



A Review of the Impact of ISO 9000 and ISO 14000 Certifications

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Abstract

This paper presents some of the most important findings of studies of the impact of ISO 9000 and ISO 14000 certifications on organizations, based on a literature review. The article discusses potential synergistic advantages that can be derived from an integrated quality-environment system and qualitative benefits using ISO 9000 and 14000 certifications. This article also discusses some of the limitations of the current literature and how these can be addressed in the future research.

Keywords: ISO 9000, ISO 14000, quality systems, environmental systems

Introduction

Global competitiveness, an attribute of today's economic scenario, has compelled companies to invest more and more resources into enhancing their management efficiency. This economic and market globalization has given rise to an increasingly important role of standards. Guasch, Racine, Sánchez, and Diop (2007) and the National Research Council (NRC) (1995) explained the positive economic effects of standards: ability to exploit network externalities, increase productive and innovative efficiency, decrease imperfect information, diffuse information, reduce cost, promote competition, increase compatibility, promote process management, and foster public welfare. These benefits are not mutually exclusive (NRC, 1995). Guasch et al. (2007) stated the contradictory negative economic effects of standards: imposition of constraints on innovation and the decrease of market competition. However, Guasch et al. (2007) concluded that the positive effects of standards outweighed the negative effects.

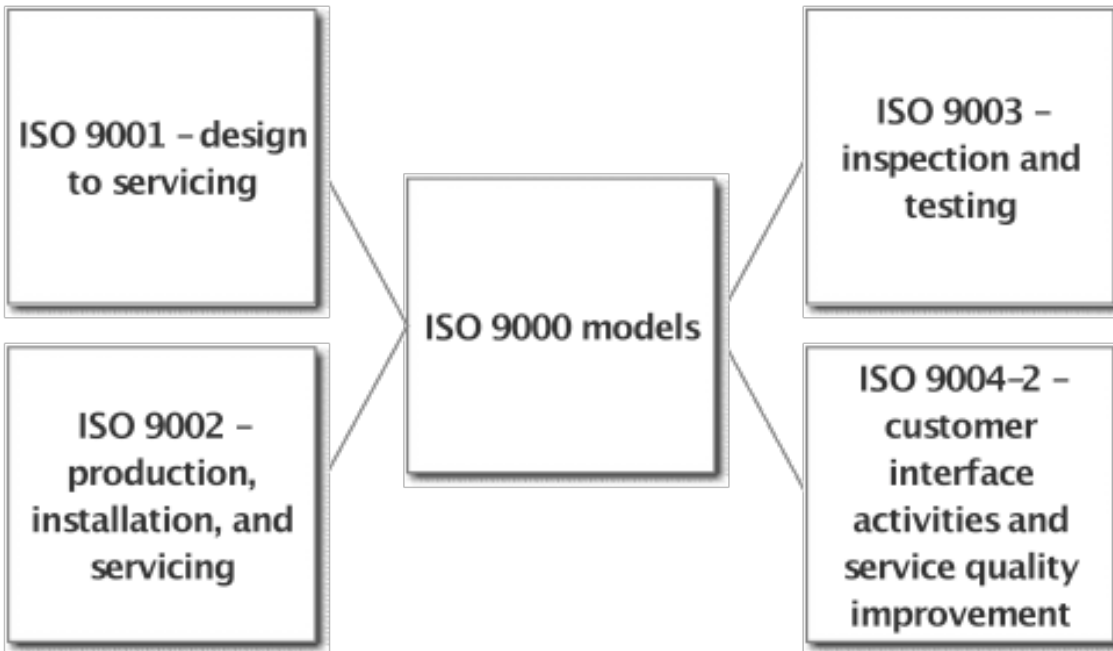
Approximately 60 programs and awards reward firms for improving quality globally (Wilson, Walsh, & Needy, 2003). The most famous ones are the Malcolm Baldrige National Quality Award, Six Sigma, ISO 14000 programs, and ISO 9000 programs (Troy, 1992). Most employers in the United States would want to know if the financial advantages associated

with ISO 9000 and ISO 14000 registrations outweigh the costs associated with obtaining these certifications. ISO 9000 and ISO 14000 are not standards in themselves; they are descriptors for series of standards as described in the next sections. The main standards are ISO 9001 and ISO 14001, which set out the requirements for achieving efficient quality management and environmental management systems, respectively (Morris, 2004). In this article, ISO 9000 and ISO 14000 refer interchangeably to ISO 9001 and ISO 14001, respectively.

