process bulk materials. A survey instrument was developed from a validated safety climate survey to measure quality climate at the organizational (management) and group (supervisory) administrative tiers. In addition, employee perceptions of trust and quality climate were compared between organizations which had a formalized quality



Dr. Charles R. Hurburgh, Charlie to most everyone, is a native Iowan from Rockwell City (Iowa, USA). He continues to operate the family farm, and is a

Professor of Agricultural Engineering at Iowa State University. He has BS, MS, and doctorate degrees from Iowa State, and specializes in quality management systems with related traceability, measurement and sensor technologies. He is the author of more than 220 technical and general articles on grain quality, measurement science and grain marketing. Dr. Hurburgh manages the ISU Grain Quality Research Laboratory and the Extension-based Iowa Grain Quality Initiative. Dr. Hurburgh participates in European Union projects on GMO marketing and traceability. He also serves on the US Technical Advisory committees for two ISO working groups—traceability, and ISO 22000 food safety management systems and on several industry food safety/quality management groups. Dr. Hurburgh may be reached at tatry@iastate.edu.

management program in place (two of the three facilities) versus the facility which did not. Implications for management and supervisors conclude the manuscript.

TRUST AND QUALITY CLIMATE

In the workplace, trust has several important effects for all levels of personnel (Willems, Gallois, & Callan, 2003). Researchers have identified trust as an important factor in several positive organizational outcomes, including high quality communication, performance levels, constructive citizenship behaviors, increased problem solving, and employee cooperation (Whitener, Brodt, Korsgaard, & Werner, 1998). In addition, employee trust levels have been found to be dependent on a variety of factors, including prior beliefs and the level of risk perceptions (Albrecht, 2002; Poortinga & Pidgeon, 2004; Slovic, 1993). However, even when considering multiple contributing factors, employee trust levels are fundamentally based on the employees' perceptions of the management and supervisor (Albrecht, 2002; Slovic, 1993).

The definition of trust is complex, with multiple meanings and constructs identified in the literature. One of the constructs often used to describe trust is consistency (Levin, 1999). Alternate words to label consistency include predictability, reliability and past behavior (Currall & Epstein, 2003; Mishra, 1996; Gabarro, 1978). Dependable and consistent behavior is grounded in a correspondence between the actions and the words of management and supervisory personnel across both events and experiences over a period of time (Shockley-Zalabak, Ellis, & Winograd, 2000). Mayer, Davis, and Schoorman (1995) note that consistent behavior can be positive or negative; therefore, a trusting relationship must include more than just consistent actions from management and supervisors. Even so, consistent behavior and similarity between words and actions helps lower the perceived vulnerability of the employee, increasing his or her trust levels. As might be expected, unpredictable behavior and discrepancies between words and actions generally decrease trust levels in employees (Shockley-Zalabak et al., 2000; Levin, 1999).

Credibility is another important construct of trust identified by several researchers (Levin, 1999). Many equivalent words can define credibility (integrity, honesty, moral character, fairness, etc.), but employees generally associate high credibility with a uniformity between words and deeds (Whitener et al., 1998). Although credibility is similar to consistency, alignment of the administrator's actions and words is not the only property of credibility. Mayer et al. (1995) proposes that a key additional point is the correspondence between the values and benefits of the trustor and the trustee. Without an agreement on values and benefits, the actions

of the trustee may be perceived as only consistent rather than credible. Only with both consistency and credibility in place can a trusting relationship be firmly established between employees and their administrators (Levin, 1999).

QUALITY MANAGEMENT SYSTEMS AND EMPLOYEES

Previous research on the use of quality management systems within a bulk material handling and processing facility demonstrated several benefits including increased operating efficiency, a better ability to meet customer specifications, and tighter security controls (Laux, 2007; Laux & Hurburgh, 2010). However, Davis (2004) and Willem (2004) note that a lack of employee motivation could limit the realization of organizational benefits. Programs pushed from the top down are especially vulnerable to failure (Sroufe & Curkovic, 2008).

Researchers also note that one of the most difficult elements of a quality management system to both manage and control are personnel actions (Henson & Heasman 1998; Azanza & Zamora-Luna 2005; Luning & Marcelis 2007). Accordingly, Gadenne and Sharma (2009) conclude that "soft factors" such as management philosophy, employee training, and employee involvement are extremely important components in maintaining a competitive edge using quality management systems. Jackson (2004) also found that increased "quality commitment" from employees enhanced quality management initiatives.

