ENVIRONMENTAL RESPONSIBILITY MODEL BASED ON ISO 14000 MANAGEMENT SYSTEMS

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Abstract:
Worldwide corporations, as well as their stakeholders, are more conscious of the need for environmental management, SR behaviour, and sustainable growth and development. International Standards are becoming more significant for corporations to work towards common environmental management practices. ISO 14001 is the first and the broadest standard intended at a more responsible approach of corporations and the world's most acknowledged framework for environmental management systems that assists corporations to better manage the effect of their activities on the environment. This article aims to study ISO 14001 implementation and its effects on the environmental responsibility. A model will be built, which covers the environmental management system, the components of organizational culture, being able to influence environmental standards implementation.

Keywords: Environmental management system, environmental responsibility, environmental responsibility model, management system ISO 14000, climate change.

Introduction

The United Nations (2001, p. 176) define an EMS as "systematic planning, implementation and control activities in order to achieve continual improvement of corporate environmental performance".

Environmental management systems involve a wide variety of practices, ranging from internal audits, assessments of environmental accounts, customers and suppliers, based on environmental criteria or Total Quality Environmental Management (TQEM). This wide range of activities alleged by the existence of EMS is influenced by a number of internal factors such as the specific characteristics of the firm, the technical capacity (Harrington et al., 2008) and a series of external factors, external pressures exerted by the regulatory agencies and consumer lobbying groups (Henriques and Sadorsky, 1996; Amacher and ERDF, 1997; Dasgupta et al., 2000; Khanna and Anton, 2002a, b; Anton. et al, 2004). There are records showing that environmental management practices can lead to improving the performance of companies in the environmental field (Arimura et al., 2008; Anton et al, 2004; Dasgupta et al., 2000; Khanna and Anton, 2002; Ziegler and Rennings, 2004; Melynk, Sroufe and Calantone, 2003; Anandale, Morrison-Sanders and Bouoma, 2004). However, the link between the existence of an EMS and environmental performance is not always proved by empirical studies (Barla, 2007).

The raising awareness about the environmental impacts of polluting activities on the environment supported the development of environmental

standards, which are proposing to guide and integrate EMSs in the overall company management system. The most prevalent is ISO 14001, which was officially published in September 1996 (Alberti, Caini, Calabrese & Rossi, 2000) and that provides guidance for the development of performant EMS, demonstrating companies' commitment in respect to the environmental protection objectives. ISO 14001 is based on three principles: pollution prevention, continuous improvement and voluntary participation (Hunter and Bansal, 2003).

For internal management, ISO 14001 responds to the need of promoting a preventive approach and of integrating environmental concerns into everyday activities. This attitude of integration and preventive behaviour, which is the core of EMSs, cannot simply be reduced to technical measures under the responsibility of an Environment Department (Boiral 2007, 127). Internally, the entire company must be involved in the environmental policy. In terms of external recognition, ISO 14001 helps improving company's image and demonstrates its commitment to environmental protection in dealing with customers, public authorities, citizens and environmental groups (Bansal and Roth, 2000).

In this article, it will be provided a conceptual framework relating the Plan-Do-Check-Act framework to the environmental management practices. A description of the empirical models will be provided to explain the adoption of environmental management practices for climate change mitigation.

Literature review

Environmental management systems

The starting point in a transparent and credible management of climate change is an EMS. The most wide-spread standard that is the basis of an EMS is ISO 14001, which applies the classic Plan-Do-Check-Act Deming cycle for the management of environmental issues within a company.

EMSs are focusing on aligning all processes that take place within a company, the framework of integrated systems aimed to provide the highest value for the customer and other stakeholders. In this case, the main beneficiaries of EMS are the local, regional and global environment. Secondary beneficiaries may include the owners or shareholders of organization, customers, government agencies and employees. Effective EMSs provide significant advantages for each of these groups of beneficiaries. Those in charge of the development, implementation, and maintenance of these systems need to understand and be able to communicate both the benefits and risks, in order to obtain the support of management and executives to effectively and efficiently create a management system (Kausek, 2006).

ISO continuously develops new standards, in response to the interests of different fields and stakeholders. ISO aims to provide practical tools for addressing environmental challenges, ranging from standards for methods of sampling, testing and analysis, environmental management or issues of products design as to be environmentally friendly.

ISO 14000 family of environmental management standards represents a worldwide point of reference in terms of best practices in this field. The ISO 14000 family is designed to be implemented according to the same Plan-Do-Check-Act (PDCA) cycle underlying all ISO management systems standards (ISO, 2011).

ISO 14001:2004, Environmental management systems – Requirements with guidance for use, the best known of these standards offer the requirements for EMS and contribute to achieving the objectives of the company in the field of environmental protection.

