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Abstract
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IDENTIFYING THE FACTORS WHICH AFFECT THE DECISION TO ATTAIN ISO 14000

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ABSTRACT

Formally adopted in 1996 by the International Organization of Standardization, ISO 14000 represents a new voluntary international environmental standard which will likely be adopted by the vast majority of corporations. While the literature is clearly divided in its assessment of ISO 14000, an underlying common theme is that the decision to achieve ISO 14000 certification constitutes a major undertaking for most firms. Such an undertaking, it is argued, does not take place in a vacuum. Rather, it is a response to a number of factors or influences. However, no research to date has empirically identified these factors and explained how they can be leveraged into a competitive advantage. In this article, we use qualitative case studies to identify which factors affect the decision to attain ISO 14000 certification and we also explain how these factors can influence the level of success achieved during the certification process.

INTRODUCTION

The primary objective of this article is to explore the implications of ISO 14000 for environmental management. Developing a more accurate and realistic understanding of the implications of ISO 14000 certification will help alleviate some of the potential disappointments in the outcomes often associated with ISO 14000. The literature is clearly divided in its assessment of ISO 14000, which is viewed as either a variant of TQEM or a paper-driven process of limited value. An examination of this international environmental standard was inspired by recent visits to a number of manufacturing facilities. It was discovered that not only do managers embrace the ISO 14000 criteria, they view it as an integral part to their future success. These mangers insist that ISO 14000 is worth chasing, not only because their customers might demand it, but also because ISO 14000 improves performance.

These findings raise an interesting issue. The issue pertains to the decision to pursue ISO 14000 certification. That is, if there is a real benefit to being ISO 14000 certified, then what factors influence this decision? Examples from these field visits will introduce the factors which influenced certification and critically challenges the criticisms commonly associated with ISO 14000. The article is organized as follows. First, we define and provide a background of ISO 14000. Then we use examples from managerial experiences to identify the factors which affected certification status. The research concludes with an evaluation of the factors underlying the decision to attain ISO 14000 certification and how these factors can be leveraged to obtain a competitive advantage.

ISO 14000 as a Means of Achieving a Competitive Advantage

In the course of interviewing managers and touring manufacturing facilities for a number of recent research projects, the authors have been repeatedly struck by certain factors which were identified as having a critical impact on predisposition and progress toward attaining ISO 14000 certification. Many times we were told that these factors not only influenced their decision to pursue ISO 14000 but these factors also influenced the level of success achieved during the certification process. What follows is an attempt to re-conceptualize ISO 14000 as a program that can lead to a competitive advantage. Our approaches to studying ISO 14000 are qualitative and based on field studies. The next section details the qualitative methods used to conduct this research.

METHODOLOGY

The purpose of this study was to identify why companies seem to embrace ISO 14000 even though the standards have been the subject of great debate and criticism. Since the focus of this research was exploratory in nature (rather than confirmatory), qualitative data collection methods were used. Field-based data collection methods were used to ensure that the important variables were identified. It also

helped us develop an understanding of why these variables might be important (Eisenhardt 1989). A small detailed sample fit the needs of the research more than a large-scale survey would have.

The method followed was similar to the grounded theory development methodology suggested by Glasser and Strauss (1967). In instances where a well-developed set of theories regarding a particular branch of knowledge does not exist, Eisenhardt (1989) and McCutcheon and Meredith (1993) suggest that theory building can best be done through case study research. The researchers participating in this project relied primarily on the methods of qualitative data analysis developed by Miles and Huberman (1994), which consisted of simultaneous data collection, reduction, display, and conclusions testing. The end result was a series of case studies in which each case was treated as a replication.

There are some pitfalls to case study analysis, including lack of simplicity or narrow and idiosyncratic theories (Eisenhardt 1989). A primary disadvantage of the case research approach is the difficulty in drawing deterministic inferences, and there are limitations in terms of the external validity of the study. These limitations are often addressed by using large samples, or using "before" and "after" quasi-experimental designs (Cook and Campbell 1979). However, due to the lack of theory building in the area of environmental management systems such as ISO 14000, it is important to use the case study approach to identify differences among adopters. While causality can never be shown in case studies, analysis of data collected from multiple sites can help support the generalizability of results.

After the initial screening, which also addressed the willingness of the company to participate, 16 firms were again contacted and site visits were arranged. The interviews were conducted with several managers responsible for portions of the ISO 14000 certifications process at each site. Some titles of the people interviewed include "manager of:" environmental health and safety, corporate quality services, supervisor/planning group, plant planner, global director of development, environmental science and assessment, new product group, and design engineering.

Interview Protocol

Eisenhardt (1989) suggested that a researcher should have a well developed interview protocol before making the site visits. A structured interview protocol was used at all of the plants. The interview protocol, included in Appendix II, was developed based on the researchers' general understanding of ISO 14000. The protocol was pre-tested at four manufacturing facilities and then used for the 16 firms included in this study. Minor changes were made to the protocol after the pre-test. Questions focused on previous and current EMS, and the roles and experiences of the players involved. Interviews were conducted in the respondents' facilities, and discussions focused on the consideration of ISO 14000 as an important part of their EMS and the factors affecting their predisposition towards ISO 14000.

