Extending the Relationship between ISO 14001 and Financial Performance: A Knowledge Management Perspective

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ABSTRACT

Both legal and public requests increasingly demand organizations to take more responsibility regarding their environmental management systems (EMS) by obtaining such a certification as one of International Organization for Standardization (ISO) 14001 to ensure the effectiveness of their EMSs. While such a goal and responsibility initially spell financial liability, relevant research suggests that effective EMSs somehow enhance organizational competitive advantages. However, the underlying mechanism of such a relationship is rather understudied. Building on some existing literature, this paper attempts to extend the relationship by proposing that knowledge management capability (KMC) plays a key role both before and after achieving an ISO 14001 certification. In particular, this paper posits that KMC not only helps organizations achieve the certification, but also interacts with the achievement, thus consequently improving their financial performance. Limitations and implications of the paper are discussed.

INTRODUCTION

As environmental issues take forefront in how today’s organizations deal with their potentially harmful activities, both legal and public concern increasingly demand organizations to show more responsibility regarding their environmental management systems (EMS). Responding
negatively to such a request, an organization could face not only penalty fees but negative perception from its customers. While it is tempting to simply perceive an investment in an EMS as unnecessary financial liability, research suggests that being responsible to environmental issues by establishing an effective EMS somehow enhances organizational competitive advantages in the market. Nonetheless, the underlying mechanism of such a relationship is rather scarce in the literature.

Despite the fact that an organization can respond positively through implementing its own EMS, it should not be difficult to argue that adopting a formal systematic standard from a well-established organization such as International Organization for Standardization (ISO) helps ensure the effectiveness and quality of the EMS of the firm. In this paper, we focus on a particular certification, namely ISO 14001 that directly tackles the environment issue management of organizations (Miles et al. 1997). Thus, when we use the term the achievement of the certification, we imply that the organization are being responsible to environmental issues.

Drawing from some work in the field of knowledge management and relevant literature, this paper aims to extend the relationship between being responsible to environmental issues through obtaining the certification of ISO 14001 and financial performance of the firms by integrating the notion of knowledge management capability (KMC). Specifically, this paper posits that KMC not only helps organizations to achieve the certification but also interacts with the achievement, the interaction that ultimately improves financial performance of the firms.

This paper is organized as follows. First, brief introduction of ISO 14001 is provided. Second, previous literature on the relationship between ISO 14001 and financial performance is discussed as well as associated propositions. Then, the concept of KMC is discussed in terms of how it can position itself as an underlying mechanism of how the certification is found associated with improved financial performance. Finally, implications and limitations of the paper are discussed.

THEORETICAL BACKGROUND

ISO 14001

A series of International Organization for Standardization (ISO) 14000 provide structured standards of how environmental activities should be managed. Specifically, ISO 14001 from the family of ISO 14000 accounts for “the environmental management system (EMS) specifications including a formal environmental policy statement requiring the corporation's commitment to compliance, prevention/minimization of pollution, and continued improvement” (Miles et al. 1997). In detail, with the base of ISO 14001:2004 which was upgraded from ISO 14001:1996, ISO) describes that a firm achieving ISO 14001 satisfies the requirement of an efficient environmental management system with the offer of internal objectives for assurance of management and employee and of external objectives such as assurance of stakeholders and externally environmental regulatory (ISO, 2009). ISO 14001 also provides a way to improve the quality management and to increase of competitiveness of a firm.

The focus of ISO 14001 is not outcome-oriented per se, but rather processes-oriented – particularly standardized processes of how a firm engages in appropriate management of
environmental activities. In such processes, a firm can improve its competitive advantages through positive environmental activities and efficient operating processes within supply chain relationship. In other words, ISO 14001 would provide advantages at two different levels: corporate level and societal level (Bansal et al. 2003). In corporate level, improved control of management, along with the reduction of negative environmental impacts, can be accomplished. And, in societal level, international trade and sustainable development of a company can be more enhanced by an internationally legitimized system of standardization. As mentioned, many firms might have their internal EMS. The difference between ISO 14001 and EMS is the existence of audits: for achievement of ISO 14001, auditing by a third party generally is required. The auditing by a third party would increase an objective view of the assessment of environmental management.

**ISO 14001 and Financial Performance**

Many studies attempt to show that effective EMS positively affects organizational performances. While it is tempting to consider investing in an EMS financial liability, we believe that by responding to customers’ request to be friendly environmental, organizations improve not only their images in the industry but also their relationships with the public and potentially can attract new groups of customers.

