Chapter 3
Quality and Environmental Management Systems in the Fashion Supply Chain

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ABSTRACT

Consumers and stakeholders have rising concerns over product quality and environmental issues, and therefore, quality and environmental management have become important topics for today's fashion products manufacturers. This chapter presents some empirical evidence of the adoption of quality management systems (QMS) and environmental management systems (EMS) and their impact on fashion and textiles related firms' supply chain efficiency. Although both management systems are commonly adopted in the manufacturing industries and becoming a passport to business, their actual impacts specifically on the fashion supply chain have not been explored. By investigating the adoption of ISO 9000 (a quality management system) and ISO 14000 (an environmental management system) in the U.S. fashion and textiles firms, we estimate their impact on manufacturers' supply chain performance. Based on 284 publicly listed fashion and textiles manufacturing firms in the U.S., we find that fashion and textiles firms operating cycle time had shortened by 15.12 days in a five-year period. In the cross-sectional analysis, the results show that early adopters of ISO 9000 and high-tech textiles related firms obtained more supply chain benefits. We only find mixed results of the impact of ISO 14000 on supply chain performance.

BACKGROUND

The quality of textiles products at each stage in the fashion supply chain is essential for the success of a fashion product. The quality level delivered to the final customer is the result of quality management practices of each link in the fashion supply chain, thus each actor is responsible for their own quality issues (Romano & Vinelli, 2001). This is because the quality of the final product that reaches the customers is clearly the results of a chain of successive, inter-linked phases: spinning, weaving, apparel and distribution, and thus quality management in supply chain are particularly

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relevant in the fashion and textiles industries (Romano & Vinelli, 2001).

Quality management is defined as an integrated approach to achieve and sustain high quality output, focusing on the maintenance and continuous improvement of processes and defect prevention at all levels and in all functions of the organization to meet or exceed customer expectation (Flynn, Schroeder, & Sakakibara, 1994). The customer expectations on the quality of a product, however, are not just its physical attributes and workmanship. According to ISO 9000, quality is defined as customer expectations over actual performance (ISO, 2004). Consumers' expectations on fashion products, nowadays, also include its environmental attributes, for instance, use of sustainable materials and control of environmental impacts during the manufacturing processes, etc. Therefore, both quality and environmental management have become important focuses for today's fashion and textiles manufacturers. International buyers of major brands often use quality management system (QMS) and environmental management systems (EMS) as a major tool to select capable fashion and textiles suppliers (Boiral, 2003; Boiral & Sala, 1998), to ensure their products and raw materials could meet customers' expectations on quality and environmental aspects.

To respond to the call for management systems in various industries, International Organization for Standardization (ISO) has developed ISO 9000 in 1987 and ISO 14000 in 1996, which are generic QMS and EMS for worldwide applications. The number of ISO 9000 certified firms has been increasing persistently since its introduction some 20 years ago. According to recent statistics (ISO, 2009), almost one million of firms or business divisions in 175 countries have adopted ISO 9000. In the past five years, almost 800,000 firms or business units have adopted ISO 9000, representing an increase of almost 570%. For ISO 14000, it has been adopted by 188,815 firms or business divisions in 155 countries (ISO, 2009). From 2006 to 2008, almost 60,000 firms or business units have adopted ISO 14000, representing an increase of about 47% (ISO, 2009). Multinational enterprises (MNEs) with operations in more than one country are widely recognized as key agents in the diffusion of ISO certifications across national borders.

The diffusion of ISO 9000 in the fashion and textiles industries is particularly pronounced. In the early 1990s, European Committee for Standardization (Committee European pour Normalization - CEN) developed importing regulations for use by the European Union (EU) countries. CEN requires manufacturing firms that are importing products into the European market to comply with ISO 9000 standard. Import of fashion and textiles products to EU countries are under this regulation. The requirement of ISO 9000 was then followed by major MNEs, which use the ISO-based criteria to certify their own suppliers and have developed their internal quality management systems according to the ISO guidelines (Guler, Guillen, & Macpherson, 2002). Many suppliers to MNEs subsequently required their upstream suppliers or business partners to be ISO certified, leading to the widespread diffusion of the standard in global supply chain.

ISO 14000 follows the global diffusion pattern of ISO 9000, and it has become the most widely adopted EMS in the world (Corbett & Kirsch, 2001). It is a set of management processes and procedures requiring firms to identify, measure, and control their environmental impacts (Bansal & Hunter, 2003). With the aim of improving the environmental performance of a firm, compliance with the standard is audited and certified by an independent, third-party certification body (Jiang & Bansal, 2003). The initial version of ISO 14000 was a consolidation of various elements in BS 7750, a British environmental management standard, and European's Environmental Management and Audit Scheme (EMAS).

Regulations of different countries towards the adoption of ISO 14000 also affect the diffusion of this standard. European countries and