ISO 14001 is a standard, which describes the necessary elements of an EMS and allows companies to obtain the certification of those systems in accordance with the requirements of the standard. ISO 14001 does not take into account economic and environmental capacities or priorities of developing countries. Management elements of ISO 14001 do not feature adaptability, being typically applied by the developed countries. This issue raises a number of challenges for developing countries in terms of economic, financial and environmental matters (Burhenne-Guilmin, 2001).

ISO 14000 family of standards includes also tools for environmental management and design of environmentally friendly products (ISO, 2010). These ISO standards are designed to be policy-neutral which provides the flexibility that has made it possible for ISO standards to be applied to many different climate change programmes around the world.

Organizational factors – organizational culture

To explain EMS adoption and climate change it is necessary to identify the factors underlying the adoption of an EMS. These factors are (Kausek, 2006):

Increasing the company's image and reputation. An EMS should be properly designed to reduce the risk of environmental accidents, which could lead to the loss of customers.

Reduce environmental costs. An EMS properly applied should significantly reduce the costs associated with licenses, waste disposal fees, administrative costs.

Increasing access to new customers. Many large companies require their suppliers' certification according to ISO 14001 or other specific environmental standards requirements.

A study of Morrow and Rondinelli (2002), in companies producing energy and gas has indicated that, among the reasons that influence adopting or certifying an EMS are improved documentation and increased processes efficiency. Darnall et al. (2000) have found that other issues, which are not related to the environment, such as maintaining competitive advantage, strengthening public relations, achieving customer requirements, and reducing total costs, seem to play a more important role in the decision-making process of a company, which applies for certification. Economy and institutional pressures also play a significant role in the adoption of ISO 14001 (Bansal & Bogner, 2002). The results of a survey by Mori, Welch and Aoyagi-Usui (2002) have shown that Japanese companies that have implemented environmental standards for the first time were large firms, ecological friendly and influenced in minor extent by the competitive and regulatory pressures or mass media. On the other hand, companies that have later adopted the standards were smaller and less eco-friendly, largely influenced by competitive and regulatory pressures or mass media.

Based on the literature there were identified those factors that were consider to be the most influential in adopting ISO 14001: top management, perceived benefits, market, motivation, availability of resources, regulatory concerns, and organizational culture.

From ISO 14000 implementation's perspective, organizational culture was envisioned as a constraint to accept the change, employee participation, willingness to learn, and ISO standards (mainly ISO 9001).

Cultural changes are needed to support the implementation of environmental management programs within an organization. These are changes, which increase the participation and integration of employees as well as cross-functional integration within the organization

(Kitazawa and Sarkis, 2000). An organization needs to design, plan, implement a program of organizational development, and participate in the change of what Porter and Van der Linde (1995) defined as "organizational inertia". However, Ruth (1999) reported that the barrier to an EMS implementation is the inconsistency of top management involvement.

Knowledge and skills acquisition and improvement allow achieving objectives such as systematic solving of problems and consciously approach of processes. Without appropriate training, team efforts are becoming less effective (Harris et al., 2002). Several studies underline the idea that employees' participation possibly improves the performance of implementation (Hanna et al., 2000). On the other hand, a survey by O'hEocha (2000) has shown that a significant obstacle to the implementation of the project for improving communication is linked to the degree of involvement and attitude of employees.

Organizational culture is one of the attributes that a firm's management must take into consideration before adopting ISO 14001. Such a change includes employees' participation, teams' cross-functional coordination, as well as employees and top management training. Top management must provide employees with the knowledge and skills necessary to ensure the effectiveness of ISO 14000 adoption.

The environmental responsibility model

Based on two variables, ISO 14001 and climate change, it was envisioned a link between three key elements that, eventually, can be used to create the environmental responsibility model. The model comprises of three elements: ISO 14001 (implementation) and climate change (reduction) through ISO 14001 implementation. In addition, besides the two elements, it was used a third one, organizational culture, which was considered that demonstrates the environmental responsibility of corporations.

The implementation of ISO 14001 is based on an environmental management system. While the specific components of an EMS can vary (according to its implementation), the general structure of an EMS is mostly the same.

Below, there are presented the components of a generic EMS. Based on PDCA cycle, the EMS is focused, through its implementation, on continuous improvement.

PLAN

- Initial Environmental Review through Environmental Legal Requirements and Aspects
- Commitment and Environmental Policy
- Environmental Objectives
- Environmental Management Programs

DO

- Structure and Operations
- Training, Awareness, Competence and Responsibility
- Communication
- Document and Control
- Emergency Awareness

CHECK

- Monitoring and Measuring
- Correspondence Assessment
- Correcting and Preventing Actions
- Audits and Records

ACT

- Documentation
- Management Review

Overall, the External Environmental Communication is one of the factors that provide confidence to all stakeholders regarding the environmental issues of the company.