Luning and Marcelis (2007) acknowledge that although technical actions typically dominate quality management models, a consideration of only the technical actions is an overly simplistic approach. They list several "human dynamics" which impact the quality management model, including tasks such as handling out of tolerance products, corrective actions, critical decisions, and appropriate action points. While previous research (Laux, 2007; Laux & Hurburgh, 2010; Thakur & Hurburgh, 2009) has illustrated several key benefits for the management of quality factors in a bulk materials handling and processing environment, the role of employees on the quality system in this environment remains largely unexamined.

TWO-TIERED TRUST AND QUALITY

Several researchers have observed that managers and supervisors affect employee perceptions in a workplace environment, but they do so in different ways (Patterson et al. 2005; Simard & Marchand 1995; Thompson, Hilton, & Witt, 1998; Zohar 2008). Previous research has examined the relationship between perceptions of organizational climate, the employee's relationship with the management

team, the employee perceptions of group climate, and the underlying expectations and understandings concerning the employee's relationship with his or her supervisor (Thompson et al. 1998; Zohar 2008). However, little previous research has examined the association between organizational and group tier perceptions of trust and quality.

Zohar and Luria (2005) present a multilevel model of safety climate based on previous work by Zohar (2003). The model links some variation in climate to the dynamics of the work group. This model assumes that employees are continually presented with a large number of inconsistent and contradictory demands from both management and supervisors. A second assumption is that although the management may create and develop policies and regulations, the daily implementation of the resulting actions and tasks are left to the supervisor.

Zohar (2008) adds another important component of the two-tiered system, which aligns closely with previous findings by Zohar and Luria (2005). Zohar (2008) differentiates between formal policies created by management and actual policies enforced by supervisory staff. Zohar (2008) also believes the reason for the difference between the formal and enforced policies has to do with the realities of most workplaces. Formal policies rarely cover every possible situation and because of this, supervisors are forced to make choices on how and which policies can reasonably be enforced. The result is often a significant difference between organizational level (management) climate and group level (supervisory) climate. These differences have the potential to play a large role in the perceptions employees have of quality and ultimately of the implementation of a quality management system within the workplace (Psomas, Fotopoulos, & Kafetzopoulos, 2010; Zohar, 2008).

Furthermore, Thompson et al. (1998) note that managers and supervisors are involved in the setting the direction of employees, but in different ways. Managers largely determine the degree of politics in the organization's work climate. The personnel actions of the supervisor may then in turn reflect the climate under which he or she is operating. In both cases, Thompson et al. (1998) define politics as a negative attribute because it suggests a lack of fairness, a negative view of perceived justice, and an unfair distribution of incentives from the employee perspective.

This work examines the association between employee trust at the organizational and group tiers with a two-tiered quality climate. A secondary investigation examines whether facilities with an existing quality program observe enhanced employee perceptions in terms of quality climate. The primary interest of researchers was the amount of variance accounted for by the independent variables (organizational and group quality climate) in

the dependent variable (trust) when demographic variables were controlled. The secondary interest was to gauge the influence of an existing quality management program on employee perceptions of quality. To these ends, the following research questions were explored in this work:

1. Does the level of organizational and group trust predict the organizational or group quality climate within a bulk materials handling facility?
2. Does the relationship between trust and quality climate differ among organizational and group tiers within a bulk materials handling facility?
3. Do facilities with established quality programs in place have a more positive organizational and group quality climate measure than those facilities which do not have an established quality program?

METHODOLOGY

Participants in the study were employees of three Midwestern bulk materials handling facilities. Employees who worked within the handling and processing operational areas were invited to take part in the study. Of the 410 invitations, 197 responded. Of these 197, 177 provided usable data, for a response rate of 43 percent. In discussion of data and results, organizational level factors refer to trust and quality climate for the management and group level factors refer to the trust and quality climate for supervisors.

