



The importance of quality management for the success of environmental management initiatives

Frank Wiengarten ^{a,*}, Mark Pagell ^{b,1}

^a ESADE School of Business, Ramon Llull University, Av. de Pedralbes 60-62, 08034 Barcelona, Spain

^b Schulich School of Business, York University, 4700 Keele Street, Toronto, ON, Canada M3J 1P3

ARTICLE INFO

Article history:

Received 18 June 2011

Accepted 22 June 2012

Available online 30 June 2012

Keywords:

Environmental management

Quality management

Performance

Survey

ABSTRACT

This paper investigates the importance of quality management practices for the success of environmental management initiatives. It has been recently established that sustainability initiatives whether in terms of social or environmental investments can improve organizational performance. Additionally, some authors have suggested striking similarities between environmental and quality practices and argued that a well functioning quality management system is a prerequisite for a successful environmental management system. However, it may be the case that having a well functioning quality management system enables a company to reap higher returns from its environmental management practices. The aim of this paper is to explore the role of quality management in the environmental management—performance relationship. Specifically, we assess whether or not quality management practices interact with environmental practices to drive operational performance. This question was tested with survey data collected from 1142 plants. The study makes significant contributions to the quality and sustainability literature and implications are drawn to practice.

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1. Introduction

Environmental management practices as part of the sustainability management movement have become an integral part of the practices and mindsets of operations managers and researchers (Kleindorfer et al., 2005). Recently, Lubin and Esty (2010) concluded that the sustainability ‘hype’ is here to stay and will profoundly change the way companies run their businesses. Lubin and Esty (2010) reviewed managerial megatrends such as quality management and concluded that sustainability is developing along a similar trajectory to quality management, which became a megatrend in the 1980s and 1990s and remains so today.

In addition to following similar trajectories, some authors have identified similarities between sustainability and quality programs in terms of their philosophies and applied practices (Klassen and McLaughlin, 1996; Curkovic et al., 2000; Narasimhan and Schoenherr, 2012). Philosophically, both sustainability and quality take a proactive managerial stance that focuses on long-term goals and maintaining performance achievements. At a practice level there are numerous resemblances such as zero defects, waste reduction, life-cycle assessment and employee involvement and training (Hunt and Auster, 1990; Sroufe and Curkovic, 2008).

According to Curkovic et al. (2000) many conceptual and case studies have suggested that significant benefits could arise when applying quality practices within the new paradigm of sustainability practices. In fact a few studies have suggested that a well functioning quality management system could be a pre-requisite for the successful implementation of environmental management practices (Rusinko, 2005; Curkovic et al., 2008). Whilst focusing on the driving role of quality management the literature has largely overlooked the possibility that environmental and quality practices might interact in a positively reinforcing fashion to improve operational performance.

This paper focuses on the environmental management pillar of sustainability and its relationship with quality management practices and performance. Specifically, this research explores the interaction of quality management and environmental management practices as they relate to operational performance. We propose that quality management practices such as ISO 9001, supplier certification, statistical process control and total quality management (TQM) might enhance the success of environmental management practices such as ISO 14001, pollution prevention, recycling of materials and waste reduction. This research analyzes the following research question: *To what extent do quality management practices interact with environmental management practices to improve a plant's operational performance?* The research question will be assessed through regression analysis using a large-scale dataset compiled in a cross-country study.

In answering this question significant contributions will be made to theory and practice. Critically, the anecdotal evidence of

* Corresponding author. Tel.: +34 932 806 162.

E-mail addresses: Frank.wiengarten@esade.edu (F. Wiengarten), mpagell@schulich.yorku.ca (M. Pagell).

¹ Tel.: +416 736 5074.

the importance of quality practices for the success of environmental initiatives will be empirically tested. In the process of addressing the interaction between quality and environmental practices this research will also provide additional evidence on whether or not investments in environmental practice have operational performance benefits. The findings will provide essential information for practice as critical insights about the interplay between quality and environmental practices are explored. The end result will be a better understanding of when and why organizations should invest in environmental management practices.

This paper is organized as follows. In the next section the sustainability literature regarding performance and quality aspects is reviewed, synthesized and analyzed. Based on this review hypotheses are developed. The subsequent sections highlight the research methods and the analyses. Afterwards, the results of the regression analyses are presented followed by the discussion. Finally, the paper concludes with suggestions for future research.

2. Literature review

The following sections are intended to provide an overview and a synthesis of the relevant sustainability and quality management literature. This section will also highlight the gaps in the literature and the development of the hypotheses.

