

Decision traps in ISO 14001 implementation process: case study results from Illinois certified companies

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Abstract

This paper describes cognitive decision traps into which companies may fall prey during implementation of the ISO 14001 Standard, and their effect on the environmental performance of certified companies. The environmental performance of several Illinois ISO certified companies over time has been investigated. Furthermore, three manufacturing plants have been analyzed, in depth, in order to determine the possible correlation between their Environmental Management Systems and the environmental decision biases. The outcomes of this survey show that even companies seriously committed to the fulfillment of the Standard, can still accidentally fall prey to cognitive decision traps, and that the myths regarding the effectiveness of the ISO 14001 Standard are often far from reality. A set of guidelines that companies should follow in order to avoid the most serious decision traps is provided, as well as recommendations for the next ISO 14001 review.

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1. Introduction

ISO 14000 is a series of standards and guidelines formulated in 1996 by the International Organization for Standardization (Geneva, Switzerland), with the aim of standardizing the environmental management programs of industries worldwide. The standards are voluntary, and can be tailored to any organization regardless of its size, location and activity. The core of the series is the ISO 14001 Standard, which pertains to implementation of Environmental Management Systems (EMS). It is rapidly becoming the dominant international standard. As of December 2002, the total number of ISO 14001 certifications worldwide reached 46,836, with 2400 in the U.S. [1].

However, it is suspected that the Standard does not necessarily lead to an improvement in environmental

performance. The hypothesis presented here is that the ISO 14001 implementation process can create several cognitive biases which may actually hinder the overall environmental performance of certified companies. The purpose of this paper is to describe and document cases of cognitive decision traps into which companies may fall prey during the ISO 14001 implementation, and to investigate their effect on environmental performance.

In order to recognize the relevant behaviors that support this hypothesis, the environmental performance of several Illinois ISO certified companies was investigated, over time. Three case studies were analyzed in more detail, to identify correlations between the Environmental Management Systems and the decision traps. Finally, guidelines for overcoming the most serious decision traps are presented, together with recommendations for the next ISO 14001 review scheduled for 2004.

In Section 2, relevant literature is reviewed. Section 3 describes the basic structure of the ISO 14001 Standard. Section 4 describes environmental decision traps that

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may be encountered during the Standard implementation. Section 5 analyses the environmental performance of Illinois companies before and after their ISO 14001 certification, and Section 6 presents the Standard adoption process of three companies. Conclusions are then drawn in Section 7 and recommendations are made in Sections 8 and 9.

2. Literature review

ISO 14001 (the “Standard”) is relatively new, and it is not always possible to study data related to environmental metrics of certified companies. Despite these difficulties, several studies are now emerging that analyze how EMSs affect environmental performance.

A comprehensive analysis of European industry, MEPI (Measuring Environmental Performance of Industry), reported that the performance of companies with ISO 14001 certification was not significantly better than those without [2]. Llomaki and Melanen [3] found that companies do not develop Environmental Management Systems because of a genuine concern about environmental issues, but rather because of external stakeholder pressures and marketing considerations. Furthermore, they discovered that certified EMS does not necessarily result in improved material efficiency or waste minimization. According to Pringle et al. [4], an ISO 14001 registered firm is not actually required to improve its environmental performance, and it may be able to point to its ISO certification as a “proof” of its commitment to protecting the environment without any guarantees that such improvements will actually occur. Krut and Gleckman [5] have argued that the ISO 14001 Standard falls short in responding to public expectations of sustainable industrial development. Rondinelli and Vastag [6] have analyzed a particular case study where a company with a strong environmental history certified ISO 14001, and actually improved some of its environmental aspects. Nonetheless, additional paperwork associated with ISO certification was created, which eventually became a significant burden to keep updated.

Similar criticisms can be found in the literature review of ISO 9000 series of manufacturing and quality control standards, which can be considered the precursors of ISO 14000. According to Eklund [7], ISO 9000 is not directly related to product quality, but rather a complex procedure to create order in the manufacturing process, and an additional bureaucratic obstacle for creative people. According to the author, the worldwide spread of this Standard is due to the customer-supplier chain reaction, which eventually will force even very small companies to seek the certification, even though compliance is not mandated. The bureaucratic nature of the ISO Standard and the burden of its implementation

on small companies has also been addressed by Wareham [8].

The University of North Carolina at Chapel Hill, in association with US-EPA, is developing a National Database on Environmental Management Systems [9]. The goal is to determine the effects of ISO 14001 on the environmental and economical performance of 63 companies, which volunteered for the study. Another study, conducted by Ammenberg and Hjelm [10], analyzed and compared trends of environmental metrics for 12 small and medium-sized companies before and two years after EMS implementation. More than half of the environmental metrics’ outcomes were either incalculable or not considered trustworthy, even though these companies had passed the external auditing processes. According to the authors, ISO 14001 vaguely defines the requirements of continual improvement, but does not guarantee good environmental performance.

From the decision-making perspective, Petroni [11] proposed a multi-attribute evaluation technique, based on the Analytic Hierarchy Process, to analyze the benefits and shortcomings of ISO 14001 registration in a large food machinery manufacturer. Mangun [12] investigated six decision biases during environmentally conscious design which may negatively affect environmental impact: transfer of environmental impact, focusing only on end-of-pipe solutions, status quo, reacting to legislation, objective isolation, and ignoring the customer.

3. ISO 14001 environmental management system

The ISO 14001 document entitled “Environmental Management System—Specification with Guidance for Use” is the centerpiece of the ISO series [13]. According to this Standard, a company must commit itself to pollution prevention, regulatory compliance and continuous improvement of its products, activities and services. The EMS is used to achieve these goals, and it follows the “plan, do, check and act” model, which forms the basis of continuous improvement philosophy. An EMS which conforms to the ISO 14001 Standard requires the following elements:

1. An Environmental Policy appropriate to the organization’s activities, products and services.
2. A Planning process that identifies the environmental aspects and the legal requirements that characterize the company, and then implements environmental programs that address the impacts found significant.
3. An Implementation system that includes the company’s structure of responsibility for the elements of the EMS, employees training and awareness programs, an effective communication system, the establishment of the EMS documentation, the

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