



The relationship between total quality management practices and their effects on firm performance

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Abstract

Recent research on total quality management (TQM) has examined the relationships between the practices of quality management and various levels of organizational performance. These studies have produced mixed results, probably because of the nature of the research designs used such as measuring TQM or performance as a single construct. Based on a comprehensive literature review, this study identifies the relationships among TQM practices and examines the direct and indirect effects of these practices on various performance levels. A proposed research model and hypotheses are tested by using cross-sectional mail survey data collected from firms operating in the US. The test of the structural model supports the proposed hypotheses. The implications of the findings for researchers and practitioners are discussed and further research directions are offered.

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1. Introduction

The barnyard rooster Chanticleer had a theory. He crowed every morning, putting forth all his energy, flapped his wings. The sun came up. The connexion was clear: His crowing caused the sun to come up. There was no question about his importance. There came a snag. He forgot one morning to crow. The sun came up anyhow. Crestfallen, he saw his theory in need of revision.

(Deming, 1993, p. 105)

In the late 1970s and early 1980s, previously unchallenged American industries lost substantial market share in both US and world markets. To regain

the competitive edge, companies began to adopt productivity improvement programs which had proven themselves particularly successful in Japan. One of these “improvement programs” was the total quality management (TQM) system. In last two decades, both the popular press and academic journals have published a plethora of accounts describing both successful and unsuccessful efforts at implementing TQM. Like Chanticleer’s theory, theories of quality management have been under revision ever since.

The early stages of empirical research in TQM have been almost exclusively limited to attempts at constructing instruments capable of measuring TQM practices as, for example, Saraph et al. (1989) have done, and with studies such as Garvin’s (1983) that compare TQM practices in Japanese and US firms. More recently, scholars like Mohrman et al. (1995) have channeled their research efforts into analyzing

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the relationship between practices of quality management and organizational performance on various levels. Recent studies such as the one conducted by [Das et al. \(2000\)](#) have started investigating both the relationships among techniques of quality management systems and the effects they have on performance.

These studies have produced mixed results. This failure to obtain consistent results could be due to three significant differences among studies in terms of research design issues. First, in some studies such as the one conducted by [Douglas and Judge \(2001\)](#), TQM is operationalized as a single construct to analyze the relationship between TQM and firms' performance, while others, [Samson and Terziovski \(1999\)](#) for instance, operationalize TQM as a multidimensional construct. Second, the levels of performance measured vary among the studies. Some studies operationalize performance only at operating levels as [Samson and Terziovski \(1999\)](#) do, while others like [Douglas and Judge \(2001\)](#) measure only financial performance; and still others as do [Das et al. \(2000\)](#), measure performance at multiple levels. Third, the analytical framework used to investigate the relation between TQM and performance also differs among the studies. In other words, when the data analyses are based on a series of multiple regressions ([Adam et al., 1997](#); [Mohrman et al., 1995](#); [Samson and Terziovski, 1999](#)) or correlations ([Powell, 1995](#)), the studies fall short of investigating which TQM practices have direct and/or indirect effects on various levels of performance. In short, comprehensive studies trying to identify the direct and indirect effects of TQM practices on performance at multiple levels are rather limited and fail to respond conclusively to the following research questions:

- What are the relationships among TQM practices?
- Which TQM practices are directly related to operating, market and financial performance?
- Which TQM practices are indirectly related to operating, market and financial performance?

This study investigates these research questions by using the data from [Kaynak's \(1997\)](#) study. This research contributes to the development of TQM theory by investigating the relationships between seven quality management practices and their effects on operating, financial, and market performance. While this study does replicate some earlier research, it is unique

in that the dimensions of the quality management practices investigated are extensive and firms' performance is measured at multiple levels. Replication research facilitates the goal of science, which is empirical generalization or knowledge development ([Hubbard et al., 1998](#)), and it is recommended in cases such as this "where different studies produced inconsistent results" ([Amundson, 1998](#), p. 355). This research is relevant to practitioners because the findings may reveal patterns in the implementation of TQM practices, which may provide significant information managers can use to solve implementation challenges and perhaps to improve performance. Moreover, the results of this study may provide support for continued implementation of TQM. The unsuccessful attempts have prompted criticisms of TQM in the popular press and caused some managers who might otherwise have had an interest in implementing TQM to question the wisdom of utilizing this management approach. But this, to quote an old but still relevant cliché, is throwing out the baby with the bath water. The remainder of this paper is organized as follows. A research model and related hypotheses are offered based on the review of the literature in the next section. [Section 3](#) describes the research methodology, including the construction of the instrument and measures, the survey procedure, the sample, and the tests for reliability and validity. [Section 4](#) presents the results of testing the structural model. The implications of the results for researchers and practitioners are discussed and validity of findings is reevaluated in [Section 5](#). The paper concludes with further research implications of this study.

2. Theoretical background

TQM can be defined as a holistic management philosophy that strives for continuous improvement in all functions of an organization, and it can be achieved only if the total quality concept is utilized from the acquisition of resources to customer service after the sale. TQM practices have been documented extensively in measurement studies as well as in the studies that have investigated the relation of TQM practices to various dependent variables. The TQM practices identified in measurement studies by [Saraph et al. \(1989\)](#) and those who have followed their example are summarized in [Table 1](#).

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