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The benefits associated with ISO 14001 certification for construction firms: Turkish case

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ABSTRACT

Construction firms all over the world are increasingly seeking to obtain ISO 14001. The rapid growth in the number of ISO 14001 applications in Turkey and the share from the construction sector in this number, as a leading sector, is rather striking. This paper, using a structured questionnaire survey, investigates whether there is any dependence or relation between construction firms characteristics and having ISO 14001 certification and any difference in the perceptions related to ISO 14001 by considering both firm characteristics and two different groups as certified and non-certified firms. Additionally, it examines the perceived benefits of having ISO 14001 for certified construction firms. According to the results of analysis, although there is not any difference in perceptions on ISO 14001 certification in terms of firm characteristics and being as certified and non-certified and their both positive opinions about ISO 14001 certification. There is a relation between firms characteristics and having ISO 14001 certification. ISO 14001 certification contributes to construction firms not only in terms of environmental benefits but also with corporate management and marketing effects, thus verifying that the ISO 14001 has a positive impact on the Turkish construction sector.

1. Introduction

Following both the Rio Conference in 1992 and GATT (General Agreement on Tariffs and Trade) negotiations, international standards have become important for succeeding and for getting access to the markets; at the same time, there has been an increase in the interest of environmental management. Such regulatory and competitive pressures have caused firms to take into consideration the environmental issues within their own production and market plans. Many firms have attempted to seek an effective environmental management system. These have led to implementation and development of the ISO 14001 standard for assessing environmental management processes. Today, all over the world, many firms are seeking ISO 14001 certification. According to statistics published by ISO, by the end of 2006, 129,199 certificates have been issued in 140 countries, an increase of 18,037 certificates since the end of 2005 when the total number was 21,225 in 138 countries [1]. While Europe has 44.05% of regional share expressed in 2006, Far East countries have 41.24% share. The other regional shares are respectively North America 5.94%, Africa/West Asia 3.74%, Central and South America 3.37 and Australia and New Zealand 1.66%. The top 10 countries for growth in ISO 14001 certification were China (6159), Italy (2745), Spain (2505), Germany (975), Korea (938), Sweden (729), Romania (702), Turkey (505), and Switzerland (503) by 2006. In Turkey, while 918 firms were registered at the end of 2005, the number of certifications increased to 1423 at the end of 2006. This is an increase of 64.5% in one year in the number of ISO 14001 certificates in Turkey. This growth is rather striking.

According to statistics published by ISO, the top five industrial sectors for ISO 14001 certifications are electrical and optical equipment (9423), construction (9095), basic metal and fabricated metal products (7521), chemicals, chemical products and fibers (5041), and machinery and equipment (4554), respectively. The share of construction certificates in industrial sectors is quite high. While 4660 firms were registered at the end of 2005, the number of certifications rose significantly to 9095 at the end of 2006. In this sector, the share all over the world has increased by 51.2% in one year [1]. The more and more increasing interest of construction firms to obtain the ISO 14001 certificate depends on benefits associated with it.

Construction, as an activity, is defined by NACE Code[1] under the Group F. Under this group, there are three sub-groups: construction of buildings (F41), civil engineering (F42), and specialized

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[1] NACE stands for "Nomenclature Generale des Activites Economiques dans l'Union Europeenne" (General Name for Economic Activities in the European Union) and is based on the European standard for industry classifications.

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construction activities (F43). In this study, construction, the general field of activity of the surveyed firms includes all items given under the titles of all three sub-groups.

While the construction sector creates and provides facilities for human activities and social development [2], environmental impacts of construction activities, products and services are quite significant [3]. Construction activities, products and services may cause different types of pollution such as land deterioration, resource depletion, waste generation, air pollution, noise pollution and water pollution [4–6]. The ISO 14001 offers a framework for managing construction operations for improvement of their environmental performance.

In Turkey, as rapid growth in the number of ISO 14001 certifications and the share of the construction sector as a leader in this number are considered, there is a need to conduct an exploratory study on Turkish construction firms. This paper has focused on two main aims. The first is to determine whether there is any dependence or relation between construction firms characteristics and having ISO 14001 certification and also any difference in the perceptions related to ISO 14001 depending on both firm characteristics and grouped as certified and non-certified construction firms. Second one is to examine the perceived benefits gained from obtaining ISO 14001 for certified construction firms. The contribution expected from this study is to examine relation between construction firm characteristics and having ISO 14001 certification and the benefits associated with the ISO 14001 certification in the construction sector in Turkey and to compare the findings with other countries.

