

# Strategic Explanations for the Early Adoption of ISO 14001

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**ABSTRACT.** There are two different, and somewhat competing, strategic explanations for why firms certify for ISO 14001. On the one hand, firms may seek to *reinforce* their present strategies thereby further enhancing their competitive advantage. On the other hand, firms may use ISO 14001 as a mechanism to *reorient* their strategies, so that a clear signal is sent about the firm's change in strategic positioning. This paper aims to identify the most likely explanation for early adopters of ISO 14001.

Using a matched pair design, we test these alternative explanations on a sample of US firms that certified for ISO 14001 in the first two years after its introduction. In particular, we tested whether ISO 14001 was used to reinforce or reorient firm strategies in respect to the natural environment, corporate social responsibility, quality, and internationalization.

We found that firms that certified early for ISO 14001 had considerable environmental legitimacy and a strong international presence. We also found that the firm's commitment to corporate social responsibility and quality were not significantly different between certified and non-certified firms. These findings suggest that early adopters of ISO 14001 leaned towards reinforcing rather than reorienting their firm strategy, which calls into question the ultimate reach of ISO 14001.

**KEY WORDS:** early adoption, ISO 14001, strategic realignment, strategic reinforcement

## Introduction

In 1996, at the request of the United Nations Conference on Environment and Development (UNCED) four years earlier, the International Organization for Standardization (ISO) introduced ISO 14001, the first of the ISO 14000 family of environmental management systems (EMS) standards. The goals of ISO 14001 were twofold. At a corporate level, ISO 14001 was designed to help businesses reduce their environmental impact while improving management control. At a societal level, ISO 14001 was intended to facilitate sustainable development and foster international trade by providing an internationally legitimized system of standardization.

While the environmental and economic benefits associated with ISO 14001 could also accrue to a firm with an in-house EMS, ISO 14001 had the added benefit of signaling a firm's commitment to environmental management to external stakeholders (Jiang and Bansal, 2003). ISO 14001 was also consistent with the principles of corporate social responsibility, quality initiatives and internationalization. It is not clear, however, whether ISO 14001 was adopted early to reinforce existing firm strategies or reorient them. This paper aims to shed light on this question.

Identifying the type of firm that certified early for ISO 14001 can help inform management scholars about whether the standard will trigger a bandwagon of certifications or be limited in its reach. It could be argued that if early adopters

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of ISO 14001 were looking to reinforce existing firm strategies, the standard was less likely to initiate a bandwagon effect than if adopters were looking to change their strategy. Firms reinforcing their current strategy were likely looking for the competitive advantage associated with being a first mover with ISO 14001. Without a large number of firms that look to ISO 14001 to reorient their strategy, the societal level benefits of the standard may not be realized.

By investigating a firm's strategy in respect to the environment, corporate social responsibility, quality, and internationalization, we identify which of these two alternative explanations are likely to apply to adopters of ISO 14001. We test these alternative explanations among a large sample of the first adopters of ISO 14001 in the US using a matched pair research design. In the next section, we first present a short description of ISO 14001 in order to provide some understanding as to why firms may choose to certify. We then develop four hypotheses that suggest that firms were attempting to reinforce their present strategy. In the subsequent section, we briefly outline alternative hypotheses. We then describe the methodology we use in the study and end the paper with an analysis of our findings.

### **A description of ISO 14001**

ISO 14001 is an international standard for environmental management systems (EMS). An EMS is a set of management processes that requires firms to identify, measure, and control their environmental impacts. Without external certification, firms could indicate that they had adopted an EMS, but not follow through on those activities. There are six steps that must be followed in order to comply with the ISO 14001 standard:

1. develop an environmental policy,
2. identify the firm's activities, products and services that interact with the environment,
3. identify legislative/regulatory requirements,
4. identify the firm's priorities and set objectives and targets for reducing its environmental impacts,
5. adjust the firm's organizational structure to meet those objectives, such as assigning responsibility, training, communicating and documenting,
6. check and correct the environmental management system.