ISO 9000

The International Organization of Standardization (ISO) was formed in Geneva, Switzerland, in 1946 to develop international, industrial, and quality standards as a model for quality assurance standards in design, development, production, installation, and service. ISO 9000 is a series of quality management standards published by the ISO in 1987 after a process of consensus handled by ISO Technical Committee 176; these are codified, verifiable, and easily adaptable (Wilson et al., 2003). ISO 9000 standards are so adaptable that updates and changes have been made roughly every three years since their adoption. According to Pantouvakis and Dimas (2010), ISO 9000 helps companies establish quality assurance systems. Kartha (2004) stressed that these standards are generic and not only limited to products or services, but they also apply to all processes and can be employed by manufacturing and service organizations.

Figure 1 shows the four ISO 9000 models for quality systems. The ISO 9001 model depicts all activities from researching, designing, building, shipping, installing, and servicing. The ISO 9002 model guarantees production, installation, and servicing. The ISO 9003 model is restricted to inspection and testing. The ISO 9004 or 9004-2 model deals with customer interface activities and service quality improvement (Todorov, 1996).

Figure 1. The Four Models for Quality Management System (Todorov, 1996)

ISO 9000 helps firms with internal improvements and strategic benefits that accompany the quality tool. Wilson et al. (2003) pointed out that the internal improvements comprise all business activities that are associated with a product and should be carried out in a three-part continuous cycle of planning, control, and documentation. ISO (2011) states a company that obtains ISO 9000 fulfills a customer's quality requirements and applicable regulatory requirements, while targeting enhanced customer satisfaction and achievement of continual improvement of its performance.

ISO 14000

ISO 14000 is a descriptor for a series of environmental management standards that was developed based on the success of the international quality standard ISO 9000 and in response to the global concern about the environment (Delmas & Montiel, 2008; Morris, 2004). According to Sayre (1996), ISO 14000 is derived somewhat from British Standard 7750, which includes the specification for environmental management systems and is considered globally a foundation for sound environmental performance. Furthermore, the 1994 American National Standard, ANSI/ASQC E4 might enhance the understanding

of the components of ISO 14000. ISO (2011) pointed out that a company that obtains ISO 14000 certification minimizes the harmful effects that occur from its activities to the environment and accomplishes continual improvement of its environmental performance.

ISO 9000 and ISO 14000 are similar in their processes, but they target different elements of a company (quality versus the environmental impact of operations). Delmas and Montiel (2008) showed that ISO 14000, to some extent, complements the quality management system by establishing a similar system for the management of the environmental impact; however, these standards also address slightly different audiences. ISO 9000 aims to improve quality and facilitate business objectives. ISO 14000 targets the improvement of environmental performance and the facilitation of relationships with not only market actors, but also nonmarket actors, such as regulatory agencies and nongovernmental organizations (NGOs). The success of the implementation of ISO 9000 promotes the adoption of ISO 14000.

Impact of ISO 9000

McAdam and McKeown (1999) mentioned that the main benefit of ISO 9000 is that it gives

rise to an effective quality system that assists in the elimination of errors, which eventually saves money on rework and scrap. They also claimed that ISO 9000 offers marketing benefits because ISO 9000 certification indicates an internationally recognized level of quality. According to Lloyd's Register Quality Assurance Ltd. (LRQA, 1995), the following reasons are why companies implement ISO 9000: pressure from large customers; reduce first time failure; reduce the costs of customer claims; get things right the first time; improve service to the customers and increase competitiveness; and maintain contracts with existing customers. Chow-Chua, Goh, and Boon Wan (2003) indicated that the two most common benefits of the ISO 9000 certification are increase in productivity and access to overseas markets.

Most companies place great emphasis on ISO certifications as a marketing tool. Burgess (1993) highlighted that certification tends to lead to improved marketing. However, Burgess also explained that most companies, irrespective of location, see improved efficiency as a major benefit. Porter and Rayner (1991) also made the same conclusions, that benefits from certification are associated with marketing factors. Additionally, Porter and Rayner (1991) mentioned the correlation between the benefits companies derive from certification and the reasons for their pursuing certification. Other studies indicate that benefits of ISO 9000 can far outweigh the costs of registering, but ISO 9000 should not be seen as a "quick fix, but as a long-term investment which requires commitment and continued effort" (McAdam & McKeown, 1999, p. 232).

Quinn (1992) stressed that considerable effort is made both in terms of money and valuable management resources to reach the level necessary for the achievement of ISO 9000 quality standards. However, Quinn stated that quality rewards itself many times over "in repeat orders from satisfied customers, in new customers . . . reduced waste . . . and in greater employee job satisfaction" (McAdam & McKeown, 1999, p. 232).

