

Quality and Production Standards in Latin America and the Caribbean

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ABSTRACT

As developing economies face the challenges of liberalization in the global market place, the ISO 9000 Quality Management System (QMS) must be an integrated concept and tool in the planning and implementation of these countries' national and regional technological and socioeconomic development programs. This concern is especially acute for the countries in the Caribbean sub-region where most business organizations are not ISO 9000 certified. This may further be extended to countries in Latin America as well.

This paper presents and discusses the methodology, statistical findings and analyses of a study that investigated the factors influencing non-implementation of the ISO 9000 Quality Management System among business organizations in the Caribbean Sub-region, which showed a general lack of awareness. Based on such findings, the paper further discusses a proposed "Regional Quality Management System Model" with specific recommendations for its implementation to assist, foster and encourage the systematic deployment and increased implementation of the ISO 9000 QMS with respect to the development of quality and production standards. It further discusses a case study where ongoing attempts are being made to implement this Regional Quality Management System Model among business organizations in the Caribbean sub-region.

Keywords: ISO 9000, Quality Management System, Caribbean Sub-region, Quality Standards

1. INTRODUCTION

Trade liberalization and globalization have become the new world economic order. With this development, the need for well-developed international and national infrastructures in the areas of standards and related matters is very evident. Further, this phenomenon dictates that developing economies are expected to compete and become better integrated in the world's economy. However, many of these economies do not have fully developed infrastructures in the areas of standards and related matters such as technical regulations, conformity assessment, quality and metrology. This weakness of the standards' infrastructure represents a serious handicap for the economic players in the countries concerned. Whether they are manufacturers or traders, exporters or importers, regulators or consumers, developing countries find it more difficult to produce, exchange or consume safe products of good quality in the absence of standards, regulations and conformity assessment infrastructures (Eicher, 2001).

2. GENERAL AREA OF CONCERN

Developed or major trading countries have long been aware of the importance of international standards. Unfortunately, most interested parties in developing countries know little of standardization: they are not aware of the opportunities provided by standardization and conformity assessment activities at the national and international levels; often they do not even realize the value of their own national standard bodies within international activities (Tabari, 2002). This scenario holds true for all the countries in the Caribbean sub-region: Antigua and Barbuda, The Bahamas, Barbados, Belize, Dominica, Grenada, Guyana, Jamaica, St. Kitts and Nevis, Montserrat, St. Lucia, St. Vincent and the Grenadines, Suriname, and Trinidad and Tobago. This is highlighted by the ISO annual statistics, which as of December 2005, showed that of the 776,608 business organizations worldwide with the ISO 9000:2000 management quality systems certification (ISO Press Release Ref: 1021, 2006), only 101 of those certified organizations belonged to the Caribbean sub-region. Moreover, the ISO's Central and South America grouping (with which the Caribbean sub-region is a part) records 22,498 ISO 9001:2000 certified organizations, representing 2.9% of the worldwide certifications (The ISO Survey - 2005, 2006).

3. BACKGROUND TO THE STUDY

Over the past 30 years, countries in the Caribbean sub-region have engaged in various standardization initiatives beginning with the Caribbean Common Market (CARICOM) which was established by the Treaty of Chaguaramas (Trinidad) in 1973. The establishment of CARICOM was the result of a 15-year effort to fulfill the hope of Caribbean regional integration which began with the formation of the British West Indies Federation in 1958 (Caribbean Community (CARICOM) Secretariat, 2002).

In 1976, the Caribbean Common Market Standards Council (CCMSC) was set up to advise the Council of Ministers (now Council for Trade and Economic Development – COTED) of the Caribbean Community on matters relating to Standards and Technical Regulations. The CCMSC comprised primarily of the heads of the existing National Standards Bodies and was an informal arrangement among its members, with no juridical personality. With the changing roles and responsibility of standards organizations in the Caribbean due to international developments, and, in particular, the World Trade Organization (WTO) rules, the CCMSC was frequently called upon to address matters outside of its terms of reference and at times beyond the constraining capabilities of its informal structure. The CCMSC's *status and modus operandi* were therefore inadequate to:

1. Fulfill the CARICOM Single Market and Economy's (CSME) stated commitment to promote and enhance regional standards and regional international trade, and
2. Supporting the impending formation of major regional and hemispheric trading groups such as the CSME and the Free Trade Area of the Americas (FTAA) (Thomas, 2002).