The standard is designed to be flexible in order to meet the needs of firms in different countries and industries. There are three principles that guide the standard and contribute to its flexibility: pollution prevention, continuous improvement and voluntary participation. Pollution prevention reduces pollution before production begins. Through continuous improvement, efforts are aimed not at drastic changes, but incremental and on-going adjustments to management measurement tools and controls. Finally, the voluntary nature of ISO 14001 facilitates buy-in from all types of firms without legal threat.

ISO 14001 is not a performance standard; it is a process based standard. It signals only that the firm has implemented a management system that documents the firm's pollution aspects and impacts, and identifies a pollution prevention process. Advocates of the standard argue that by developing a management system that aims to improve processes, environmental performance will ultimately improve. Skeptics argue that changes to management systems are possible without commensurate changes to performance, and the change to performance is critical for realizing the societal benefits of ISO 14001.

### **Why is ISO 14001 a preferred EMS?**

Firms can implement an in-house EMS, without having to go through the time and expense of ISO 14001 certification. However, an in-house EMS often lacks the legitimacy of ISO 14001, which is easily recognized by external stakeholders. With an in-house EMS, there is no audit process to ensure that the EMS achieves what it was set out to do.

Because ISO 14001 is voluntary, firms can reduce pollution at their own pace without having to compromise their competitiveness. The

standard is flexible and focuses on the firm's processes rather than its environmental performance, so that firms of all sizes and in all sectors, and in all countries can participate. Therefore, ISO 14001 does not create the distortions associated with blanket policies such as legislation because of unequal administration or financial burdens. The standard is also less likely to influence competitive dynamics, threatening the livelihood of some firms, than market-based measures such as carbon taxes and pollution permits. The cost of ISO 14001 certification can range between \$10,000 and \$128,000, depending on the size of the facility and the sophistication of the environmental management system, and cost between \$5,000 and \$10,000 per year to maintain (Freeman, 1997).

At the national level a country's comparative advantage in certain industries is enhanced as its members improve their efficiencies (Porter, 1990). As firms become more efficient and cost competitive, multinational firms are likely to invest in that region to take advantage of these efficiencies (Porter, 1987). Since an EMS can help firms in a specific industry improve their performance by reducing waste and creating other efficiencies (Porter and van der Linde, 1995), a country's national comparative advantage in specific industries can be enhanced if industry members are ISO 14001 certified.

A firm's competitiveness can also be enhanced by the adoption of ISO 14001. There is considerable anecdotal and empirical evidence to suggest that many American firms have improved their financial performance through the development of rent generating resources and capabilities, by reducing resource use, reducing process waste, improving product quality, and improving international trade (Davies and Webber, 1998; Ralborn et al., 1999; Delmas, 2001).

ISO 14001 also changes corporate culture by sensitizing management and staff to the environmental implications of their operations. Just as accounting management systems impose financial criteria on decision-making, ISO 14001 imposes environmental criteria on decision-making. While this can occur with any generic EMS, ISO 14001 has the additional benefit of requiring external certification. This external account-

ability ensures that someone in the organization monitors and controls its effective application. Failing the certification process sends an immediate and unambiguous signal to senior management of the failure of someone to fulfill her/his responsibility, and that the firm's EMS may be compromised.

The benefits associated with ISO 14001 can accrue both to firms that are engaged in strategies consistent with ISO 14001 and those that want to change their strategies. For those firms that want to reinforce their current strategy, they can gain first mover benefits so that their reputation is enhanced further. For those firms that want to reorient their strategy, they can gain the managerial and operational benefits associated with ISO 14001. In what follows, we develop four hypotheses in which we identify four different firm level strategies that are consistent with ISO 14001. We take the view that firms are attempting to reinforce their firm strategies. Immediately following these four hypotheses, however, we present the alternative case in which firms use ISO 14001 to reorient their firm strategy.

