

Quality management and the work environment: an empirical investigation in a public sector organization

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Abstract

The integration of quality management initiatives, particularly total quality management (TQM), and ergonomics has received increasing attention from scholars and practitioners. Above all, the question of how TQM programs relate to ergonomic aspects of organizational design and culture is at the center of this discussion. This study examines how elements of a “typical”, Deming-inspired, TQM program in the public sector interact with the work environment. Elements of the TQM program were defined and measured using the Malcom Baldrige Award criteria. The specific elements examined were “Management Support of Quality”, “Information and Analysis”, “Human Resources”, “Processes and Quality Results”, and “Customer Focus and Satisfaction”. The relationship between these TQM elements and the work environment were defined through five separate hypotheses. The work environment was described by the constructs “Supervisor Support”, “Task Clarity”, “Task Orientation”, and “Innovation”. Data were obtained through survey questionnaires administered to employees of four departments in a municipal government organization. Results supported three of the hypotheses, but produced some unanticipated outcomes with regard to the other two. Namely, “Management Support of Quality” was significantly related to “Supervisor Support”, “Task Orientation”, “Task Clarity” and “Innovation”; “Human Resources” was significantly related to “Supervisor Support”; “Processes and Quality Results” was significantly related to “Task Orientation” and “Innovation”. Contrary to predicted “Information and Analysis” was negatively related to “Innovation”, and “Customer Focus” was unrelated to any of the outcome variables. The relationships between these TQM elements and work environment dimensions are discussed. Implications for TQM and ergonomic practice are analyzed, and directions for future research proposed.

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1. Introduction

Total quality management (TQM) is an approach for continuously improving the quality of goods and services delivered through the participation of individuals at all levels and functions of an organization (Pfau, 1989). TQM affirms a management philosophy based on process improvement using data, and builds upon involvement and participation from top management to the shop floor. TQM focuses on customer

orientation, comprehensive quality monitoring, and supportive management systems (Smith et al., 1989). TQM makes itself evident through an organization-wide shared belief in total customer satisfaction (Huq and Martin, 2000). This philosophy also requires cooperation between management and labor (Hackman and Wageman, 1995). Thus, TQM requires fundamental changes in every aspect of an organization: its workforce, its management, its structure, and its culture. TQM principles and practices have served also as basis for other process improvement initiatives such as Six Sigma (Caulcutt, 2001; Wiklund and Wiklund, 2002).

While TQM has been shown to be effective in many companies and industries (e.g. Douglas and Judge, 2001; Easton and Jarrell, 1998; GAO, 1991; McDonnell, 1992;

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Shortell et al., 1995; Terziovski and Samson, 1999), it is not easy to effectively initiate such an effort, implement its techniques, tools and principles, and institutionalize it within an organization. TQM is not simply a set of tools that can be used on an as-needed basis. As described by Caldwell (1995), “introduction of TQM does not create a conversion of Organization A to Organization A-plus-TQM, but rather it is a cultural transformation in which Organization A becomes a different organization, Organization B”. To be effective, TQM must pervade every aspect of an organization, and to operate effectively in the long run, it may require a radical change in management practice as well as in organizational culture and philosophy.

Not surprisingly, a growing amount of attention among ergonomics scholars and practitioners concerns whether and how human factors/ergonomics and TQM can be successfully integrated (e.g. Axelsson et al., 1999; Drury, 1997, 1999; Eklund, 1997, 1999). It seems clear, at least in principle, that the two are related and interact in a variety of applications such as inspection, process control, safety, and environmental design (e.g. Axelsson, 2000; Drury, 1978; Eklund, 1995; Rahimi, 1995; Stuebbe and Houshmand, 1995; Warrack and Sinha, 1999). There is some consensus that the form of this relationship is one in which “good ergonomics” (e.g., appropriate workstation, job, and organization design) leads to improved human performance and reduced risk of injury, which in turn leads to improved product and process quality. Eklund (1995), for example, found that the odds of having quality deficiencies among ergonomically demanding tasks at a Swedish car assembly plant were 2.95 times more likely than for other tasks. Interestingly, whereas there seems to be at least theoretical agreement on how ergonomics can improve quality, there is less agreement, and in fact much debate, over how TQM affects other (macro) ergonomic aspects such as the organizational design and culture (Abraham et al., 1999; Dean and Bowen, 1994; Detert et al., 2000; Eklund, 1997; Hackman and Wageman, 1995; Huq and Martin, 2000; Lawler et al., 1992).

There are at least two reasons for the debate over the effects of TQM on work environment issues. First, of the limited amount of TQM research that has been done, few have examined organizational outcomes related to the implementation of TQM (except for indirect measures of organizational performance). Second, the effects of TQM on the work environment are likely to depend on how institutionalized TQM practices are in a given organization. These two issues contribute to speculation over how TQM affects organizational and cultural aspects of the work environment. For example, TQM requires both continuous improvement and company-wide implementation of work standardization. One can argue that while continuous improvement is likely to promote creativity, work

standardization requires adherence to established procedures and leaves little latitude for ingenuity. This apparent contradiction makes unclear if TQM will result in an increased or decreased organizational emphasis on innovation.

2. Review of the literature

The available literature includes only a few studies that examine effects of TQM on organizational factors such as job design (Lawler et al., 1992; Victor et al., 2000). Nevertheless, TQM has implications for job and organizational design. Through the implementation of quality teams, jobs may be affected in several ways. Increased skill variety can result from both team activity and one's role within the team. Activities such as data collection and analysis, problem solving, information presentation to groups, and group decision-making are key elements in TQM-related teamwork (Hackman and Wageman, 1995; Lawler and Mohrman, 1987). These activities may not be part of workers' daily routines, and their roles may be different from their usual jobs, which increase skill variety.

However, among the limited number of studies assessing the impact of TQM on employee attitudes and the work environment, there are conflicting findings. Sommer and Merritt (1994) indicated that TQM had a positive impact on attitudes and organizational climate in a study conducted in a large hospital. The effects included reduced turnover and unexcused absenteeism, improved perceptions of collaboration between employees, reduced competition and conflict between workers, and increased job satisfaction and organizational commitment. Conversely, Lam (1995, 1996) assessed the impact of TQM in eight different organizations and found that not all aspects of job satisfaction were enhanced. According to Lam, even though TQM enhanced employee participation in decision making, respondents felt that it made the work more demanding in terms of load, skill, accuracy, and responsibility. Respondents indicated that TQM neither made their jobs more interesting nor resulted in a sense of achievement or recognition. Job autonomy was also perceived as being reduced under TQM.

Since TQM has become a widespread phenomenon, it is paramount that ergonomists learn how this management approach impacts the work environment. Ergonomists can increase their influence by recognizing opportunities created by a TQM program. In addition, an understanding of TQM can be used to make sure that psychosocial needs of workers are considered when TQM is being implemented. To this end, this study is an attempt to address the question: in what ways may TQM impact the work environment?

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