All respondents were asked if they were ISO 14000 certified. In addition, their reasons for certification (or for not being certified) were solicited. Of the 16 companies, 14 were certified, while the remaining 2 were considering certification. Finally, we discussed the outcomes of certification with those firms which were certified. This research is built primarily on the responses of the 12 firms that were certified. However, the comments and concerns of the other firms were also used to help explain why firms may be reluctant to adopt the environmental standard.

Qualitative theory building research is an iterative process (Eisenhardt 1989; Miles and Huberman 1994; Yin 1994). Eisenhardt (1989) suggested that data collection and data analysis should be done simultaneously. In other words, the data from one case is collected and then analyzed before the next replication is performed. Improvements in the protocol can be made between replications by collecting data in this manner. Important issues that are raised in early cases can be included in the protocol for subsequent replications. This ability to refine and improve upon the protocol between cases is a significant advantage of this type of research.

Data Collection

The primary data collection was done using structured interviews in a field setting. Sixteeen plants in 7 industries were visited over a one-year period. In the sample of 16 installations (one installation per site), 14 different companies were represented. The plants were located in 6 mid-western states: 1) Michigan; 2) Ohio; 3) Indiana; 4) Illinois; 5) Wisconsin; and 6) Minnesota.

Structured interviews at each plant generally took place with the plant manager as well as the environmental manager. At most plants, additional interviews also took place with company presidents or vice presidents, manufacturing engineers, quality engineers, purchasing managers, and designers. At three of the smaller plants, interviews were limited to the plant manager or presidents.

Data were collected following a strict interview protocol that included a tour of the plant. The primary researcher was accompanied on all visits by a second researcher who reviewed all field notes prior to final coding. The use of multiple respondents and multiple interviewers at every plant helped limit possible biases introduced by a single

respondent and researcher. The field notes identified responses to all of the protocol questions, answers to other questions that were raised during the interview and plant tour, and other information such as company publications.

RESULTS

ISO 14000 has only recently been introduced and many organizations are still struggling with the decision whether to implement the system and get certified. This may be attributable to having no clear picture of the critical factors for successful implementation of ISO 14000. In this section, case studies, combined with the literature, are used to determine which major factors affect the decision to attain ISO 14000 certification and how these factors can influence the level of success achieved during the certification process.

Past Experience with Total Quality Management

Several of the companies visited utilized TQM approaches to developing their environmental systems. Some of the relevant TQM principles which were integrated into their ISO 14000 based programs included: 1) a systems analysis process orientation that aimed to reduce inefficiencies and identify product problems; and 2) data-driven tools, such as cause and effect diagrams, quality evolution charts, pareto analysis, and control charts.

Past Experience with ISO 9000 and QS 9000

It was observed at several of the companies visited that ISO 14000 status was positively influenced by the status of the plant in terms of either ISO 9000 or QS 9000 certification. All of the respondents agreed that operating two separate quality and environmental management systems would have been wasteful and redundant. Integration was not only possible at the facilities, it was preferable. Since they already had an ISO and/or QS 9000 quality management system in place and wanted to implement an ISO 14000 EMS, integration was the next logical step. Most of the companies used their existing quality management systems as a baseline for implementing ISO 14000.

Current Status of Cross-Functional Programs

A team orientation that uses the knowledge of employees to develop solutions for waste problems was integrated into the EMS for several of the cases. One company showed that employee involvement can be promoted by improving employee-management interaction and promoting responsibility for the environment among all levels of management including individual employees.

DISCUSSION

While many factors have been cited as influencing the predisposition toward ISO 14000 certification and the value of this certification, certain factors were identified as having a critical impact on predisposition and progress toward attaining this new form of certification. These factors included: previous experiences with Total Quality Management; past success with quality-based certification processes, such as ISO 9000 or QS 9000; previous experience with cross-functional teams and management; firm size/Full-Time Employee Equivalents; nature of corporate ownership (foreign-owned plants are more likely to pursue and receive ISO 14000 certification); and, end sales.

These factors describe a situation where the respondents saw ISO 14000 as an extension of the TQM movement. They also describe a situation in which respondents recognized that success with ISO 14000 requires cross-functional teams and cooperation. There seems to be recognition that succeeding with ISO 14000 requires more than simply introducing a new program or creating a new department. Rather, ISO 14000 is an undertaking that requires the participation of multiple parties working together. It is argued that these various factors act to pre-condition the firm and its systems to the introduction, acceptance, and progress on ISO 14000.

CONCLUDING COMMENTS

ISO 14000 is a trend in environmental management which cannot be ignored. In fact, for those companies which wish to remain competitive, and improve their environmental systems, it can be an invaluable tool. Many managers warned that ISO 14000 certification can result in non-value added costs if it is pursued only for its marketing or regulatory appeal. The true commercial value associated with ISO 14000 can only be achieved when it is made consistent with a company's strategic direction. This means using the ISO 14000 standards as a foundation for a much broader system such as TQEM. The experiences of these companies can serve as an illustration for organizations contemplating pursuing certification. Through its standardization of environmental systems, ISO 14000 can help an organization not only reduce waste, but also gain a competitive advantage in the international marketplace.

Full references available upon request.