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An action-research based instrument for monitoring continuous quality improvement

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Abstract

Despite containing an extensive body of normative or prescriptive studies, quality management literature offers little by way of generally applicable guidance concerning how to measure or monitor the critical factors underlying strategic quality management initiatives, such as total quality management and continuous quality improvement. Although several studies have relied on survey data from a multiple set of sources to unearth models of such factors, they do not offer general guidelines to select factors appropriate in a specific setting. In this paper, in contradistinction to the multiple-source survey methodology, we take an action-research approach and present the findings of a contextually specific, single-site empirical research that we carried out at Lockheed Martin Tactical Aircraft Systems, in Fort Worth, Texas. We discuss the implications of our findings for extending our empirical understanding of the factors underlying strategic quality management programs and for the development of reliable and valid instruments to monitor them.

Keywords: Quality management; Continuous quality improvement; Survey instrument design; Measurement of perception of quality practices

1. Introduction

Continuous quality improvement (CQI) has emerged as a dominant theme for survival and growth in today's fiercely competitive business environment. CQI is at the culmination of a progressive transformation of quality management themes that has evolved through the stages of "quality by inspection," "statistical quality control (SQC)," "quality assurance (QA)," and "total quality management (TQM)." This quality transformation points to a fundamental shift that goes beyond the quality of products or services and focuses on quality improvement as a day-to-day mindset. CQI is a never-ending process that seeks to achieve defect-free, high quality products or services. Because CQI is an ongoing process, it is imperative that firms monitor the CQI program on a regular basis to ensure that it is working well and to continually identify areas for improvement.

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In order to effectively monitor CQI one needs a reliable and valid instrument to collect data on the factors underlying CQI. However, a review of the extensive literature on quality management reveals that, currently there is no theory to guide the selection of such factors. Consequently, a number of studies have endeavored to identify the critical factors of quality management and TQM using data collected from surveys (Saraph et al., 1989; Flynn et al., 1994; Black and Porter, 1996; among others). These are excellent survey-based studies, and careful attention has been given to ensure the reliability and the validity of the items included in the survey instruments used in these studies. Yet, the findings of the surveys have limited general applicability to guide the selection of the factors underlying quality management initiatives such as TQM and CQI because of several reasons. First, the basis for the choice of the preconceived factors is different across surveys. The survey in Saraph et al. (1989) was based on the normative prescriptions of the acknowledged quality experts or "gurus" while the survey by Flynn et al. (1994) focused on the practitioner and empirical literature on quality practice in the US and Japan. Second, the different surveys have focused on respondents at different levels. For example, while the survey by Saraph et al. (1989) focused on administrative and quality managers at the business unit level, the survey by Flynn et al. (1994) focused on respondents at the plant level. Taking a slightly different approach, Black and Porter (1996) relied exclusively on the Malcolm Baldrige National Quality Award (MBNQA) framework in selecting the critical factors for their survey of a sample of the members of the European Foundation for Quality Management. Third, surveys are based on the perceptions and the experiences of the respondents, which vary widely across industries, firms within industries, and functional responsibilities of respondents within the firms. However, since the adequacy of a CQI depends on perceptions and the experiences of the personnel at all levels and a variety of functional responsibilities within a single firm, the findings of the surveys have limited applicability in specific settings. Following the development of a very comprehensive survey-based instrument for use at the plant level, Flynn et al. (1994) expressed this concern succinctly. They state "Although we believe this to be a strength of the instrument, it also limits its usefulness, not permitting assessment of quality management strategy at the corporate and division levels, nor a comparison of the initiatives between various levels" (Flynn et al., 1994, p. 361).

It is thus clear that, since we do not as yet have a well-founded theory of quality management it is not feasible at this stage to develop a universally applicable instrument for monitoring quality management initiatives such as TQM and CQI. Nor can we find in the survey-based studies, a single "model" (i.e., a set of factors) that has established itself as a generally acceptable basis for CQI. This has meant a lack of easily applicable methods for identifying the key factors that are theoretically sound and empirically valid to monitor a CQI program. Further, since it is impossible to generalize the findings of the surveys conducted in diverse settings, we are in a dilemma that is aptly described by Miles (1979). Miles describes the frustrations of trying to codify diverse situations and concludes by asking: "what are the possible conceptual and organizational solutions to the steady tension between the unique, contextually specific nature of single sites, and the need to make sense across a number of sites? Must we trade close-up descriptive validity for accurate but 'thin' generalization?" (Miles, 1979, p. 599).

Embracing the spirit of this observation, in this paper, we present the findings of a context-specific, single-site "action-research" project we carried out in Lockheed Martin Tactical Aircraft Systems (LMTAS) in Fort Worth, Texas, that led to the development of a reliable and valid survey instrument to monitor the firm's CQI program. In presenting our action-research conducted at a single site, which is a departure from the traditional survey methodology, we are further motivated by assertive stance of the organizational theorist (Mintzberg, 1979): "Organizational theory has, I believe, paid dearly for the obsession with rigor. Too many of the results have been significant only in the statistical sense. What, for example, is wrong with samples of one? Should Piaget apologize for studying his own children, a physicist for splitting only one atom?" (Mintzberg, 1979, p. 583).