The survey instrument to measure trust had been previously validated (Levin, 1999) and the instrument used to measure quality climate was modified from a validated safety climate instrument (Zohar & Luria, 2005). The trust survey instrument was developed and validated by Levin (1999) using the responses of 601 employees from 7 sample groups to measure behavioral trust. The 40 item questionnaire asked employees to rate the frequency of behavioral actions by their management and supervisors on a 5 point scale (1 = always or almost always; 3 = occasionally; 5 = rarely or never). The quality climate survey instrument was adapted from Zohar and Luria's (2005) organizational and group level safety climate survey. The safety climate instrument was validated at two levels with 3952 employees from 36 industries. In the quality climate instrument, 16 items were used for management and 15 were used for supervisors. Employees were asked to rate their agreement with statements concerning their view of quality climate at their company. Using factor analysis, one universal quality climate factor was extracted for management and one for supervisors (Bryman & Cramer, 2009). A copy of the quality climate instrument is shown in the Appendix.

All data-gathering instruments were presented to employees in a web-based format. Questionnaires were presented in random order and questionnaire items were also randomized. No personal identifiers were linked with the identification numbers to eliminate the possibility of tracking participants' responses and to encourage candid responses.

Variances for each group were tested using the Levene's Test for Equality of Variances and were found to be statistically equivalent. Therefore, equality of variances was assumed. The majority of the raw data were parametric; therefore, the t-test for independent samples was used to analyze differences in response means between work sites. The work of deWinter and Dodou (2010) supported this decision. They examined the difference in Type I and Type II error rates when using a t-test and a Mann-Whitney-Wilcoxon test. They found the tests had equivalent power except in cases where data were severely skewed and no significant increases in the rates of Type I or Type II errors were noted. Given the sample size of 197, the authors felt the data were parametric, and were confident in using a t-test to measure the differences in group responses.

Non-parametric methods were used in one case where the independence of the responses could not be assumed. The responses concerning employee perceptions of trust and quality climate at the organizational and group level are not considered to be independent responses. It is obvious that a person's response about trust in their management could be related to how they perceive trust in their work group supervisor. For this reason, when comparing the responses of workers at all work sites concerning levels of trust and quality climate, the Wilcoxon Signed Rank Test was used.

RESULTS

The sample consisted of 142 males and 35 females for a total number of 177. The age of participants ranged from below 21 to over 61, with the most common response (nearly 58%) being 31-50 years of age. Most participants belonged to one of two groups: those with less than three years on the job, (38.2%) and those who had been with the organization more than 10 years (34%). Nearly all (98%) had completed high school, with the majority (62%) completing at least some college.

Bi-variate two-tailed correlations were calculated to illustrate the relationship between organizational and group variables. A correlation matrix reporting all values is shown in Table 1. Scale reliabilities were calculated using Alpha's Cronbach and these values are shown in parentheses on Table 1.

Strong positive and significant relationships were noted between organizational trust and organizational quality climate and between organizational and group trust. A significant and positive relationship was also noted between quality climates at the organizational and group tiers. The relationship between group trust and group quality climate was positive but not significant, yet the relationship between group trust and organizational climate was both significant and positive. No significant relationship was observed with organizational trust and group quality climate.

To determine if employee responses for trust perceptions and quality climate differed at the organizational (management) level as compared with the group (supervisory) level, a Related Samples Wilcoxon Signed Rank test was performed. The method tests a null hypothesis that the median of differences between organizational responses and

TABLE 1. CORRELATION MATRIX OF ORGANIZATIONAL AND GROUP TRUST AND QUALITY CLIMATE

	Organizational Trust	Group Trust	Organizational Climate	Group Climate
Organizational Trust	1 (0.97)			
Group Trust	0.730**	1(0.96)		
Organizational Climate	0.655**	0.608**	1.(0.97)	
Group Climate	0.125	0.130	0.242**	1(0.97)

^an = 177; **p<0.01

TABLE 2. TRUST AND QUALITY CLIMATE AT ORGANIZATIONAL AND GROUP LEVELS

Variable	Response mean ^a	P-value
Organizational Trust ^b	1.87	0.000*
Group Trust	1.76	
Organizational Quality Climate ^b	2.00	0.858
Group Quality Climate	1.98	

^aN=177; ^b1 = positive trust/quality; 5 = negative trust/quality; *p<0.05

group responses equals zero. Results generated from the Related Samples Wilcoxon Signed Rank tests are presented in Table 2. Results were equivalent when data were analyzed with a t-test for paired comparisons.