### **Reinforcing firm strategy through ISO 14001**

Because ISO 14001 is a symbol of the firm's commitment to environmental management systems that is internationally recognized and endorsed, firms that are aligned with the symbol are seen as engaging in acceptable practices. As a result, the standard can improve a firm's image by conferring greater environmental legitimacy (Jiang and Bansal, 2003). A firm's environmental legitimacy is the acceptability of the firm's perceived environmental performance (Bansal and Clelland, forthcoming). Firms that are already perceived as environmentally legitimate may be among the first to adopt ISO 14001 because certification will reinforce their present environmental strategy. As a result, the resource commitment for ISO 14001 will be considerably lower than firms that are not perceived as environmentally legitimate. Further, these firms are more likely to be aware of the development of

the standard. Firms that have low environmental legitimacy may not be concerned about environmental issues and not be tracking the development of new environmental management system standards. Finally, firms that are environmentally legitimate may see the opportunity to gain a competitive advantage through their positive image. As a result, they may seek to reinforce their positive image further by being a first mover, allowing them to tout themselves as being first to certify in their industrial or geographic space. We, therefore, propose that:

*Hypothesis 1: Firms with high environmental legitimacy will be more likely to certify early for ISO 14001 than firms with low environmental legitimacy.*

Proponents of corporate social responsibility (CSR) assume that businesses have a responsibility to contribute to society (Wood, 1991). Firms that behave in a socially responsible manner follow procedures and policies that deliver outcomes that do not focus exclusively on improving the firm's economic performance, but take into account multiple stakeholders (Turban and Greening, 1997). A firm's stakeholders may include employees, shareholders, customers, government agencies, non-governmental organizations (NGOs) and members of the local community. Examples of socially responsible behaviors include environmental clean-up programs, community development programs, and employee welfare programs.

Socially responsible behaviors have also included environmental performance improvement programs (Russo and Fouts, 1997). By focusing on improving their environmental performance, firms have been responding to their stakeholder's needs, especially those in the local community. Since firms with a high degree of corporate social responsibility attempt to meet the needs of their multiple stakeholders, it is likely that they would seek out an EMS that would both be credible to all parties and fulfill the firm's environmental performance goals. ISO 14001 has a high degree of credibility with such stakeholders as governments, customers, NGOs,

suppliers and competitors, and can improve corporate environmental performance and, therefore, confirm a firm's commitment to social responsibility. Since ISO 14001 has strong brand recognition, ISO 14001 certification may fulfill the multiple corporate goals of helping to improve the environment, improve financial performance, and signal the firm's social responsibility to external stakeholders. We therefore propose:

*Hypothesis 2: Firms committed to corporate social responsibility will be more likely to certify early for ISO 14001 than firms with low commitment to corporate social responsibility.*

An EMS is based on the principles of total quality management (Shrivastava, 1995; Hart, 1995). First, as with a quality management system, an EMS such as ISO 14001 advocates principles of continuous improvement: plan, do, check, act. Firms are required to measure environmental performance, implement procedures for changing it, and then check and correct their procedures as necessary. Second, a quality management system takes a systems approach for improving quality so that it applies not only to a specific functional area of the organization, but also looks at relationships between departments. ISO 14001 does the same. For example, a change in inputs may impact production processes that may or may not improve overall environmental performance. Hence, it is important to evaluate the impact of changes in production processes on the entire organization and not a single operation. Further, quality management is consistent with lean production where the fewest inputs are used to produce the output. This philosophy is consistent with superior environmental performance as it will lead to less resource use, waste and emissions. In fact, an EMS is often referred to as a total quality environmental management system (TQEM) because the philosophies are so closely aligned. Given the consistency between ISO 14001 and quality management systems, firms may use ISO 14001 to confirm their commitment to quality (Angell, 2001). We, therefore, propose that:

*Hypothesis 3: Firms with high commitment to quality initiatives will be more likely to certify early for ISO 14001 than firms with low commitment to quality initiatives.*

International scope represents the breadth of a firm's international operations. Firms with greater international scope may be more likely to certify their facilities for three reasons. First, firms that have greater international scope have greater difficulty with internal coordination because of the size and complexity of their operations (Roth, 1995). ISO 14001 provides firms with better internal coordination by requiring that the firm document all relevant environmental regulations and develop a plan to meet them.