The CSME is the Common Market arrangement that will ultimately allow CARICOM goods, capital, services, and people to move without restriction throughout the region. The inception came from the desire to foster inter-regional trade and macroeconomic policies, as well as eventual monetary integration. Proponents of the CMSE are of the view that it is essential because the lack of international competitiveness among business organizations in the region cannot be solved at the national level due to the small size of firms and small uncompetitive national markets. The enlarged regional market and the freedom of movement of resources within the region will improve the international competitiveness of CARICOM firms (Thomas, 2002).

The FTAA (currently suspended) was the effort to unite the economies of the Americas into a single free trade area. The concept was initiated at the Summit of the Americas, held in December 1994 in Miami, U.S.A. The FTAA negotiations were formally launched in April 1998 at the Second Summit of the Americas in Santiago, Chile. The Heads of State and Government participating in this Summit agreed that the FTAA Agreement will be balanced, comprehensive, WTO-consistent, and will constitute a single undertaking. They also agreed that the negotiating process would be transparent and take into account the differences in the levels of development and size of the economies in the Americas in order to facilitate full participation by all countries. Furthermore, they

agreed that the negotiations should proceed in order to contribute to raising living standards, improving working conditions of all people in the Americas, and better protecting the environment (Free Trade Area of the Americas, 2004).

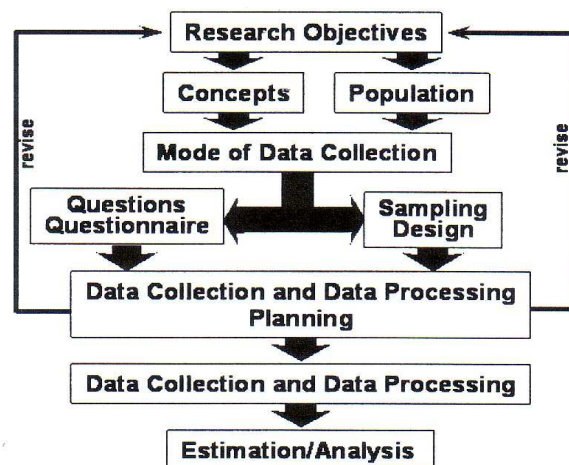
In order to facilitate and participate in these regional and international paradigms, the heads of the various Bureaus of Standards in the Caribbean agreed in 1996 that the CCMSC needed to be restructured to increase its competence in the development of harmonized standards in the region. Further to this agreement, COTED resolved to establish the CARICOM Regional *Organisation* for Standards and Quality (CROSQ) as an inter-governmental regional standards organization. Unlike its predecessor CCMSC, CROSQ has a formal organizational structure, legal status and a juridical personality in order to receive international recognition (Thomas, 2002). However, in spite of the national Bureau of Standards in the respective countries and CROAQ, ISO 9000 and other quality management systems are still largely non-existence. It is for this reason that the author conducted this study to investigate the non-implementation of ISO 9000 QMS among business organizations in the Caribbean Sub-region for his dissertation in partial fulfillment of his Ph.D. in Technology Management – Quality Systems Specializations (Indiana State University – May 2006).

4. METHODOLOGY

4.1 RESEARCH DESIGN

The survey process of this study followed the Biemer and Lyberg (2003) model as outlined in Figure 1, and consisted of:

- a. The Research Objectives (as stated in the Research Questions below).
- b. The Target Population.
- c. Mode of Data Collection.
- d. Questionnaire Development.
- e. Sampling Design.
- f. Data Collection and Data Processing Planning.
- g. Data Collection and Data Processing.
- h. Estimation/Analysis (p. 26-34).