A significant difference between employee perceptions of trust at the organizational and group tiers was observed. Although these data indicate a significant difference between the mean scores for trust at the organizational and group levels, the practical significance of the finding is questionable as both represent high trust levels. No significant differences were noted in the quality climate between levels of administration.

Two-tailed two-sample t-tests were also conducted to compare employee responses to quality climate surveys at two levels of administration and in two groups – those from a facility with a quality management system in place and those working at a facility without a quality management system. Two of the three facilities participating in the study had quality management systems in place. The responses from these facilities were compared with the employee responses from the third location, which did not have a quality management system in place. Results for quality climate responses from employees at facilities with quality management programs and those from facilities without such programs are displayed in Figure 1.

No significant statistical differences were noted in the mean scores of employee responses for quality climate in facilities with an established quality management program versus those without a quality management program. This finding was observed

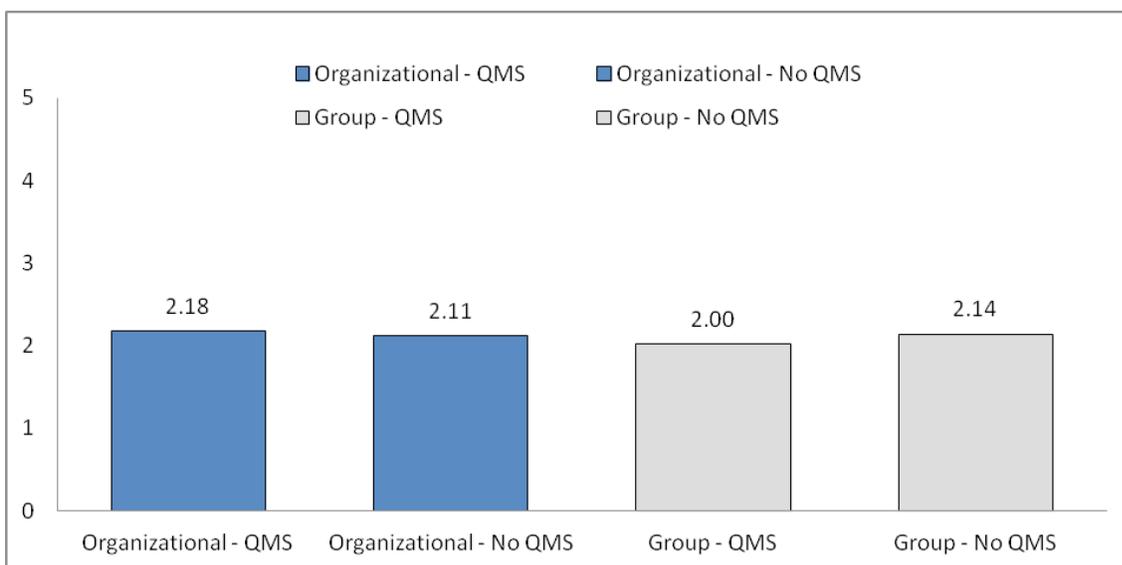
for both the organizational level and group level results. Group sizes were unequal in this analysis (QMS facilities = 53; non-QMS facilities = 124), however, deWinter and Dodou (2010) observed that the rate of Type I errors was very low, even in when sample sizes were unequal. The finding was especially true when variances between groups were equal, which was the case with this study.

DISCUSSION AND IMPLICATIONS

Several important findings emerged from this study. The first research question asked if trust at the organizational and group tiers would predict the responses of a two-level quality climate measure. The significant positive correlation found between organizational trust and organizational quality climate is notable in its strength, with quality climate responses explaining over 42 percent of the variance in trust responses.

The same results were not noted at the group level. More positive perceptions of group trust were not found to significantly predict a more positive group quality climate. This finding was unexpected, contradicting previous work on safety and other organizational climates (Evans et al., 2005; Patterson et al., 2005; Zohar, 2008). Although these data suggest that quality climate may be influenced by different factors than those which impact other organizational climates such as safety, an alternative reason could be due to the context of the work environment. In the bulk materials handling and processing environment, perhaps employees do not link their supervisors or their work group with a climate of quality. Instead, they associate quality climate and quality processes with management,

FIGURE 1. MEANS OF QUALITY CLIMATE RESPONSES AT ORGANIZATIONAL AND GROUP LEVELS



N = 177; 1 = positive quality climate; 5 = negative quality climate

following the line of thought offered by Deming (2000) and Wahid and Corner (2009).