Second, firms with greater international scope operate in multiple countries where institutions pertaining to environmental performance may be different. These firms must conform to the institutional constraints within all the countries in which they operate if they are to be deemed legitimate within each (Kostova and Zaheer, 1999). Firms that are not deemed legitimate in the country in which they operate will have limited access to the resources they need to operate (Suchman, 1995; Mitchell et al., 1997). The flexibility of ISO 14001 allows firms to meet the environmental performance legitimacy requirements of the various jurisdictions in which it operates, resulting in fewer fines and penalties, and better relationships with governments and other stakeholders.

Finally, even if firms operate in countries where ISO 14001 is not specifically mandated, it is in their best interest to be certified. The credibility of the ISO 14001 standard may provide them with some degree of legitimacy, since by certifying they present an image that they are concerned about their host-country's environment (Jiang and Bansal, 2003). Also, firms that enter new markets often have operating liabilities in relation to their domestic competitors due to their lack of familiarity with the new environment (Hymer, 1967; Zaheer, 1995). They may certify because they can realize financial performance improvements, overcome their liability of foreignness and gain a competitive advantage

over domestic competitors (Davies and Webber, 1998; Ralborn et al., 1999). So, firms that are already international may have more of an incentive to be certified than firms that operate primarily in domestic environments. We therefore propose:

*Hypothesis 4: Firms with wide international scope will be more likely to certify early for ISO 14001 than firms with narrow international scope.*

### **Reorienting firm strategy through ISO 14001**

While ISO 14001 can reinforce the firm's existing strategy, it can also serve to reorient a firm's strategy. Firms that have low environmental legitimacy may see the opportunity to use ISO 14001 to signal to stakeholders their new commitment to the environment. These firms will potentially experience greater benefit through ISO 14001 because of improved environmental performance and legitimacy than firms that already have legitimacy.

ISO 14001 can also jumpstart corporate social responsibility initiatives. Because of the consistency between ISO 14001 and corporate social responsibility, as mentioned in the development of Hypothesis 2, firms that have not exhibited corporate social responsibility in the past may see ISO 14001 as an opportunity to do so now. And, by being among the first to certify, the signal will be effective in demonstrating the change in the firm's strategy with respect to corporate social responsibility.

Firms that have been slow with their quality initiatives can use ISO 14001 to motivate new approaches to quality. ISO 14001 requires that the firm's environmental aspects and impacts be documented and measured. In the same vein, this documentation and measurement system can serve as the backbone for a quality management system.

Finally, firms that have narrow international scope and most of their operations are in a single country may be among the first to certify for ISO 14001. These firms are most vulnerable to the

requirements of host governments because they are generally smaller and have less political clout than firms that are already widely internationalized. These domestic firms, then, may see ISO 14001 as an opportunity to help in their internationalization process.

Hypotheses 1–4 predicted a positive relationship between environmental legitimacy, corporate social responsibility, quality, and international scope with early adoption of ISO 14001 on the assumption that early adopters are looking to reinforce their firm strategy. A negative relationship could instead have been proposed, suggesting that firms are attempting to reorient their firm strategy. If firms are indeed reorienting their firm strategy through ISO 14001, the potential social and business spin-offs of the standard will be greater than if it is being adopted by firms that have already engaged in firm strategies consistent with ISO 14001 objectives.