The information on the ISO 14001 is given in the following section. Section 3 presents the theoretical background related to implement in the construction sector. Section 4 gives information about the significance of ISO 14001 for construction sector in Turkey. Section 5 contains a survey study of Turkish construction firms. This section is divided into three parts. In the first part, the structure of the survey is determined. In the second part, findings in relation with the analysis are given in six sub-divisions. The third part provides a general evaluation of the findings, including comparison with experiences of other countries. Section 6 contains the conclusions and policy recommendations.

2. Environmental management system standard: ISO 14001

Although firms in most industrialized countries have adopted environmental protection practices required by government agencies since early 1970s, these regulations largely focus on control of water and air emissions and waste disposal. Government regulations usually require companies to reduce or eliminate the pollution [7]. Since the 1980s, governments and industry associations have significantly increased their promotion and reliance on voluntary environmental policies as a mean of encouraging firms to establish management and operational practices that reduce pollution and increase material and energy efficiencies. The term ‘voluntary policy’ includes a wide range of programmes that employ explicit or implied regulatory and market incentives to obtain commitments from polluters in service and manufacturing industries to reduce the environmental damage for which they are responsible. The prevalence of voluntary policies and programmes is representative of a broader shift toward more flexible instruments and away from standards-based regulation [8]. The first environmental management standard, BS7750, was prepared in 1992. In 1993, the Eco-management Audit Scheme (EMAS), prepared by the European Union, started to be applied. Following the BS7750 and EMAS, various countries developed their own EMS (Kein et al. [9]). Later, ISO 14001 environmental management system standard was introduced in 1996.

ISO 14001 provides guidelines by firms or organizations design and implement an EMS that identifies the organization’s environmental policy, the environmental aspects of its operations, legal and other requirements, a set of clearly defined objectives and targets for environmental improvement and a set of environmental management programs [10]. The ISO 14001 is a set of guidelines by which a facility can establish or strengthen its environmental policy, identify environmental aspects of its operations, define environmental objectives and targets, implement a program to attain environmental performance goals, monitor and measure effectiveness, correct deficiencies and problems and review its management systems to promote continuous improvement [11].

The ISO 14001 provides standard that is an internationally recognized system for the improvement of organization–level environmental performance through the minimization of harmful environmental effects and continual improvement [1]. ISO 14001 articulates a set of required steps that organizations must undertake prior to successful certification: definition of an organizational environmental policy; identification of environmental aspects of production and service activities; establishment of clear environmental objectives and targets; creation of plans for implementation, actual implementation, monitoring and evaluation, and periodic management review. Certification and continued compliance with the standards also requires that facilities undergo a series of third party audits [8,12].

3. Literature review: the implementing of ISO 14001 in the construction sector

A limited number of studies have been carried out in various countries related to implementing ISO 14001 in the construction sector. In these studies, two different methodologies were followed. First one covers the studies based on a sample of construction firms where second one covers the case studies performed on single firm. In literature review, this differentiation is taken into consideration. The summary of previous studies based on the ISO 14001 within the construction industry is given in Table 1.

3.1. Studies and their findings based on sample of firms

The studies based on a sample of firms related to using of ISO 14001 in construction sector focused much more in Far East and Asian countries. In these studies the benefits of ISO 14001 for construction firms and obstacles in application were determined. For example, in a study performed in Hong Kong, the most important benefits of ISO 14001 certification in the construction sector have been determined as benefits to environmental protection, minimization of environmental risk, positive development of environmental image and cost savings due to compliance with environmental guidelines [6]. In a study carried out in China, the benefits of the ISO 14001 certification are analyzed under five subtitles; internal operations, corporate management, marketing effects, subcontractor relations and site cleanliness [2]. According to the findings in this study, the benefit of the ISO 14001 certification is determined as the achievement of standardization for the management under the title of internal operations. Under corporate management, benefit of the ISO 14001 certification is seen as protection of resources and minimization of waste. In terms of market effects, the benefits are being sensitive to the environment and gaining the confidence of the clients. For subcontractor relations, the benefit is determined as the emphasis on the importance given to environmental issues by the subcontractors. In terms of site cleanliness, it is stated that the ISO 14001 certification has provided a significant development. In a study conducted in Singapore, one of major reasons why contractors would seek ISO 14001 certification is that they hope to reduce material wastage, hence cutting costs. Constructors also adopt ISO 14001 certification for purpose of alleviating the regulation burden, protecting the