ISO 9000-associated papers focus mainly on the qualitative benefits associated with certification, such as increases in communication and an understanding of how the firm works.

Regarding the quantitative benefits, there is little published documentation. Corbett, Montes, Kirsch, and Alvarez-Gil (2002) quantitatively showed that ISO certification does result in improved financial performance against competitors. Porter and Rayner (1991) found that the cost of obtaining ISO 9000 can usually be recovered within three years through reductions in quality costs. However, Corbett et al. (2002) indicated that certification does not lead to significant internal financial improvements. Wilson et al. (2003) concluded that the economic success reported by companies after obtaining ISO 9000 certification may be exaggerated, because this success cannot be guaranteed. Witcher (1994) claimed ISO 9000 helps with the promotion of the accountability of the processes but does not impact all the business activities that indicate the capability of the organization to satisfy customer requirements. Taylor (1995) mentioned that most companies lack measurement of the financial impact of ISO 9000 and Chow-Chua et al. (2003) pointed out that very few studies actually measure financial performance.

Several studies (Corbett, Montes-Sancho, & Kirsch, 2005; Easton & Jarrell, 1998; Hendricks, & Singhal, 1997) showed an improvement in the financial results of certified companies, while some researchers (Powell, 1995; Samson & Terziovski, 1999; Staw & Epstein 2000; Terziovski, Samson, & Dow, 1997) did not find better business performance after certification. Other researchers (Feng, Terziovski, & Samson, 2008; Heras, Casadesus, & Dick, 2002; Martinez-Costa & Martinez-Lorente, 2008) indicated the negative effect that ISO 9000 certification had on company benefits and profits. Casadesus and Gimenez (2000) mentioned customers' low levels of satisfaction with the implementation of the standards. It should be noted that the above studies collected evidence over a short period of time (three years) after the company obtained certification. Martinez-Costa and Martinez-Lorente's (2008) findings indicated companies obtained considerably less earnings and returns on assets (ROAs) during the three years after obtaining registration. From these findings, these authors also emphasized that the short-term results for a company's financial performance are not as impressive as the long-term results. These companies also had a

noticeable increase in operational costs over the same period, but sales and personnel expenses were intact.

Overall, according to McAdam and McKeown (1999), the impact of ISO 9000 has been very positive—over 50% (or four times as many companies) believed it saves money rather than costs money, although small ISO-certified companies are less likely to state that ISO 9000 saves money and 75% of the service sector said that ISO 9000 costs money. Quazi and Padibjo (1998) stated that certified companies saw an improvement in their quality and an increase in their sales and market share. Haversjo (2000) indicated that an increase in sales correlates with an increase in the rate of return for certified companies, as opposed to noncertified companies. On a review of the financial and scale efficiency of 18 European port authorities, some certified and some not, Pantouvakis and Dimas (2010) revealed that ISO certified ports are financially more efficient than their noncertified competitors.

Impact of ISO 14000

According to Sayre (1996), ISO 14000 advocates “sustainable development for each and every nation and sustainable development for each and every person” (p. 1). This means a firm that is committed to ISO 14000 ensures activities, products, and services are good for humans and the world. Moreover, ISO 14000 fosters principles and practices that are germane to the competitive advantage of sound environmental performance: resource allocation, responsibility and accountability, and continuous performance evaluation for improvement.

The implementation of effective ISO 14000 standards by a firm can offer these benefits: protecting human health and the environment from the potential impacts of its activities, products, and services; helping with the maintenance and improvement of the quality of the environment; meeting customers’ environmental expectations; maintaining good public and community relations; satisfying investor criteria and improving access to capital; providing insurance at a reasonable cost; gaining an enhanced image and market share; fulfilling vendor certification criteria; improving cost control; limiting liabilities; providing resource

conservation; supplying effective technology development and transfer; and giving confidence to interested parties and shareholders that policies, objectives, and targets are conformed to: stress is on prevention first, then regular occurrence of reasonable care and regulatory compliance, and finally, a system design that includes continual improvement (Sayre, 1996). According to Johnson (1997), ISO 14000 builds a single global management system that allows for effective management of environmental responsibilities. It also reduces liability, controls costs, documents a firm’s commitment to government, and finally fosters a firm’s concern for the public. ISO 14000 has the potential to lead to competitive advantages for businesses in areas such as enhancing raw material and strengthening supply management, in order to justify and make the administration of legally binding environmental laws safer, as well as to improve corporate image (Renzi & Cappelli, 2000).

