

The Integration of Quality Management and Environmental Management - A Review

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Abstract. The relationship between quality management and firm's performance as well as between environmental management systems and firm performance has conventionally been a key issue in the operations organization literature. Total Quality Management (TQM) implementation in firms often shows that costs can be reduced and differentiation levels increased. Higher quality implies lower costs and increased productivity, which in turn gives the firm a greater market share and enhanced competitiveness. On the same lines, environmental management improves performance levels of industries and hence it could become a key success factor as well as a source of competitive advantage. This idea suggests that Environmental Management system impacts on performance. TQM focuses on waste when it applies to process inefficiencies, whereas environmental management pays more attention to pollution in the form of air emissions and solid and hazardous waste. Pollution prevention can allow a firm to save control costs, input and energy consumption, and also to reuse materials through recycling. Pollution prevention can consequently help firms to reach a win-win situation, from which both the firm and the environment will benefit. Because the two systems i.e. quality management systems and environmental management systems share a similar focus, it makes sense to use many of the TQM tools, methods and practices when implementing an environmental management system. Therefore, organizations now put emphasis on integrating these two management systems. This paper presents a review of the relationship between quality management and firm's performance and also review of relationship between environmental management systems and firm performance. Need and importance of integration of two management systems has also been discussed. Finally it is concluded that being proactive in quality and environmental issues is a good strategy for differentiation and survival of organizations. Paper provides a direction to future researchers to explore the benefits of such integration particularly in case of pollution prone industries like thermal power plants.

Keywords: Quality Management, Environmental Management, Total Quality Management (TQM)

1. Introduction

The relationship between quality management and firm's performance as well as between environmental management systems and firm performance has conventionally been a significant issue in the operations management literature. Several empirical studies have found positive link between total quality management (TQM) and firm's performance. (Flynn et al., 1995; Powell, 1995; Easton and Jarrell, 1998; Samson and Terziovski, 1999; Kaynak, 2003; Prajogo and Sohal, 2006). Similarly positive link has been reported between environmental management and firm's performance in many studies. (Klassen and McLaughlin, 1996; Álvarez et al., 2001; Link and Naveh, 2006). However, no conclusive results have so far been obtained about the existence of this relationship.

A debate on the positive and negative effects of TQM and environmental management is thus being staged in the literature. Findings suggest that studies may provide mixed results. Nevertheless, a vast majority of works show positive results; so, arguably, implementing effective TQM programmes (Hendricks and Singhal, 1997) can be expected to improve performance. The same holds true for environmental management studies (Álvarez et al., 2001).

However, few studies have examined the combined effect of implementing quality management and environmental management systems on firm performance. The objective of the present study is to focus on the integration of quality management and environmental management systems. For the purpose, available

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literature is scanned and summarized here. First, review of literature focusing on the relationship between the quality management and firm performances is presented and then the review of literature focusing on environmental management and firm performance relationship is summarized. Finally the learning of integration of quality management and environmental management is highlighted mentioning about its implications.

2. Quality Management and Firm's Performance

TQM implementation in firms often shows that costs can be reduced and differentiation levels increased (Belohlav, 1993; Grant, 2002). In this sense, Deming (1982) points out that higher quality implies lower costs and increased productivity, which in turn gives the firm a greater market share and enhanced competitiveness levels. This idea suggests that TQM effects performance. TQM is most commonly seen as a set of dimensions —e.g. leadership, people management, customer focus, supplier management, planning, process management and continuous improvement. Many researchers have examined the link between TQM and performance. However, a distinction must be made between those which measure TQM as a single construct and the rest who use a number of different dimensions for TQM. These studies have found that TQM has positive effects on firm performance (Flynn et al., 1995; Powell, 1995; Hendricks and Singhal, 1997; Easton and Jarrell, 1998; Samson and Terziovski, 1999; Curkovic et al., 2000; Kaynak, 2003; Terziovski et al., 2003; Prajogo and Sohal, 2006). Similarly, regarding studies there are studies which examine the effects of ISO 9000 certification on performance. They found that the effects of the ISO 9001 standards are not so clear. There are some studies according to which ISO 9000 certified firms do not outperform those without such a certification (Singels et al., 2001; Tsekouras et al., 2002), while others argue that this standard might actually have a slight impact on some financial variables (Wayhan et al, 2002).

Although the majority of studies consider Quality Management Planning (QMP) to be key components to the improvement of financial variables in a company, other authors believe that the impact of QMP is small or non-existent. Nair (2006) argues that the reduction of expenses implies that the adoption of QMP is absorbed by the increase of other costs related to the implementation, control and maintenance of quality. The authors who claim that QMP improve the economic results of a company argue that the impact that quality has on the company's finances is the result of two related factors, one internal and another external. Internal factors are may be internal processes whereas external factors are those that have an influence on the business competitiveness.