(Source: Biemer and Lyberg 2003, p. 27)

Figure 1: The Survey Process

4.2 RESEARCH QUESTIONS

The study provided answers to the following research questions:

1. Were business organizations in the Caribbean sub-region aware of the ISO 9000 Quality Management Standard and its certification process?
2. Why would business organizations in the Caribbean sub-region pursue and obtain the ISO 9000 Certification?
3. What were business organizations' perceived benefits that may be derived from the ISO 9000 certification?
4. What were business organizations' perceived improvements that may be derived from the ISO 9000 certification?
5. What was the overall perception of the ISO 9000 Quality Management Standard among business organizations in the Caribbean sub-region?

4.3 THE QUESTIONNAIRE

The questionnaire used in this study was modeled after the ASQ ISO 9001:2000 Product Support Initiative (PSI) Survey (ASQ, n.d.) and the ISO 9001:2000 and ISO 9004:2000 Survey (ISO TC 176, 2003). The questionnaire was developed from a combination of adopting and adapting questions from these surveys as well as the formulation of some new questions. The questions were modified for administration among organizations that were not ISO 9000 certified.

4.4 THE TARGET POPULATION AND MODE OF DATA COLLECTION

The population for this study included all non-ISO certified business organizations, in both the public and private sectors in the Caribbean sub-region, and which are physically located in the countries that are members of CARICOM. The study utilized the face-to-face interview data collection survey method which Biemer and Lyberg (2003) described as “the oldest mode of interview since it does not rely on modern communication technologies. Further, because it provides the maximum degree of communication and interaction between interviewer and respondent, face-to-face interviewing is often associated with good data quality and is viewed by many survey researchers as the preferred mode of data collection for most survey topics” (p. 189).

This survey methodology had the potential to be the most effective way of data collection, for, as might be expected, it minimized misinterpretation and encouraged high (if not full) response rate. Further it reduced (or even avoided) non-response. This method however had its challenges. According to Barnett (2002), “an obvious feature of personal interviewing as a means of collecting data is its inevitable expense, through all the stages of planning, training and implementation. It is much more costly than sending out a questionnaire by postal mail or making a ‘phone call or e-mail enquiry. The justification must therefore rest in factors such as ease of access, reduction of non-response and misinterpretation and perhaps the speed with which information is needed” (p. 170).

The nature of the study, the technical content of the questionnaire, the prevailing closed and non-responsive culture of the Caribbean sub-region, and the inexperience of the study population to data solicitation in a research environment dictated that the face-to-face mode of data collection was most appropriate. This also had the potential for increasing the completion rate of the questionnaire as well as reducing errors, misinterpretation and misunderstanding. The cost factor was nevertheless a challenge. However, this was manageable as the survey sample was limited to business organizations located in Antigua and Barbuda.

5. FINDINGS

With the aid of the SPSS computer software, version 11.5, the statistical techniques of descriptive statistics, multiple analysis of variance and factor analysis were used in the data analysis process. The findings revealed that the organizations surveyed varied in type. The most frequent type were: Manufacturing and Wholesale/Retailing- 17.5%; Government and Hospitality/Tourism -15%; Telecommunications/Information Technology, Finance/Banking and Insurance - 12.5%; Business Services - 10%; and Other - 20%. It was noted that some organizations were multi-typed (Table 1). The organizations in the research sample were the more established companies in Antigua and Barbuda, 82.5% of which had been in operation for more than 10 years. The number of employees varied: 40% of the organizations had 1 - 9 employees; 25% had 10 - 49 employees; 12.5% had 50 - 99 employees; and 22.5 % had 100 or more employees. With respect to revenue, 57.5% of the business organizations reported to have annual revenues exceeding US \$500,000 while 22.5% reported annual revenues between US \$250,001 - \$500,000.

Table 1: Organizations Description and Quantity

Organizations' Description*	Frequency	Percentage (%)
Manufacturing - durable/non-durable	7	17.5
Engineering services/consultancy	3	7.5
Business services/consulting	4	10.0
Telecommunications/Information Technology	5	12.5
Education	0	0.0
Finance/Banking	5	12.5
Government	6	15.0
Agro-business	3	7.5
Health care	2	5.0
Hospitality/Tourism	6	15.0
Insurance	5	12.5
Transportation	1	2.5
Utilities	3	7.5
Wholesale/Retailing	7	17.5
Other	8	20.0

*Note: Some organizations were multi-typed.