Integration of ISO 9000 and ISO 14000

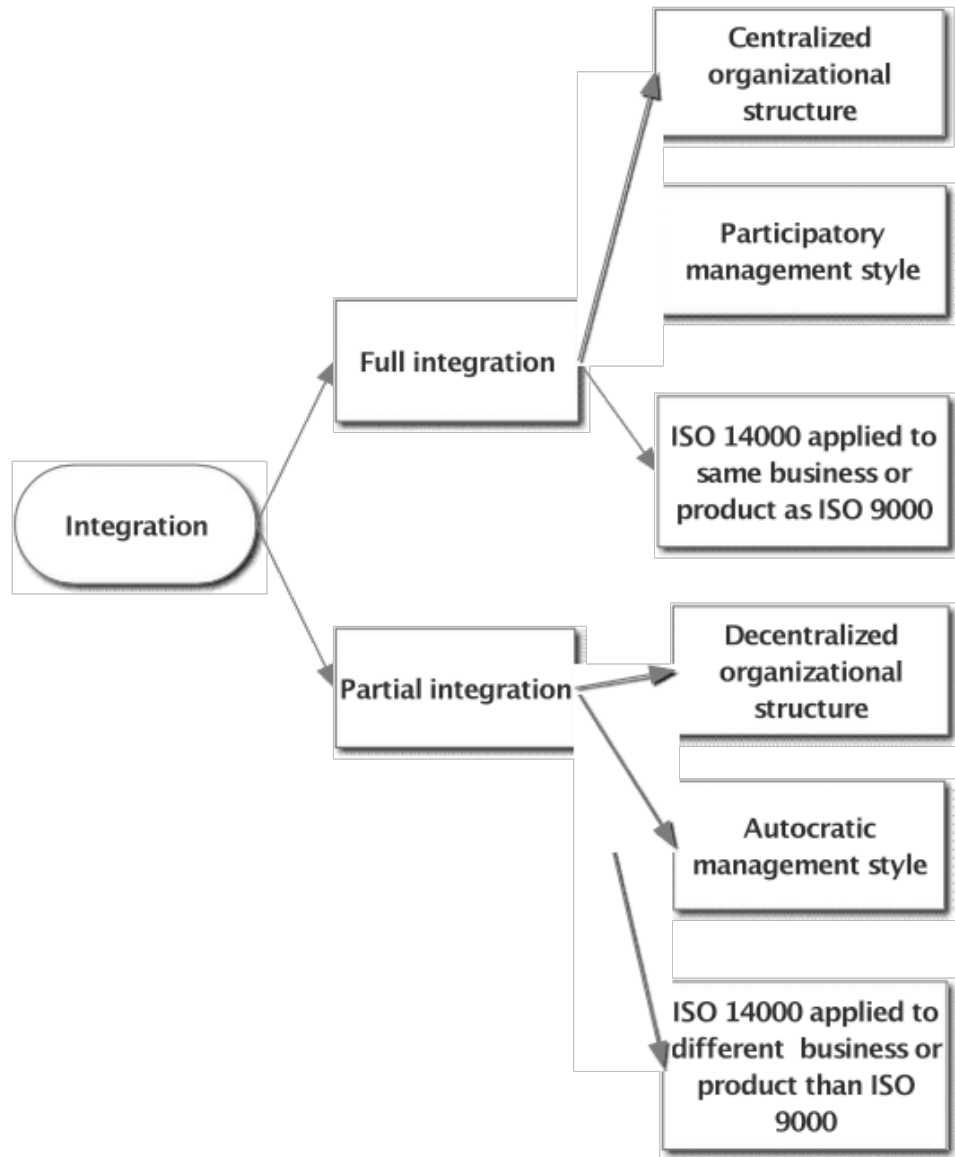
The formation of one cohesive management system comes from two stand-alone systems: quality management systems (ISO 9000) and environmental management systems (ISO 14000). The integration of ISO 9000 and ISO 14000 is dependent on two assumptions. First, firms integrating the two stand-alone systems must have in place a mature quality management system and will employ ISO 14000 to expand it. Second, the quality management system in place conforms to ISO 9001, ISO 9002, or QS-9000 (Block & Marash, 1999). There are two ways of integrating ISO 9000 and ISO 14000. First, full integration leads to a single system that accommodates all of the requirements imposed by ISO 14000 and ISO 9000. The advantage this brings is one system manual in addition to one set of procedures, one audit that looks at the combined requirements, and one management review (Block & Marash, 1999). Second, partial integration involves keeping separate ISO 9000 and ISO 14000 internal audit processes, registration audits, and surveillance audits. By doing this, two system manuals are created: one for ISO 9000 and one for ISO 14000. Under the appropriate circumstances, an ISO 14000 system employs procedures from the ISO 9000 system. Such procedures may be modified to conform to ISO 14000 requirements; however, this must

be done to ensure that the ISO 9000 system is not compromised. A noteworthy outcome of the partial integration is two sets of documentation, much of which may be unnecessary (Block & Marash, 1999).

