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# TQM and innovation: a literature review and research framework

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## Abstract

This paper discusses the relationship between the implementation of Total Quality Management (TQM) and innovation performance. The discussion arises primarily based on the considerable controversy concerning this relationship that appears in the literature. As of interest to resolve this controversy, a research framework is developed preceded by a theoretical discussion of the multidimensionality of TQM when applied in different organizational contexts. The primary proposition of this framework is that the implementation of TQM practices will be influenced by the external and internal environment as well as the strategy adopted by the firm. The model of TQM implemented is then reflected in terms of different outcomes relating to quality performance and innovation performance. © 2001 Elsevier Science Ltd. All rights reserved.

*Keywords:* TQM; Innovation; Relationships; Literature review

## 1. Introduction

The emergence of Total Quality Management (TQM) has been one of the major developments in management practice. TQM began to be introduced in the US around 1980, primarily in response to severe competitive challenges from Japanese companies. The recognition of TQM as a competitive advantage is widespread around the world, especially in Western countries, and today very few (especially manufacturing) companies can afford to ignore the term TQM (Dean and Bowen, 1994). On the other hand, innovation has also received considerable attention as having a crucial role in securing sustainable competitive advantage in today's competition. As Tushman and Nadler (1986, p. 74) assert:

In today's business environment, there is no executive task more vital and demanding than the sustained management of innovation and change. . . . To compete in this ever-changing environment, companies must create new products, services, and processes; to

dominate they must adopt innovation as a way of corporate life.

This paper discusses the relationship between TQM and innovation. We believe that such a discussion is important for the following three reasons: to assess the relevance of TQM for management of innovation; to determine the usefulness of TQM as a resource for innovation; and to clarify conflicting accounts of the relationship between TQM and innovation. First, from a TQM perspective, this discussion provides a reassessment of the need for implementing TQM in organizations. Basically, TQM has been widely accepted as a management model that provides a competitive advantage, if implemented successfully. However, as market conditions change, it is expected that the basis of competition will also change with quality becoming one of the "qualifying criteria" and flexibility, responsiveness and particularly innovation taking over as "winning order criteria"<sup>1</sup> (Bolwijn and Kumpe, 1990; Hamel and Prahalad, 1994; Tidd et al., 1997). In this respect, a question can then be raised: Should organizations continue to implement TQM as a management model in the future,

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<sup>1</sup> Qualifying criteria and winning order criteria were first formulated by Hill (1985).

particularly if they want to achieve a high innovation performance?

Second, from the point of view of innovation, testing the suitability of TQM as a management model for managing innovation could enrich the perspective of managerial practices in innovative organizations. As Cooper (1998) suggests, academics as well as practitioners have devoted significant amount of time to continually seeking and identifying organizational factors, practices and resources that support and enhance innovation. In this respect, a particular question can thus arise: Can TQM function as a specific resource that allows organizations to build their competence and competitiveness in innovation?

Third, the discussion on the relationship between TQM and innovation is important from the point of view of innovation based also on the fact that innovation studies consider TQM itself as one form of innovation (Westphal et al., 1997; Yamin et al., 1997; Cooper, 1998). At the same time, innovation scholars have an interest to examine the impact of adoption and implementation of a particular innovation, as suggested by Wolfe (1994, p. 417):

A logical extension to moving from adoption to extent of implementation as the focus of innovation research would be to consider the influence of an innovation on organizational performance.

This is because, as Tornazky and Flischer (1990) argue, innovation will have a wide range of consequences, the intended or anticipated ones as well as the unintended ones. Similarly, Flynn et al. (1995a, p. 1325) also affirm that

Use of a given set of practices should affect the intended type of performance, but it may also affect other types of performance.

Honoring these arguments with respect to TQM and innovation, it should be worthwhile investigating the relationship between TQM practices and innovation performance. It would be interesting then to examine the impact of TQM adoption particularly in organizations, and particularly in terms of innovation performance.

Finally, this discussion on the relationship between TQM and innovation is important because conflicting arguments appear in the literature in regard to this relationship. This paper, therefore, seeks to resolve this debate from a theoretical perspective, thus leading to the development of an appropriate research framework for examining the relationship between TQM and innovation.

The remainder of this paper is structured as follows. Section 2 discusses the relationship between TQM and

innovation. Both positive and negative arguments in this respect are presented. Section 3 discusses the multidimensionality of TQM with respect to innovation. The three factors, namely external environment, organization's strategy, and internal environment, that impact on TQM implementation are also addressed. Finally, Section 4 presents our research framework and hypotheses to be examined.

## 2. Literature review on the relationship between TQM and innovation

Before discussing the literature review on the relationship between TQM and innovation, it is necessary to clarify what we mean by TQM and innovation. Defining "what is TQM" is quite problematic because the most serious problem with TQM is the absence of a uniform definition (Lau and Anderson, 1998). The problem in defining TQM then results in another problem of establishing a clear-cut boundary to distinguish "TQM" from "not TQM", and what belongs to TQM and what does not. As such, we constrain the scope of TQM by referring to the work of several TQM scholars, such as Dean and Bowen (1994), Hackman and Wageman (1995), Plenert (1996) and Lau and Anderson (1998), who recognize that TQM concepts and practices are shaped by a number of individuals who are honored as "quality gurus" based on their views and prescriptions about modern quality management, namely Deming (1982, 1986), Juran (1988), Juran and Gyra (1993), Crosby (1979, 1984), Feigenbaum (1983), Ishikawa (1985, 1986) and Imai (1986).

On the other hand, the review of the literature on innovation also results in various definitions of innovation from different perspectives, even though they are satisfactorily coherent. In this regard, we adopt the definition suggested by Damanpour (1991, p. 556) who defines innovation as adoption of an internally generated or purchased device, system, policy, program, process, product, or service that is new to the adopting organization. In addition, innovation scholars also recognize that there are numerous typologies of innovation (Wolfe, 1994). In this paper, we constrain our focus on two types of innovation—product versus process, and incremental versus radical—because they are found to be central in innovation studies (Ettlie et al., 1984; Abernathy and Utterback, 1988; Tushman and Nadler, 1986; Zairi, 1995; Tidd et al., 1997; Huiban and Bouhsina, 1998; Sciuilli, 1998).

Discussions on the relationship between TQM and innovation do not appear very often in the literature. Essentially, there is only a small amount of such literature which is supported by theoretical concepts or by empirical evidence. A review of these papers has led to a conclusion that there are conflicting arguments

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