As noted by Zohar and Luria (2005) and Thompson et al. (1998), supervisors have a different relationship with their employees than management typically has. Even so, the relationship observed between group trust and group quality climate illustrates the low connection employees have between their supervisors and their perceptions of quality, suggesting that employees perceive a small role for supervisors in the administration of quality processes. Yet, although management does play a large role in setting quality protocols and pushing through organizational changes which result from quality management systems, on a daily basis it will be the supervisors who implement the routine tasks and procedures. Given the daily interaction between most employees and supervisors, the influence of supervisors on employee perceptions of quality would seem to be more prevalent than these data demonstrate based on previous research findings (Thompson et al., 1998; Zohar & Luria, 2005).

To realize greater success with quality management systems in bulk materials handling and processing environments, a stronger role must be created for supervisors in the development and implementation of quality programs as well as educational intervention to enhance the perceptions employees have of quality at both the organizational and group levels. The daily interaction between supervisors and employees offers many opportunities for quality interventions. The supervisor could play the role of the quality “champion” identified by Chrusciel and Field (2003), enhancing existing quality programs and increasing the likelihood of successful implementation of a new quality management system. The multiple interactions supervisors have with their employees (Zohar, 2008) also provide the opportunity to set a strong model of quality for the work group, perhaps influencing employees to work with a greater emphasis on quality management.

The second research question asked whether trust and quality climate perceptions varied between administrative tiers. Although a significant difference was noted between trust perceptions at the organizational and group levels, the difference in response values is very small from a practical perspective. No significant difference was observed between the climate of quality at the organizational and group tiers. This finding was not unexpected, as organizational climate often is a predictor for group climate (Zohar, 2008; Thompson et al., 1998). Several researchers have proposed that quality programs tend to flourish under a strong management commitment (Gadenne & Sharma, 2009; Howard & Foster, 1999) and these data demonstrate the same phenomenon.

The third question examined whether trust and quality climate would differ between companies with a quality management system in place versus those without a formal quality program in place. Employee buy-in is an important part of the quality management process (Jackson, 2004; Chrusciel & Field, 2003), therefore, positive employee perceptions plays an important role in successful organizational change involving quality processes. The lack of a significant difference between trust levels at the bulk commodity handling facilities was not unexpected, given the homogeneity of the trust responses from each facility.

However, the failure to note a significant difference between quality perceptions is troubling from a quality management and organizational change perspective. In this case, the similarity of responses is not a positive finding. Chrusciel and Field (2003) listed user involvement and perception of organizational readiness as important and critical components of success when implementing new quality processes in an organization. When employees working in facilities with a quality management system fail to recognize the higher level of quality climate in their facility, the interpretation is that they are not receiving the quality message adequately from management nor is the “comprehensive communication” mentioned by Chrusciel and Field (2003) taking place with employees. When employees do not perceive quality to be a high level or connect it with their supervisor, the implication is that they will not take quality into consideration when performing daily tasks.

The disconnect employees feel in how quality management is conceptualized in their facility was also observed by Hassan, Hashim, and Ismail (2006). However, the group did find a significant connection between quality-certified facilities and those facilities not certified in the approach of employees’ quality orientation. No such finding was observed with the employees in this study. The reason for this is not entirely known, although the work environment could play some role. Bulk commodity handlers have not traditionally placed a great deal of time or monetary resources in managing quality optimization, choosing instead to simply comply with legal requirements and customer specifications (Laux, 2007). The data from this study indicate that the employees surveyed have an equally indifferent attitude about quality within their facilities as noted in Hassan et al. (2006).

LIMITATIONS AND CONCLUSIONS

This research has provided an impetus for further study on employee trust and quality climate. Trust was found to play a significant and positive role in quality climate at the organizational tier, following

Deming's (2000) thoughts on quality. However, the connection between the trust in supervisors and group level quality climate must be enhanced to provide sustained improvements in quality management. Further study is warranted to determine if this finding was isolated or if it is true in other work environments as well. Furthermore, facilities with quality management programs in this study seem to be failing at communicating the importance of quality to their employees and the outcomes of the employees' indifference from a quality perspective are unknown.