Using the statistical techniques of analysis of variance (ANOVA) and factor analysis, based on the data collected, and analysed, the following were the findings of the study:

1. Business leaders in Antigua and Barbuda were unaware of the ISO 9000 Quality Management Standard and its certification process. Further, there were no significant differences in the lack of awareness among the different business organizational types.
2. There were no definite clusters or patterns of the variables identifying the reasons why business organizations would pursue and obtain the ISO 9000 certification. However, there was at least one statistical difference among the business organization types as to the reasons why they would pursue and obtain the ISO 9000 QMS certification. This was evident among the manufacturing organizations and the "Requirement of Customer" factor.

3. Business organizations' leaders in Antigua and Barbuda perceived that benefits of the ISO 9000 QMS were relative to the supplier, to management, and to the customer. Further, there were a number of statistical differences among the business organizations' leaders in their perceived benefits that may be derived from the ISO 9000 QMS certification. These included Business Services organizations and "*Improved Customer Satisfaction*," Telecommunications/Information Technology organizations and "*Effective Use of Data as Business Management Tool*" and "*Other Perceived Benefits*," and Finance/Banking organizations and "*Improved Customer Satisfaction*."
4. Business leaders in Antigua and Barbuda and the Caribbean sub-region by extension perceived that the ISO 9000 QMS certification would bring improvements in their general management activities, which should be customer focused. Further, the ISO 9000 QMS certification would bring improvements with respect to supplier satisfaction and retention, which were associated with market share/access. The business leaders also perceived that the ISO 9000 QMS certification would bring significant improvements in regional and international recognition for their organizations. However, the perceived benefits differ among the Tourism/Hospitality organizations with respect to "*Customer Retention*," "*Customer Satisfaction*," "*Market Share/Access*" and "*Productivity*," and also among the Wholesale/Retailing organizations with respect to "*Market Share/Assess*."
5. Business leaders in Antigua and Barbuda and the Caribbean sub-region by extension had the overall perception that the ISO 9000 QMS was applicable to their respective organization, and to Antigua and Barbuda and the Caribbean sub-region as a whole, and which they would consider implementing. However, they perceived the ISO 9000 QMS process as being "*too costly*" and "*time consuming*" to implement. Nevertheless, they are prepared to obtain more information about the ISO 9000 QMS. Further, there were no significant differences among the business organizations in their overall perception of the ISO 9000 Quality Management Standard.

6. RECOMMENDATIONS

The findings from this study showed a lack of awareness of the ISO 9000 QMS among the business leaders in Antigua and Barbuda and the Caribbean sub-region by extension. However, knowledge and implementation of the ISO 9000 QMS can play a pivotal role in these countries respective socio-economic and infrastructural developments with respect to their quality and production standards. To this end, based on the data collected, analysed and presented, the following recommendations were emanated from the study:

1. The study should be replicated with an increased sample size to facilitate greater and more discrete statistical analyses on the different organization types. Further, the population sample should be expanded to include business organizations from other countries in the Caribbean sub-region and Latin America.
2. General programs of information should be conducted to sensitize businesses in the Caribbean sub-region about the ISO 9000 Quality Management Standard and its certification process.
3. In-depth training programs on ISO 9000 QMS should be conducted for the business leaders in the Caribbean sub-region highlighting the cost-benefits of the ISO 9000 QMS certification. This should also be extended to countries in Latin America.
4. Since the perception of cost appears to be prohibitive, efforts should be made to explore avenues of obtaining developmental funding to assist in offsetting the cost of business organizations in the Caribbean sub-region in their pursuit and implementation of the ISO 9000 and ISO 14000 certification processes. This should be extended to countries in Latin America as well.

7. PROPOSED QUALITY MANAGEMENT SYSTEM MODEL - A WAY FORWARD

CROSQ is the Caribbean sub-regional latest attempt in establishing quality management systems that will aid in the technological and socioeconomic development of the region. The objectives, administrative structure and functions are extensive. The author's proposed Quality Management System Model will provide supportive mechanisms to assist the Caribbean sub-region with an accelerated way forward (see Figure 2.). The model advocates a total shift in the quality culture and is based on, and embedded in W. Edwards Deming's 14 points quality philosophy (Evans & Lindsay, 2000).

