



An empirical study of ISO certification in the maquiladora industry

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Abstract

The maquiladora industry is a manufacturing system that utilizes the Mexican workforce and foreign investment and technology on the border region between the US and Mexico. This paper conducted an empirical investigation of ISO certification practices by distributing a questionnaire to maquiladora plants in El Paso, TX and Juarez, Mexico. Descriptive statistics (by questions and types of industry) and hypothesis tests based on the data were performed. Also, extensive interviews were conducted with maquiladora managers. The questionnaire and analyses explored the prevalence of ISO certification, the length of relationship with suppliers, the employee training time, and the development of quality manuals. The analyses were conducted within the context of mature versus newer and ISO-certified versus non-ISO-certified maquiladoras. Finally, insights and perspectives of the results were provided.

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1. Introduction

Many manufacturers understand that improved quality systems are extremely important in gaining greater global competitiveness. Customers also continue to be more discriminating in seeking only those products that are of high quality. One of the important means of attaining high product quality is the achievement of ISO certification. In order to successfully complete an ISO certification program, managers should understand the important role that organizational and supplier systems play

in achieving ISO Certification. This paper studies the importance of organizational and supplier issues in the achievement of ISO certification in maquiladora industry.

1.1. *The objective of the study and the review of literature*

This paper explores the role of International Organization for Standardization (ISO) certification in the maquiladora industry by distributing a survey instrument in Ciudad Juarez and Ciudad Chihuahua, Mexico, cities that border El Paso, TX. Ciudad Juarez and Ciudad Chihuahua represent the largest concentration of maquiladoras in Mexico.

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The focus of this study is on maquiladoras achieving ISO certification, their relationships with suppliers, employee training, and the existence of quality manuals at maquiladoras. The study covered different industries, different quality experts in maquiladoras, and different aspects of ISO certification that were most relevant to maquiladoras. These were intended to shed light on the challenges of attaining ISO certification in maquiladoras.

The available literature (survey or non-survey based research) do not address the achievement of ISO certification in the maquiladoras with respect to the issues studied in this paper. There are two distinct characteristics of the existing literature in this area. First, most literature addresses the role of quality (and not necessarily ISO certification) and related issues in general and not necessarily in the maquiladoras. Second, many of these articles are short, practitioner-related, lack substantial depth, data collection, and detailed analysis. Here are some related and peripheral literature:

Chinen (2000) investigated the relationships between total quality management factors and work outcomes. This study focused on the problem-solving teams and their work outcome by analyzing a Japanese owned automobile component manufacturer. The study only considered one company with regard to the performance of quality circles. Anderson et al. (1999), in a lengthy and academic-oriented article, tested the hypothesis that the ISO-certified firms in United States and Canada obtained ISO 9000 certification in order to comply with government regulations and customer demands. Although the government regulations and customer demands were found to be significant explanatory variables for seeking ISO certification, the results, however, showed strong evidence for firms to seek ISO 9000 for the purpose of practicing effective quality management. Douglas et al. (1999) discussed the implementation issues of ISO 9000 in the UK's local government services. The implementation was designed to meet tight budgetary targets. The methodology focused on six face-to-face semi-structured interviews. No set of clearly defined certification factors was identified. Lee and Palmer (1999) investigated the quality program implemen-

tation patterns of ISO 9000 in large versus small manufacturing companies in New Zealand. The study showed that smaller companies, when compared to larger companies, are more likely to implement ISO 9000 because of external factors than internal factors. The study further revealed that smaller companies showed less understanding of the relationships between ISO 9000 and total quality management. The descriptive-based statistical analysis never made a clear distinction between internal and external factors. Scott-Docking and Downen (1999) examined the reaction of the firms' stock price to the announcement of ISO 9000 registration. The authors suggest that for smaller firms the ISO 9000 registration is regarded as positive information for investors. Rao et al. (1997) examined the doubts that have been raised regarding the effectiveness of ISO 9000 standards for infusing quality within organizations in four countries: the United States, China, India, and Mexico. Specifically, the study explored the relationships between ISO 9000 certification and TQM using ANOVA. The study concluded that ISO 9000-registered companies exhibit higher levels of quality leadership, information and analysis, strategic quality planning, human resource development, quality assurance, supplier relationships, customer orientation and quality results. The study did not make any comparative analysis between and among the quality practices of the four countries studied. Farahmand et al. (1994) in a two-page article argued that ISO 9000 certification is imperative for expansion of American maquiladoras into the European Community (EU). The authors cited one company's success in achieving ISO certification. The general discussion mostly focused on benefits and the implementation of ISO certification. Hernandez-Limon (1993) explored the relationship between total quality management and job satisfaction in the maquiladora industry. This master's dissertation did not explore ISO certification or the key quality factors involved in achieving ISO certification. Peak (1993) stated that Mexico's border facilities no longer conduct basic assembly work. Maquiladora managers proved that Japanese and American management techniques, coupled with Mexican labor, can create an atmosphere of total quality

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