## Methods

### Sample

Our sample was drawn from 197 facilities of the 90 firms that had been ISO 14001 certified in the US by 1998, two years after the standard was introduced. Given that our hypotheses were motivated by firm level characteristics, the analysis was conducted at the firm level not the facility level. Firms with at least one facility that had been certified were included in our analysis. *T*-tests comparing the means of certified firms and a sample of firms from Compustat showed that certified firms were significantly larger across a number of size indicators including number of employees, sales and assets ( $p < 0.001$ ). We also found that the majority of firms (86.5%) operated in manufacturing SIC sub-sectors such as electronics and electronic equipment, industrial machinery and equipment and transportation equipment. Thirty-one per cent of the certified US facilities were owned by firms based outside of the US. Most of the foreign owned firms were from Japan (19.2%) and the European Union (9.6%).

Based on these biases in the sample of firms,

we decided to use a matched pair analysis of certified and non-certified firms, controlling the pairs for industry membership by four digit SIC, size based on assets, and location of the home office. Only 52 of the original 90 firms were included in the Compustat database. Our sample was reduced further to 46, which represented 51% of the total population of firms, because suitable matches could not be found.

## Variables

### ISO 14001 certification

Our original set of certified firms was drawn from the Globenet web site ([www.iso14000.net](http://www.iso14000.net)).

### Environmental legitimacy

To measure environmental legitimacy, we collected articles from the Associated Press between 1995 and 1996 that pertained to any one of the sample firms and any of the following keywords: toxic, environmental, ISO 14000, ISO 14001, pollution. We then coded the articles based on whether they were favorable, neutral or unfavorable. In total 314 articles were coded. We used Deephouse's coefficient of legitimacy (Deephouse, 1996), based on the Janis-Fadner coefficient to calculate legitimacy. Deephouse had applied the Janis-Fadner coefficient of imbalance to measure a firm's legitimacy. The Janis-Fadner coefficient is bounded by  $-1.0$  to  $+1.0$  with higher values representing higher legitimacy. The formula is provided below:

$$\text{Janis - Fadner coefficient} = \begin{cases} \frac{(e^2 - ec)}{t^2} & \text{if } e > c \\ \frac{(ec - c^2)}{t^2} & \text{if } c > e \\ 0 & \text{if } e = c \end{cases}$$

where  $e$  = number of favorable environmental articles,  $c$  = annual number of unfavorable environmental articles, and  $t = e + c$ .

Two raters coded all articles and the Cohen's kappa, which measures interrater reliability, was acceptable at 0.72.

We also coded the same articles based on whether or not the firm experienced any environmental crises. For this measure, we used the total number of articles. The Cohen's kappa for this measure was 0.85.

#### *Corporate social responsibility*

We analyzed the 1997 annual reports to identify expressions of social responsibility. We scoped for examples of concern for employee welfare, occupational health and safety, community programs, environmental programs, and philanthropic activities. References to CSR issues in the Letter to Shareholders of the annual report and in the text of the annual report were coded. If any reference was made in the Letter to Shareholders, a rating of 1 was assigned to this item. If a reference was made to CSR in the body of the annual report, the item was rated 1 if there was a sentence, 2 if there was a paragraph or more, and 0 if there was no mention. The annual report item was divided by 2 and added to the Letter to Shareholders item, to reflect the greater importance often attributed to the Letter to Shareholders, to calculate the final value for CSR. The Cohen's kappa for this measure was 0.78.