MODEL EXPLAINED

The first step in the proposed model requires a commitment to quality standards by the political directorate of the respective countries in the sub-region. This commitment must be demonstrated through clear mission, value and purpose statements. The model has at the top, the regional government's representation through COTED. This body will seek input and guidance from relevant regional organizations including the industrial, manufacturing and tourism sectors. The model further stipulates that the commitments and policies are funneled through CROSQ. The role of this body is to coordinate the regional quality policy as commissioned by the Heads of Government. In addition, this institution is the regional link to the ISO. Activities will also include the provision of education and training in quality management, quality advisement and monitoring, assessment and audit, the development of quality awards, and the coordination of ISO and other certifications (through a third party) on the regional level.

With input and guidance from CROSQ, the national Bureau of Standards are responsible to plan, coordinate, manage and implement quality management systems in their respective countries, consistent with the overall regional quality policy. Their activities on the national level will include monitoring and disseminating relevant ISO information, coordinating and providing education and training in quality management, quality advisement and monitoring, assessment and audit, quality awards, and quality certification through a third party. With support from the national governments (through finance, legislations and other regulatory processes), the Bureau of Standards constituency includes the public sector, the private sector, and the tourism sector. These sectors will maintain formal and/or informal links with their regional counterparts through the regional organizations with which they hold membership.

At the organization level, quality management systems and standardization are developed and sustained by the mechanisms of education and training, advisement and monitoring, assessment and audit, a quality awards structure, and certification. It is imperative that a customer feedback system be in place so as to be assured that the goods or services outputs satisfy the needs and desires of the customer.

8. MODEL IMPLEMENTATION - ANTIGUA AND BARBUDA CASE STUDY

For the last 12 months, the author has been involved in the Quality System Model implementation at different levels in Antigua and Barbuda. At the organizational level, he has been engaging with a number of business organizations at different phases of the ISO 9001:2000 certification process, most at the discussion stage, and has stated the intervention of leading one business organization in their ISO 9001:2000 certification process. The major stumbling blocks for most companies are the perception of cost and time as well as skepticism of the benefits that may be derived from the ISO 9001:2000 certification.