Figure 2 displays the factors that influence either full integration or partial integration. Three factors that are parts of the corporate culture to consider are organizational structure, management style, and scope of system. These factors help in making the decision either to fully or partially integrate ISO 9000 and ISO 14000.

Integration of quality management and environmental management systems is advantageous in many ways. First, it brings together quality assurance and the environmental staff. This helps the staff to know more about each system. For example, the integration helps the quality management staff to be more knowledgeable about their firm's environmental impacts and legal obligations, while those of the quality environmental staff would be aware of established procedures associated to document control, records, and similar activities. Some researchers (Corbett & Cutler, 2000; Gupta

Figure 2. Flow Chart of Factors Impacting Full Versus Partial Integration (Block & Marash, 1999)



& Sharma, 1996; Kitazawa & Sarkis, 2000; Klassen, 2000) have argued that environmental managers should be integrated with quality managers in companies so they can take advantage of their possible synergies.

According to Block and Marash (1999), advantages of stand-alone ISO 9000 standards are twofold. First, these standards offer both a framework for firms that want to implement effective quality management systems and requirements against which companies can evaluate the quality management systems of their suppliers. Second, suppliers employed these standards to fulfill quality management requirements imposed by their customers. Stand-alone ISO 14000 improves a firm's environmental performance through prevention of pollution problems. Other related benefits include cost savings and improved relations with state environmental agencies (Block & Marash, 1999).

Integration of ISO 14000 into an existing ISO 9000 has significant advantages. First, the employment of existing ISO 9000 procedures to fulfill ISO 14000 requirements ensures consistency and eliminates redundancy because both standards require almost the same number of procedures. Second, using existing ISO 9000 procedures also helps to create significant cost savings in developing and implementing ISO 14000 (Block & Marash, 1999). Third, introducing ISO 14000 is seen as a normal way of doing business, so that ISO 14000 is no longer seen as the primary responsibility of the environmental department. Operationally, a fully integrated system produces an umbrella of programs that accommodates all facets of business, ranging from product quality and customer service to maintaining operations in a safe and environmentally acceptable way. Renzi and Cappelli (2000) pointed out that the following advantages are derived from integrated quality-environment system: "cost reduction, because it improves data and personnel management; homogeneity in management methodologies; and a decrease in the bulk of company papers and the creation of common forms that can be more easily used by several operators" (p. 2).

Limitations of the Current Literature

In the literature reviewed for this article, authors have discussed the advantages of both ISO 9000 and ISO 14000. However, these studies are limited to qualitative research that occurred during a short time frame.

Arbuckle's (2004) results showed a statistically significant change in total assets and return on assets for a period of two years after selected companies were certified in ISO 9000. However, Arbuckle's control groups were limited, because the researcher did not compare with non-ISO-certified companies to determine if the changes in total assets or return on assets were the result of only ISO certifications or other political and economic factors. Based on Martinez-Costa and Martinez-Lorente's (2008) findings, short-term results for a company's financial performance are not as impressive as the long-term ones; therefore, these findings imply that a longer time frame is needed to prove that Arbuckle's results would hold. However, Wayhan, Kirche, and Khumawala (2002) indicated that ISO 9000 certification has a very limited impact on financial performance, as measured by return on assets; however, this effect dissipates quickly over time. Renzi and Cappelli (2000) pointed out the advantages, which are derived from an integrated quality-environment system, make a company very competitive. There is a need for more quantitative research with a longer time frame on the financial benefits of the integration of ISO 9000 and ISO 14000.

Conclusion

ISO 9000 and ISO 14000 programs have shown well-established net advantages that were described under their impacts in this article. Additional benefits can be derived from their integration. However, most of the current studies are limited to qualitative findings and a short time frame. Therefore, more quantitative studies with longer time frames are needed to substantiate the benefits of both stand-alone certifications and the integration of the two certifications. Also, ISO certified companies must be compared with noncertified companies to determine if the benefits in financial performance indicators are the result of only ISO

certifications or other political and economic factors. In the future, the authors plan to conduct research to address these issues.

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