The second key element is ISO 14001, which includes requirements for the design, development, management,

reporting and verification of an organization's climate change inventory. Through ISO 14001 implementation the following steps are taken:

- Climate change organizational inventory design and development
- Climate change documentation and reports
- Verification of climate change assertion
- Validation of climate change assertion

As for organizational culture, important in this case are top management commitment and support, training and education, employees' enforcement and participation through teamwork.

When it was envisioned the environmental responsibility model, the following hypotheses were taken into account:

- Top management commitment and support have a very significant and strong link with EMS ISO 14001, and its implementation
- Training and education have a positive and important relation with ISO 14001 EMS and its implementation.
- Employee enforcement has a positive and important relation with ISO 14001 EMS and its implementation.
- Employee participation through teamwork has a positive and important relation with ISO 14001 EMS and its implementation.

Based on these hypothesis and the three key elements, the steps of developing the environmental responsibility model were:

1. Determine correspondence among Environmental Concerns (ISO 14001), Climate Change and Core Subjects (organizational culture: change acceptance based on top management commitment and support, employees' participation through learning, communication, involvement and attitude). The components of each of the three key elements were grouped according to PDCA cycle and, accordingly, developed the following connections:

1.1. **Change Acceptance – PLAN** (EMS ISO 14001 and climate change programs)

1.2. **Employees' participation through Learning – PLAN - DO** (EMS ISO 14001 and climate change programs)

1.3. **Employees' participation through Communication – DO** - **CHECK** - **ACT** (EMS ISO 14001 and climate change programs)

1.4. **Employees' participation through Involvement** - **DO** - **CHECK** - **ACT**

1.5. **Employees' participation through Attitude** - **DO** - **CHECK** - **ACT**

2. Based on the above developed correspondence, the environmental responsibility model is:

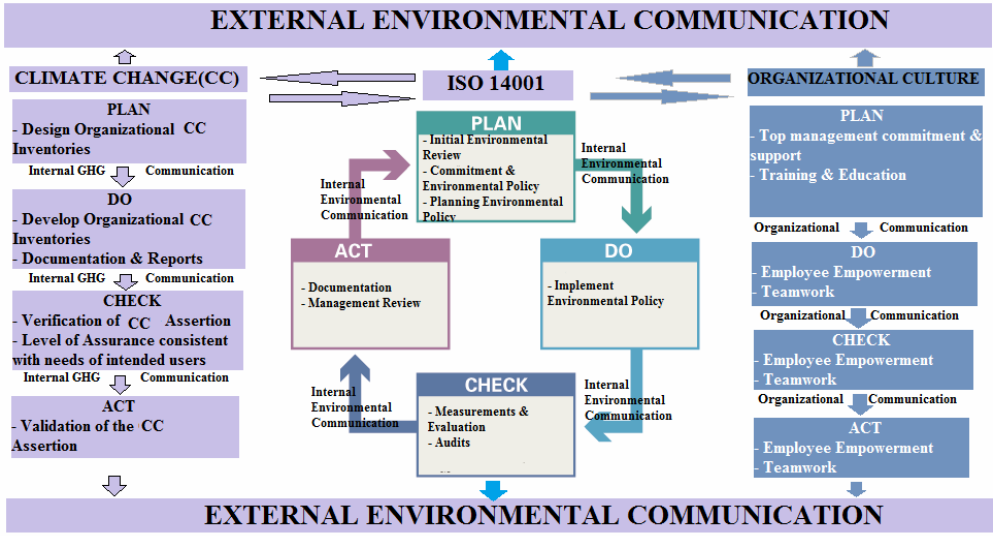

Figure.1. Environmental responsibility model
(*Source: ISO.org and own concept*)

When building the model, based on PDCA cycle to continuous improvement, it was considered that, through top management and employees' involvement and participation to implementing and operationalizing models components, the influence on climate change effects reduction will be synergetic.

Through education and training will result a change of employees' attitude strengthening the company's environmental responsibility. Each employee will have to know and understand the general objectives of and ISO 14001 EMS and the specific targets of climate change programs. Achieving these objectives will be part of the motivation and reward programmes.

Conclusions

Based on empirical research results it can be stated that implementing environmental management systems lead to increased corporate environmental responsibility. This responsibility translates into organizational and individual behaviour leading to achieving the goal of developing an economy based on friendly environment through reducing climate change effects. The trend of ISO 14001 certificates and their effects on climate change are the proof regarding the effectiveness of environmental management systems in combating climate change.

In addition, to prepare the ground for an easy implementation of ISO environmental standards, it was envisioned and built an environmental responsibility model. The model comprises of three elements ISO 14000 management system (implementation), climate change (reduction) through ISO 14001 implementation and, organizational culture which will support the implementation and the reasoning for climate change.

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