Previous literature supports such a positive view. For instance, McGuire et al. (1998) found that firms with higher social responsibility toward environmental issues gained higher the value of return of asset (ROA) and stock-market. Obtaining an official certification of ISO 14001 can significantly improve the image of the firm to the public than having a proprietary EMS can. Indeed, Jiang and Bansal (2003) suggested that if a company is operated with higher environmental impact with opacity, the company would be likely to have ISO 14001 to send positive signals about positive environmental activities to the public. The research of Jiang and Bansal (2003) not only considered any visible profits from positive environmental activities, but also thought ISO 14001 to be strategic means which were close to the satisfaction of the public’s demand.

In the resource base view, resources can be classified as tangible or intangible. ISO 14001 can be considered an intangible resource. For such intangible resource to be lead to be competitive resource, it was shown that the greater involvement of external stakeholder influence on the results (Delmas, 2001). The study of Delmas (2001) viewed the environmental management system as one of the organizational capability to be competitive. In the study of an impact of environmental management on firm’s performance, the research of Klassen and McLaughlin (1996) suggested that improved environmental management can help a company to accomplish more market gains and more cost saving. It was proposed that such advantages within a company also finally lead financial performances to be improved. They witnessed such a relationship between environmental management and financial performance through the reaction of the stock market about the announcement about winning environmental awards (Klassen and McLaughlin, 1996). In another study relating to the cost saving, it was witnessed that ISO 14001 was used to reduce sources (Kitazawa and Sarkis, 2000). In the consideration about the relationship between ISO 14001 and environmental impact such as natural resource use, solid
waste generation, and wastewater effluent, it was shown that a facility adopting ISO 14001 has reduced negative environmental impacts in Japan (Arimura, et al. 2008).

In the broad view, environmental management system can be one of green supply chain management (GSCM). The green supply chain management refers that, in the process between supply chain relationships, firms might have more benefits by reducing negative environmental impacts. By presenting categories of green supply chain management, Zhu and Sarkis (2004) stated that the achievement of ISO 14001 certification is to prove that environmental management system exists, and that the company performs external GSCM practices when suppliers have ISO 14000 certification. The adoptions of international environmental management, external GSCM, investment recovery and Eco-design in GSCM activities are positively related to enterprise’s economic performance in China (Zhu and Sarkis, 2004). In their research, Chinese manufacturing companies showed that the internal environmental management strongly influenced on improvement about environmental performance and that green supply chain practices within companies had significant relationships to economic performances (Zhu and Sakis, 2004). Also, when environmental purchasing was conducted with suppliers, it was shown that the relationship with Net income of firms was positive (Carter et al. 2000). Along with this reason, it would be explained why some large companies such as Ford, GM, and Toyota have encouraged supplier companies to achieve ISO 14001 certification in order to improve environmental performance in supply chain (GEMI, 2001). Such encouragement can support that the company creates an environmentally friendly image (Pouliot, 1996). According to another study, it is shown that green supply chain would offer company’s competitiveness and economic performance (Rao and Holt, 2005): as competitiveness, the improvement of efficiency, quality and productivity and cost saving, and as economic performance, new market opportunities, the increase of product price, profit margin, sales, and market share. Also, companies with either friendly environmental efforts or the adoption of ISO 14001 would achieve following economic benefits; the growth in operating income, the high sales to asset ratio, the high earning-to-assets ratio, higher return on investment, and greater return on assets can be listed with greater sales growth (Kulwiec, 2006). Based on the discussion above, the propositions are as follows:

**Proposition 1:** The achievement of the certification of ISO 14001 will positively influence financial performance of the firms.

**Proposition 1a:** The achievement of the certification of ISO 14001 will increase the value of the stock of the firms.

When companies pursue environmentally friend purchasing management, it was concluded that Net income was increased (Carter, et al. 2000). Furthermore, when such purchasing management is accepted, consideration from companies, which want to produce environmentally friend products, would be decreased. It also might suggest that additional costs within companies are decreased. Along with the increase of Net income of firms, when companies try to achieve green supply chain, companies would try to reduce their costs in the use of energy or resource with the accomplishment of higher profits with improved process. Finally, the achievement of the ISO 14001 would provide companies higher return on asset.
Proposition 1b: The achievement of the certification of ISO 14001 will increase the value of return on asset of the firms.