2.1. Environmental management and performance

Recent social and economic developments have made the question of whether or not to invest in social or environmental management practices obsolete (e.g., De Brito et al., 2008). Changes in consumer awareness and preferences, regulations and pressure from NGOs are only some example as to why companies are suddenly left without a choice other than to become green (O'Brien, 1999; Linton et al., 2007; Montabon et al., 2007; Golicic et al., 2010; Ilett, 2010; Pagell et al., 2010; Schoenherr, in press). However, on the other hand some studies suggest that the more companies are exposed to potential environmental concerns the less likely they might be to adopt environmental management practices as this increases the likelihood of having to report violations (Corbett and Kirsch, 2000).

Still it is critical for managers to understand the performance implications of this pressure. And the understanding of the possible monetary benefits or burdens of being green has changed over time (Porter and van der Linde, 1995; Foster et al., 2000; Ferretti et al., 2007). A decade ago researchers questioned the economic viability of sustainable investments at the company level (Walley and Whitehead, 1994; Hoffman et al., 1999; Morris and Su, 1999; Ubeda et al., 2011). Researchers as well as practitioners argued that the investments necessary to become sustainable outweigh their related benefits (e.g., Walley and Whitehead, 1994). However, recently researchers and practitioners have acknowledged that becoming more sustainable can reduce material and production costs, increase product quality and even increase creativity and innovativeness through cross-functional cooperation and communication (Russo and Fouts, 1997; Christmann, 2000; Pagell et al., 2004; Pagell and Gobeli, 2009). Melnyk et al. (2003) for example examined the impact of environmental management systems (EMS) on corporate and environmental performance. They identified that formal EMSs such as ISO 14001 significantly improve overall firm performance. Through EMS a firm reduces or eliminates waste and pollution, which subsequently has a positive impact on a firm's financial bottom line (Melnyk et al., 2003). Jacobs et al. (in press) analyzed the impact of environmental performance on the market value of the firm. They identified that announcements of corporate environmental initiatives and especially third party environmental

awards and certifications have a positive impact on environmental and corporate performance. Some authors suggest that companies can also gain additional benefits from being more sustainable such as improved company and brand image and increased innovativeness leading to competitive advantages (Porter and van der Linde, 1995; Berns et al., 2009; Hipkins, 2009). Recently, Narasimhan and Schoenherr (2012) assessed the impact of environmental management practices on competitive advantages in terms of quality. Based on the resource based view (RBV) they argued that environmental practices are valuable resources that may lead to an advantage in terms of relative competitive quality. They empirically verified this theoretical notion through identifying that environmental practices have a significant positive impact on quality performance.

Recent academic and professional publications on sustainability have created some anticipation around its various potential benefits and spinoff effects (Lubin and Esty, 2010). Although, empirical evidence on the impact of environmental practices on performance has accumulated over the past years there are still some studies suggesting a less positive view. Rather than continuing to argue over which perspective is universally applicable, researchers have slowly started to recognize the potentially important role of contingency factors on the success of sustainable practices (Sousa and Voss, 2008; Wiengarten et al., 2012). Some researchers have started to examine the factors and conditions that are favorable for the efficiency and effectiveness of sustainable investments in general and environmental investments in particular (King and Lenox, 2001; Melnyk et al., 2003; Matten and Moon, 2008; Wiengarten et al., 2012). Melnyk et al. (2003) for example have identified that companies that have an externally certified EMS such as ISO 14001 experience an increase in performance benefits from environmental initiatives as compared to organizations that do not have such an EMS. Schoenherr (in press) investigated the role of a country's level of economic development in predicting the impact of environmental investments. He found that the impact of environmental investments is greatest in plants located in emerging economics relative to plants in industrialized and developing nations. Additionally, Wiengarten et al. (2012) examined the contingent role of industry in the efficacy of environmental investments. They identified that plants competing in dynamic industries such as electronics or apparel do on average invest less in the environmental compared to plants in static industries. More importantly, environmental investments do not significantly improve operational performance in dynamic industries but they do in static industries.

These studies suggest that the impact of environmental investment on performance is not unconditional and might depend on various factors such as industry type, level of development or certifications. However, a research gap exists on identifying these contingent factors and their interaction with environmental investments. This study in particular evaluates the contingent role of quality practices for the success of environmental practices using the lens of dynamic capabilities.

2.2. Environmental management and quality management

Various academics have highlighted similarities between quality management and environmental management practices and initiatives in terms of managerial tools and underlying philosophies (Curkovic et al., 2000; Rusinko, 2005; Curkovic et al., 2008).

Quality management programs and practices have defined decades of operations management research and are considered as being close to the core of the discipline. Quality management practices and programs such as total quality management (TQM), six sigma, statistical process control and external certification programs such as the ISO 9000 series or the Malcom Baldrige National Quality Award have been extensively researched and can

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