#### *Quality*

Two different measures for quality were applied. The first was whether the firm was ISO 9000 certified. ISO 9000 is the standard for quality management systems that was launched by the ISO in 1987. Because it was so widely subscribed and seemingly successful, ISO 9000 was used as a framework for ISO 14001. We were able to identify if a firm was ISO 9000 certified from the Quality net ([www.qualitydigest.com](http://www.qualitydigest.com)). Firms that were ISO 9000 certified were expected to experience lower costs than non-ISO 9000 certified firms when they seek ISO 14001 certification because of overlapping documentation requirements. We also assessed a firm's commitment to

quality by analyzing the firm's 1997 annual reports. Both the Letters to Shareholders and annual report text were analyzed. Similar to the corporate social responsibility variable, if quality was mentioned in the Letter to Shareholders, it was rated a 1. In the annual report, a rating of 0 was given if there was no mention of quality programs, 1 if there was a sentence, and 2 if there was a paragraph or more. The reports were coded by two independent raters to ensure accuracy, and the Cohen's kappa was 0.79. The final variable was calculated by dividing the annual report information by 2 and adding it to the statistic from the letter to shareholders.

#### *International scope*

Following past research, we used the number of countries in which a firm operates as a measure of geographical dispersion of operations (Barkema and Vermeulen, 1998). These data were accumulated from the SEC and websites of our sample firms.

#### **Data analysis**

We used a matched pair design in the analysis, where the value of the explanatory variable of the certified firm is compared with the value of the non-certified firm. This type of analysis is superior to ordinary least squares regression analysis because it carefully controls for similar firms and performs a one-to-one comparison. We used matched pair *t*-tests to determine if there were significant differences between certified and non-certified firms based on the four independent variables.

#### **Results and discussion**

The correlation coefficients and descriptive statistics for all observations and variables are shown in Table I. The means of the matched pairs in our sample are shown in Table II. There is support for the predictions that firms are adopting ISO 14001 early in order to reinforce

TABLE I  
Pearson correlations

Variable	Mean	s.d.	1	2	3	4	5
1 Environmental Legitimacy	-0.02	0.43					
2 Environmental Crisis	1.84	2.35	-0.29**				
3 Corporate Social Responsibility	2.04	1.92	-0.01	0.16			
4 Quality (ISO 9000)	0.82	0.39	-0.19*	0.12	-0.03		
5 Quality (annual reports)	0.44	0.59	-0.07	0.01	0.56***	0.14	
6 International Scope	24.8	13.5	-0.14	0.41***	0.18*	0.32**	0.06

\*  $p < 0.1$   
 \*\*  $p < 0.01$   
 \*\*\*  $p < 0.001$

TABLE II  
Matched pair comparison of means

Variable	Means	
	Non-certified	Certified
Environmental Legitimacy*	-0.25	0.21
Environmental Crisis***	2.74	0.94
Corporate Social Responsibility	1.98	2.12
Quality (ISO 9000)	0.81	0.83
Quality (annual reports)	0.42	0.47
International Scope**	20.9	27.3

\*\*\*  $p < 0.001$   
 \*\*  $p < 0.01$   
 \*  $p < 0.05$

rather than reorient their existing firm strategy since certified firms tend to have higher levels of environmental legitimacy ( $p < 0.10$ ), fewer environmental crises ( $p < 0.001$ ) and wider international scope ( $p < 0.001$ ) relative to their matched non-certified pairs. While certified firms had slightly more commitment to quality and corporate social responsibility initiatives, the differences were not statistically significant. In other words, the prediction that ISO 14001 certification reinforces the firm's commitment to quality or social responsibility is not supported. There is no suggestion, therefore, that firms are reorienting their strategy along the quality or social responsibility dimensions.

These findings suggest that early adopters

of ISO 14001 were aiming to reinforce their existing strategy with respect to the environment. Firms that were already environmentally legitimate were more likely to certify for ISO 14001 than those that were not. Given that the stated goal of ISO 14001 is to facilitate sustainable development, it would appear that this goal was not being facilitated by early adopters of the standard. To effect substantial changes in sustainable development, the standard would have to reach firms that are not perceived to be legitimate.

The fact that Hypotheses 2 and 3, which suggested that ISO 14001 certification can reinforce a firm's commitment to CSR and quality, were not supported is also an important finding.



Managers may not have certified because they believe that their commitment to CSR and quality could be achieved through other means and that ISO 14001 did not offer sufficient incremental benefit.

