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An examination of ISO 9000:2000 and supply chain quality assurance

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Abstract

ISO 9000:2000 is the latest version of the quality standard developed by the International Organization for Standardization (ISO). The standard aims to evaluate a firm's ability to effectively design, produce, and deliver quality products and services. This version of the standard tries to enhance customer satisfaction by including more top-management involvement and continual improvement. Despite widespread international acceptance, the new standard is surrounded by controversy similar to that surrounding its predecessor, the 1994 version. The literature is clearly divided in its assessment of ISO 9000:2000, which is viewed as either a quality management (QM)-based system or as another paper-driven process that increases risk, uncertainty, and costs. This study utilizes case-based research to address the competing views of the ISO 9000:2000 standard in an attempt to see if a sample of firms in the automotive industry can be positioned within the Miles and Snow [Miles, R.E., Snow, C.C., 1978. Organizational Strategy, Structure and Process. McGraw-Hill, New York] strategic typology. We compare different amounts of quality standard integration and quality assurance in the supply chain of firms with ISO 9000:2000 registration while positing several research propositions.

Keywords: ISO 9000:2000; Quality assurance; Quality management; Supply chain management

1. Introduction

Quality assurance (QA) covers all activities, including design, development, production, installation, servicing, and documentation (Deming, 1981, 1986; Garvin, 1983, 1984, 1986, 1987), and is important to the competitive capabilities of any organization or supply chain. The importance of assuring quality requires that quality not be dealt with on an ad hoc basis. Only a properly implemented quality management system (QMS) within an organization and across its supply chain can provide protection from short-term actions that do not serve long-term goals. For many firms, obtaining acceptable levels of quality comes with the registration of a QMS for itself and its suppliers. In the new ISO 9000:2000 standards, the International Organization for Standardization (ISO) provides what is regarded as the most prevalent approach to developing a QMS. To date, over half a million organizations in over 150 countries have achieved quality registration through ISO standards. Over 50,000 companies within the United States alone have obtained the new ISO 9000:2000 registration (IQNet, 2006). The continued growth of this standard for nearly 20 years

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suggests that it is, and will continue to be, an influential global metastandard (Curkovic and Handfield, 1996; Curkovic and Pagell, 1999; Uzumeri, 1997; Kartha, 2004).

Despite the international acceptance of ISO 9000:2000, the standard is still subject to controversy for individual firms and supply chains. A widespread criticism of the program is that it is not connected directly enough to product quality (Wayhan et al., 2002; Naveh and Marcus, 2004). For example, a registered company can still have substandard processes and products because registration does not tell a company how to design more efficient and reliable products. When registration is used as a requirement for a supply base, buyers like to think that registered suppliers will have a leg up on the competition, but this may not be the case. Basically, the ISO quality standards ensure only that a quality system exists but cannot guarantee its functionality within a particular firm or supply chain (Curkovic and Handfield, 1996; Gotzamani, 2005). Other important criticisms include the idea that registration will not ensure improved firm performance (Anderson et al., 1999; Sun, 2000; Tsekouras et al., 2002; Wayhan et al., 2002; Dimara et al., 2004; Naveh and Marcus, 2004; Morris, 2006). There is also uncertainty as to the amount of resources necessary to implement a QMS and whether these resources actually improve quality assurance (Douglas and Judge, 2001; Hendricks and Singhal, 2001; Nicolau and Sellers, 2002; Quazi and Jacobs, 2004).

Mixed results from research on quality initiatives show that organizations achieved a distinct operating advantage when they used the ISO standards in daily practice and when these standards served as a catalyst for change (Naveh and Marcus, 2004). However, these same researchers also demonstrated that while applying the ISO standards may lead to operational benefits, doing so does not necessarily lead to improved business performance. Kaynak (2003) identified multiple relationships among total quality management (TQM) practices and performance and then found significant positive relationships by examining the direct and indirect effects of these practices on various performance levels. Comments from managers in our study mirror these findings. Some said ISO 9000:2000 had hindered the firm, others praised accompanying process improvements and benefits to the firm and its suppliers, while still others were undecided on the standards and their impact on supply chain performance.

Since the 1980s and the call to improve quality in the United States, a large amount of research has been conducted under the domain of "quality" (Juran, 1978, 1981a,b; Deming, 1981; Garvin, 1986, 1987; Juran and Gryna, 1988). Given the research to date, there is yet to be a consensus on the state of quality assurance in supply chain management and the roles of customers in driving quality assurance by requiring registrations such as ISO 9000. Existing frameworks for quality and supply chain management stress the importance of relationships (Liker and Choi, 2004), communication (Cai et al., 2006), agility (Lee, 2004; Swafford et al., 2006), speed (Fine, 1998; Foster and Adam, 1996), and supplier selection (Choi and Hartley, 1996), to name a few. However, no research has focused on the strategic aspects of quality assurance programs and the use of international standards for supplier selection and supply chain performance. Thus, a lack of consensus exists regarding the effects ISO quality standards have on quality assurance and supply chain performance. There also appears to be little treatment as to where quality standards fit within existing frameworks.

Miles and Snow (1978) produced a typology of business-level strategies that can be used as a lens through which to view the integration of ISO 9000:2000 within supply chain management quality assurance efforts. Miles and Snow proposed that firms develop relatively stable patterns of behavior in order to survive within their perceived industry environments and that they take on one of four basic typologies/strategies: defenders, reactors, analyzers, or prospectors. While obtaining ISO registration in itself does not constitute a shift in strategy, registration does become part of a history of decisions that help constitute an overall strategy for a firm. Within the Miles and Snow typology, *defenders* have narrow product domains. Managers in this type of plant are experts in their organization's area of operation but do not search outside their domain for new opportunities. These managers seldom need to make major adjustments in structure or methods of operation unless customers demand it. They look primarily at improving the efficiency of existing operations. *Reactors* include managers who frequently perceive change and uncertainty occurring in their organizational environments but are unable to respond effectively. Management lacks a consistent strategy–structure relationship and seldom makes adjustments until forced to do so. Reactors may also be considered *laggards* when adopting new systems (Moore, 1991). *Analyzers* include firms that operate in two types of product-market domains, one relatively stable, the other changing. Within the stable areas, these companies operate routinely and efficiently through formalized structures and processes. Alternatively, in the more turbulent product areas, management will watch their