Journal of Operations Management 19 (2001) 269–285

JOURNAL OF OPERATIONS MANAGEMENT

www.elsevier.com/locate/dsw

Firm characteristics, total quality management, and financial performance

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Received 2 September 1998; accepted 27 May 2000

Abstract

This paper uses a sample of quality award winners to empirically test hypotheses that relate changes in operating income associated with effective implementation of total quality management (TQM) to various firm characteristics. The characteristics examined are firm size, the degree of capital intensity, the degree of diversification, the timing of TQM implementation, and the maturity of the program. We find that smaller firms do significantly better than larger firms. Firms that have won awards from independent award (a proxy for more mature TQM implementation) do significantly better than just supplier award winners. The evidence weakly supports the hypotheses that less capital-intensive firms do better than more capital-intensive firms, and more focused firms do better than more diversified firms. Finally, we do not observe any significant differences between the performance of earlier and later implementers of effective TQM.

The key implications of these results are that many organizational characteristics moderate the benefits of TQM implementation. Although not all of these characteristics are controllable by managers, managers must set realistic expectations for the degree of benefits from TQM. The results for size and capital-intensity validate the importance of TQM practices for smaller firms and environments that are more labor intensive. Investing to achieve a broader, deeper, and more mature TQM implementation (possibly by targeting an independent TQM award) should also result in higher benefits from TQM implementation. Furthermore, the results indicate that it is never too late to invest in TQM.

Keywords: Quality; Financial performance; Empirical research

1. Introduction

Recently, many researchers have examined the link between total quality management (TQM) and financial performance. Christiansen and Lee (1994), Ittner and Larcker (1996), Hendricks and Singhal (1997, 1999) and Easton and Jarrell (1998) provide evidence to show that effective TQM implementations improve long-term profitability and stock returns. Flynn et al. (1995a,b) report that higher intensity of TQM practices results in improved quality performance. The conclusion from these studies is that effective implementation of TQM improves financial performance.

This paper extends the existing research on TQM and financial performance by examining how the impact of TQM on financial performance is moderated by various firm characteristics. For example, the time and cost to implement TQM could vary across firms,

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0272-6963/01/$ – see front matter
PII: S0272-6963(00)00049-8

the extent of potential gain from implementing TQM could be impacted by a firm's technology, and the synergies in implementing TQM could be dependent on the number of different markets that a firm operates in. Furthermore, the gains from TQM could be a function of how intensely TQM is implemented, and when it is implemented relative to competitors. Since such differences do exist among firms, we expect the impact of TQM to be different across different firms.

The three primary concepts of TQM — the cost of quality, total customer satisfaction, and organizational learning — also suggest that the benefits of TQM will be moderated by firm characteristics. For example, the cost of quality concept predicts that as conformance quality increases the total cost of quality decreases. Obviously, the higher the initial conformance quality, the smaller the resulting benefit from improvements. Thus, one might expect firms with already tight process controls to see lower benefits from TQM. The concept of total customer satisfaction predicts that higher customer satisfaction should lead to higher retention rates, increased market share, and higher profitability. The concept of organizational learning involves teaching an organization to use the scientific method, to create and utilize specific knowledge, and to change its performance measurement systems. The ability to successfully implement customer responsiveness and organizational learning is likely to vary by firm characteristics.

This paper relates financial performance from effective implementation of TQM to specific firm characteristics. It documents the extent to which the financial impact of TQM varies by firm characteristics, and tests whether the magnitude of observed differences are statistically significant. The characteristics examined are firm size, the degree of capital intensity, the degree of diversification, the maturity of the TQM implementation, and the timing of effective TQM implementation.

There are a number of reasons why it is important to understand how the financial impact of TQM varies by firm characteristics. First, the success and failure of TQM implementations are often judged by comparing the actual benefits against prior expectations. It seems to us that in many cases expectations about the potential benefits of TQM are based on a few well-publicized success stories such as Motorola, Xerox, and Milliken and Co. The experience of these firms may not apply to all firms. If firms set high and unrealistic expectations about what TQM can deliver, even those TQM implementations that have delivered good results but below expectations may be perceived to be failures. By providing evidence on how TQM affects the financial performance of firms with different characteristics, we provide an empirical basis for forming realistic expectations about the benefits from TQM.

Second, many firms are often able to estimate how much investment is required to implement TQM. Investment could include items such as training costs, cost of implementing new information and performance measurement systems in place, redeployment of resources, and other capital investments to improve quality and increase customer satisfaction. However, the benefits of implementing TQM are much harder to estimate as it could vary by firms. Evidence on how the gains vary by firm characteristics could be used to justify TQM investments as firms can base their return calculations on the actual experiences of firms with similar characteristics.

Third, despite the widespread adoption of TQM, it has come under increasing criticism for delivering lackluster economic returns. Business Week (Byrne, 1997), The Economist (1995), Wall Street Journal (Fuchsberg, 1992a,b), and USA Today (1995), among others, have featured articles that question whether TQM has created significant economic value. Much of the criticisms about TQM seem to be motivated by results from studies done by consulting firms who generally report management perceptions about whether TQM is beneficial or not, but make little effort to assess the basis for these perceptions (see, for example, the studies discussed in Kelly (1992) and The Economist (1992)). These studies rarely provide objective data backed by statistical evidence to support their claims. By documenting how the financial impact of TQM is influenced by firm characteristics, we provide more detailed evidence on the value of TQM. This hopefully will help move the discussion on the value creation potential of TQM to hard and rigorously tested facts instead of perceptual and anecdotal data.

Finally, the issue of how the gains from TQM vary by firm characteristics has not yet been extensively explored in the literature. Our research makes an initial effort to explore this issue.