Several limitations of the research may curtail the generalization of these findings. The small sample size was cross-sectional and from a limited number of organizations in one type of work environment. Respondents volunteered for the study, introducing the possibility of selection bias. Moreover, the measure of quality climate could include constructs not included on the survey instrument. Although

the instrument was deemed reliable and valid, a survey instrument that is more specific to the work environment studied might measure the constructs of quality climate differently.

Workplace quality outcomes depend on management and supervisors and to a lesser extent, employees' responses to the objectives outlined by their management and supervisors. A better understanding of how employees perceive quality climate within an organization could play an important role in workplace quality initiatives in all work environments. The influence of trust, management commitment, and the role of the supervisor on quality management systems are all factors which need further study. An enhanced understanding of these factors has the potential to not only improve existing quality management programs, but also increase the likelihood of successful implementation of new quality management systems.

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APPENDIX

Organization and Group Level Quality Climate

Please answer the questions below by circling the number which best matches your opinion on the quality climate in this organization. **Mark your answers in the following ways: 1 = Strongly agree; 2 = Agree; 3 = Neutral; 4 = Disagree; 5 = Strongly disagree.**

Organizational-Level Quality Climate

Please answer the following questions about your organization's top management team.

Top management in this organization	1 = Strongly agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly disagree
React quickly to solve problems when told about quality issues.	1 2 3 4 5
Insist on thorough and regular quality audits and inspections.	1 2 3 4 5
Emphasize the importance of continuous quality improvement in each work area.	1 2 3 4 5
Provide all the means needed to perform jobs in a high-quality manner.	1 2 3 4 5
Are strict about quality requirements even when work falls behind schedule.	1 2 3 4 5
Quickly correct any quality errors no matter what the cost.	1 2 3 4 5
Provide detailed quality reports regarding work tasks and performance.	1 2 3 4 5
Consider a person's attitude toward quality when moving or promoting people.	1 2 3 4 5
Require each manager to help improve quality in his or her work area.	1 2 3 4 5
Invest a lot of time and money in quality training for workers.	1 2 3 4 5
Use any available information to improve quality protocols.	1 2 3 4 5
Listen to workers' ideas on continuous quality improvement.	1 2 3 4 5
Consider quality standards when setting production and speed schedules.	1 2 3 4 5
Provide workers with continuous feedback on quality performance.	1 2 3 4 5
Regularly hold quality awareness events (meetings, presentations, updates, etc.)	1 2 3 4 5
Give quality leaders the power they need to meet quality goals.	1 2 3 4 5

APPENDIX

Group Level Quality Climate:

Please answer the following questions about your supervisor or supervisors.

My supervisor(s) ...	1 = Strongly agree 2 = Agree 3 = Neutral 4 = Disagree 5 = Strongly disagree
Makes sure we all receive the means and support needed to meet quality requirements.	1 2 3 4 5
Frequently checks to see if we are all complying with quality requirements.	1 2 3 4 5
Discusses ways to improve quality with us.	1 2 3 4 5
Uses explanations (not just forced compliance) to improve product quality.	1 2 3 4 5
Emphasizes quality procedures when we are working under pressure.	1 2 3 4 5
Refuses to ignore quality requirements when work falls behind schedule.	1 2 3 4 5
Makes sure we follow all the quality procedures (not just the most important ones).	1 2 3 4 5
Insists we follow quality requirements when fixing equipment or machines.	1 2 3 4 5
Praises workers who pay special attention to quality.	1 2 3 4 5
Is strict about quality at the end of the day when we want to go home.	1 2 3 4 5
Spends time helping us learn to see quality problems before they arise.	1 2 3 4 5
Frequently talks about quality issues throughout the work week.	1 2 3 4 5
Insists we follow through on quality requirements even when it's inconvenient.	1 2 3 4 5
Is strict about quality protocols when we are tired or stressed.	1 2 3 4 5
Reminds workers who need them to work with quality in mind.	1 2 3 4 5