Along with the satisfaction about demand for positive environmental activities of the public through the achievement of ISO 14001 certification, companies would have additional chances to sell their products more than before. For instance, as large companies, as previously mentioned, have encouraged their suppliers to achieve ISO 14001, suppliers would have additional chances to contact other customers demanding suppliers satisfying environmental standards in order to make production process to be smooth or improve company’s social responsibility.

Proposition 1c: The achievement of the certification of ISO 14001 will increase sale volume of the firms.

Knowledge Management Capability

Knowledge management capability is a firm’s capability to create, transfer, integrate, and utilize relevant knowledge to reach desired performance of the firm (adapted from Tanriverdi, 2005). Literature in the field of knowledge management in the context of internationalization has specifically found that technological and marketing knowledge are significant resources. For example, Wipawayangkool (2009) suggested that technological and marketing KMC importantly influence the extent of how much a firm can diversify its businesses in foreign countries, and subsequently the performance of the firm. Thus, it is deducible that if firms know how to effectively create, transfer, integrate, and utilize knowledge in both areas, the desired goals can be met. As the first set of the propositions in the attempt to link KMC and the relationship between ISO 14001 and organizational performance, we first look at the time before the firm can obtain the certification. We believe that effective processes of the KMC in both technology and marketing will help the firms to achieve the certification. Thus, the propositions are as follows:

Proposition 2a: The technological knowledge management capability of a firm will help the firm to achieve the certification of ISO 14001.

Proposition 2b: The marketing knowledge management capability of a firm will help the firm to achieve the certification of ISO 14001.

After a firm achieves the certification, the EMS becomes standardized across business units of the firm. It is doubtful whether the achievement alone can strongly affect organizational performance. There must be more to the relationship. Thus, in addition to the before phase, this paper suggests that KMC plays another role in that effective KMC leads to improved financial performance. Specifically, technological KMC should be able to support EMSs of the firms such as resource and waste disposal management systems, potentially improving return of a number of assets (ROAs) in the long run. Marketing KMC could help improve the perceptions of customers and thus could boost sale volumes. Tanriverdi (2005) found that KMC mediates the relationship between the use of common technology and management across business units and firm performance. The use of common technology can be analogous to that of EMS in this paper. One of our arguments is clear that obtaining the certification can improves the image of the firms. As a result, we believe that KMC is more appropriate to be positioned as a moderator in our context.
because: while ISO 14001 alone should be able to help improve some of the financial performance as discussed, the interactions between ISO 14001 and effective KMC should exponentially improve a variety of financial performance indexes such as ROA, stock values, and sale volumes. Simply put, for example, having the certification is one story, but having the marketing ability to gain strategic advantages (e.g. significantly higher values of stock values and sale volumes) is a different story. Similarly, while ISO 14001 standardizes the EMS across business units generating a certain improvement of ROA, effective technological KMC will significantly improve some financial performance indexes (e.g. significantly higher ROA) in that technology enhances some business processes relying on the EMS. Thus, the propositions are as follows:

**Proposition 3a:** The technological knowledge management capability (KMC) of a firm moderates the relationship between the achievement of the certification of ISO 14001 and financial performance of the firm in such a way that the relationship will be stronger with more effective KMC.

**Proposition 3b:** The marketing knowledge management capability (KMC) of a firm moderates the relationship between the achievement of the certification of ISO 14001 and financial performance of the firm in such a way that the relationship will be stronger with more effective KMC.

Based on the discussion and all the propositions, our research model is the following:

![Research model diagram]

**Figure 1: Research model**

**IMPLICATIONS, LIMITATIONS, AND CONCLUSION**

Given the missing link between the relationship between possessing ISO 14001 and financial performance of the firms, this paper proposes that knowledge management capability (KMC) plays dual roles in that KMC helps organizations both achieve the certification and improve their
financial performance. Although this paper is an initial attempt to search for a missing link, we believe that the proposed model opens a number of future research directions. For example, a more detailed of how KM processes interact with the EMS components could be an interesting topic. The role of industry could be another moderator as the effects of ISO 14001 may affect more significantly to the perception of customers in some industries but not the others. Empirical studies are encouraged and carefully conducted longitudinal ones can definitely help establish the role of the KMC to the relationship between ISO 14001 and financial performance more conclusively. In addition to financial performance, others such as employees’ satisfaction or emotional responses toward the EMS should also be explored as after all employees are the source of knowledge.

REFERENCES