We found significant support for the view that firms with wide international scope were more likely to certify than firms with narrow international scope. This finding suggests that ISO 14001 is consistent with a corporate internationalization strategy and that it supports the objective of the standard to facilitate international trade.

## **Conclusion**

This study investigated whether the first movers for ISO 14001 certification were aiming to reinforce or reorient their existing strategies, particularly in respect to the natural environment, quality, corporate social responsibility, and internationalization. We found support for the hypotheses that suggested that firms were reinforcing their commitment to the natural environment and internationalization, and we found no support for the view that firms were using ISO 14001 to reorient any of their strategies.

This raises the question as to whether ISO 14001 will be limited in its diffusion. The objective of ISO 14001 was to assist in internationalization and sustainable development. Given that firms that are already perceived to be international and environmentally legitimate are adopting the standard, it is possible that ISO 14001 may not achieve its objective.

Whether or not ISO 14001 will reach a wide group of firms will depend on a number of different factors. First, the standard will need to be adopted by firms that are perceived to be leaders within the industry. Firms are more likely to mimic the policies and practices of other firms that are perceived as successful and legitimate (Powell and DiMaggio, 1991). If, however, ISO 14001 does not signal that a firm has become more environmentally responsible, heavy polluters may not be encouraged to certify. Second, the standard must be perceived as giving the firm legitimacy. If, however, the

standard is assumed to be an easy hurdle to which any firm, no matter how polluting, can subscribe, then other firms, even polluting firms may not subscribe to the standard. It is important that the standard conveys information about the practices of the certified firm. Third, the standard must become well known so it is instantly recognized and even requested by customers and members of the local community. Ironically, the standard may never become widely adopted until it is widely known, but it may never become widely known until it is widely adopted.

Early adopters of the standard do not appear to have questioned the need for ISO 14001. It likely met with their desire to build and sustain a competitive advantage in the environmental and international arenas. However, it is not clear if ISO 14001 will reach firms that want to reorient their firm strategy.

This study has limitations that need to be acknowledged. First, this study was conducted within two years of the standard's release, so to project its findings on future adoption rates would be misleading. It would be desirable for future research to identify the strategic motivation for firms that are ISO 14001 certified. Second, this study did not account for differences in environmental performance between certified and non-certified firms. It would be useful for future studies to also incorporate differences in toxic emissions among certified and non-certified firms, especially changes in environmental performance over time. It would also be interesting for future research to consider why firms are not ISO 14001 certified. While it is easier to determine why firms engage in behaviors or actions, it is much more difficult to determine why they do not engage in some behaviors. This information could provide deep insights into whether it is a lack of knowledge of ISO 14001 that explains the lack of adoption or whether ISO 14001 is perceived as not conveying sufficient legitimacy to warrant the expense.

Managers have been inundated with articles and anecdotes of how ISO 14001 certification has improved business performance. Until the business benefits of ISO 14001 become more apparent to firms, firms that want to signal a shift in strategy will not likely certify for ISO 14001.

Most managers do not question the need for an EMS, but rather, the need for ISO 14001 (Jiang and Bansal, 2003). They often prefer the flexibility of an in-house EMS. Certification, they argue, provides little marginal benefit at a high cost.

An important question to ask is whether ISO 14001 will be widely accepted and adopted, potentially using ISO 9000 as a good benchmark. The firm level benefits of ISO 14001 are not as apparent as they are with ISO 9000. Quality improvements translate directly into improved financial performance through lower reject rates of manufactured products and higher customer satisfaction. The impact of ISO 14001, on the other hand, is primarily social and the direct business benefits of the standard are not always evident. Further, there does not appear to be any suggestion that firms that see opportunities to improve quality see synergies between ISO 14001 and their quality initiatives. If ISO 14001 is to meet its societal objectives of sustainable development and improved international trade, it needs to be institutionalized which will only happen if managers see firm level benefits.

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