The implementation of quality improves certain internal processes that, despite creating expenses, result in a significant reduction of costs due to a better use of resources and the decrease of processes and tasks that do not add value to the company but do generate cost (Citing the most recent studies: Terlaak and King, 2006; Rubio-Andrada et al., 2011; Rodriguez-Antón et al., 2011; Alonso-Almeida et al., 2012). On the other hand, there are several studies asserting that QMP have a positive impact on a company's capacity to remain in the market. More specifically, improvements in employee performance (Testa and Sipe, 2006; Sousa and Aspilwall, 2010; Rodriguez-Antón and Alonso-Almeida, 2011), enhancement of customer satisfaction in relation to the services received (Chen and Kao, 2010) and the ability to attract new clients and improve the company's image (Yee et al., 2008 and 2010) are all effects of quality that improve the competitiveness of a business and its ability to survive in a market during times of crisis. Continuing with this bibliographic analysis, we may propose that adoption of QMP has a direct and positive impact on the financial results of a company.

3. The Environmental Management and Firm's Performance

An increasing number of forums and debates are being devoted to the environmental responsibility of firms, an aspect which should not only be approached from the point of view of social responsibility toward the environment but also from the perspective of economic performance or success. If environmental management improves performance levels of industries, it could become a key success factor, as well as a source of competitive advantage. The impacts caused by the implementation of an effective environmental management scheme on the performance of industries may be very varied, but can be divided into two broad groups: direct and indirect. Direct impacts are related to the internal management of industries, whereas

indirect ones improve its performance as a result of the increased competitiveness of the destination where the establishment is located.

The distinction between cost and differentiation competitive advantages (Porter, 1980) provides a useful framework to analyse direct impacts. Pollution prevention can allow a firm to save control costs, input and energy consumption, and also to reuse materials through recycling (Shrivastava, 1995a; Hart, 1997; Chan and Lam, 2003; Chan, 2005). Thus, the essential purpose of eco-efficiency is to produce and deliver goods more cost-efficiently while simultaneously reducing ecological impact and resource intensity, and minimizing material as well as energy intensity (Knight, 1995; Starik and Marcus, 2000). Pollution prevention can consequently help firms to reach a win-win situation, from which both the firm and the environment will benefit.

Study conducted by Molina-Azorín et al. (2009) reveals that higher pro-activity in environmental practices results in better economic outcomes. A recent study by Bagur-Femenías et al. (2013) argues that adopting EMP has indirect positive effects on business performance. The implementation of environmental practices increases customer satisfaction and the company's positioning and image in addition to improving employee satisfaction as a result of belonging to a company committed to sustainability (Kassinis and Soteriou, 2003). Continuing with this bibliographic analysis, we may propose that adoption of EMP has a direct and positive impact on the financial results of the company.

4. The Integration of Quality Management and Environmental Management

These business practices are being increasingly adopted by firms, very often jointly (Karapetrovic and Willborn, 1998; Wilkinson and Dale, 1999). In fact, environmental management offers a striking parallel with TQM (Kleiner, 1991; Klassen and McLaughlin, 1996). As it happens with quality, a long-term goal of environmental management consists in moving towards a proactive, preventive stance, incorporating environmental issues into product design, technology-related decisions, the entire manufacturing process, and customer service. Moreover, the TQM goal of "zero defects" closely parallels the "no waste" aim of environmental management-based systems. TQM focuses on waste so far as it applies to process inefficiencies, whereas environmental management pays more attention to pollution in the form of air emissions and solid and hazardous waste. Because the two systems share a similar focus, it makes sense to use many of the TQM tools, methods and practices when implementing an environmental management system.

Thus, due to these and other parallels and also due to the fact that research on the TQM side is more developed than that on the environmental management side, significant benefits are bound to derive from applying what has been learnt about TQM to environmental issues (Klassen and McLaughlin, 1993; Curkovic, 2003). This is why some organizations have decided to integrate their management systems. Combining these two sustainability practices has a positive impact on business performance, although the effect of each practice is different. Quality practices improve worker's performance, customers' perception about the business and the company's image. All of these changes directly influence the business' competitiveness. Good environmental practices improve the results by reducing significant operating expenses. Therefore, it can be concluded that being proactive in quality and environmental issues is a good strategy for differentiation and survival.

5. Conclusion

TQM and environmental management are two management systems which have often been studied. Within such a context, this paper presents review of literature mentioning effects of two management systems separately on firm's performance and also combined effect of two systems on firm's performance. Literature reviews suggest that future researchers may carryout studies to examine effects of integration of two management systems on firm's performance. This is more necessary in developing countries like India where probably no such studies have been carried out by previous researchers. Studies are expected to unravel interesting results particularly in case of pollution prone industries like thermal power plants in India.

6. References

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