**CARIBBEAN SUB-REGION
QUALITY SYSTEM
MODEL**

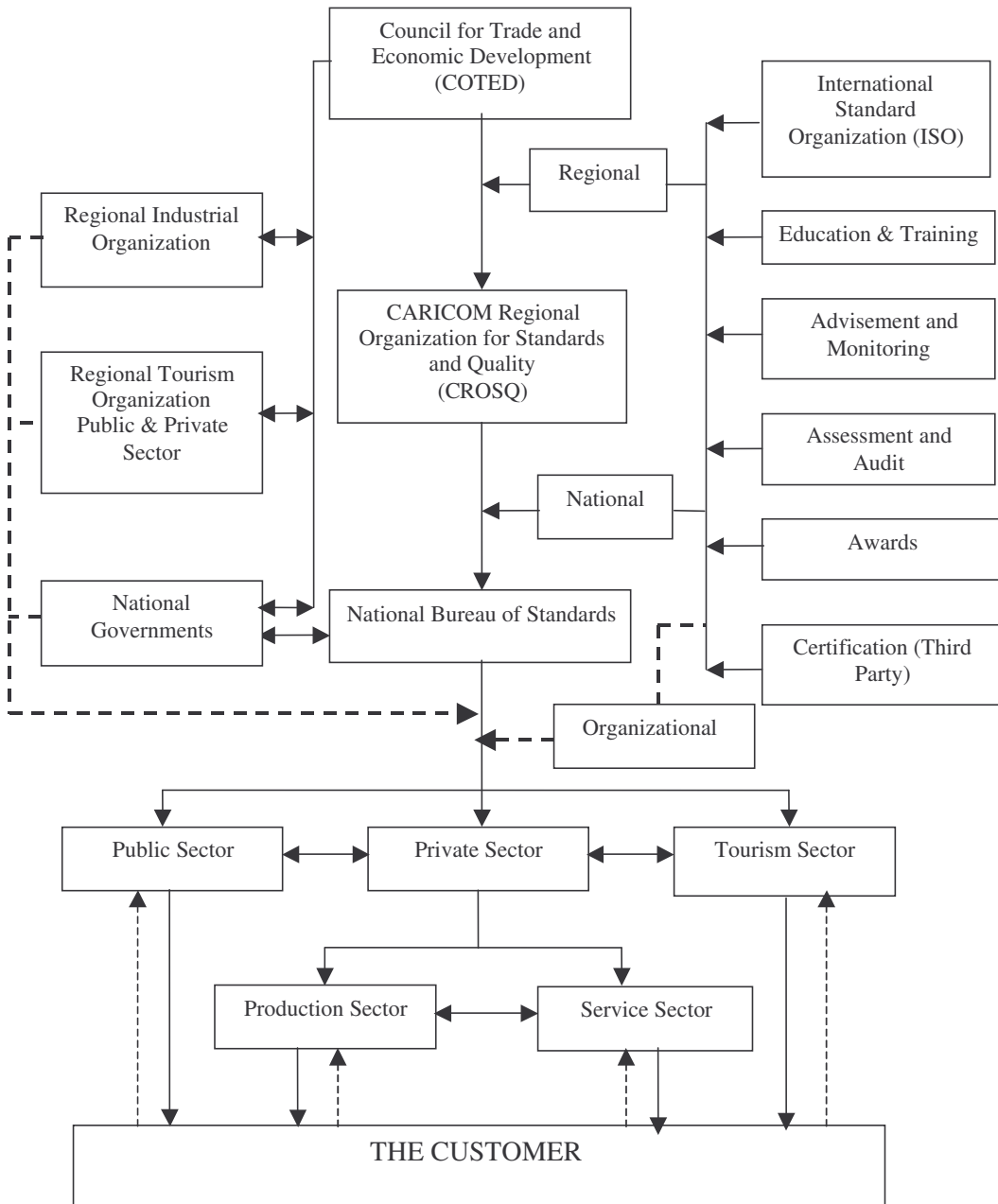


Figure 2: Proposed Caribbean Sub-region Quality Management System Model

On the national level, as a private sector representative on the Antigua and Barbuda National Standards Council, and working through the national Bureau of Standards, beginning November 2006, the author is coordinating a 'Year of Quality Activities' which focus on a particular sector of the economy every month. The program was launched as part of the October 15, 2006 World Standards Day (WSD) Activities. Working around the theme "Quality is my life: I expect it, I deliver it," the monthly activities will culminate in a National Quality Award Scheme. Each month focuses on a different sector of the national economy as follows:

November 2006 – Vendors and Trade Services	December 2006 – Tourism
January 2007 – Engineering	February 2007 – Education
March 2007 – Banking & Financial Services	April 2007 – Agriculture/Agro-Processing
May 2007 – Industry and Commerce	June 2007 – Government
July 2007 - Entertainment and Media	August 2007 – Social Services
September 2007 – Health Services	October 2007 - WSD 2007 Week of Activities/with Awards

The frame work of the monthly activities includes:

- Media Infomercial and Education – Electronic and Print.
- Quality Workshops to include standards referencing in the particular sector.
- Showcase and Career day for the respective sector in primary and secondary schools throughout the country.
- Quality Customer care and appreciation.

The above have been met with initial success, but are being curtailed by the Bureau of Standard's lack of financial and human resources. Nevertheless, there is much optimism among the respective stakeholders for a successful year of activities and beyond.

9. CONCLUSION

The 2005 ISO certification statistics show that the countries in Latin America and the Caribbean continue to lag behind in ISO 9001:2000 certifications. However, the ISO 9000 QMS certification can propel these economies in their technological and socioeconomic development with respect to quality and production standards. The data collected, analyzed and presented in this study indicated that this condition is due primarily to a general lack of awareness among the business communities. Arresting this situation requires a radical paradigm shift towards a quality business culture. To this end, the author developed and began the implementation of Caribbean sub-region Quality Management System Model, which initially has encountered a number of expected challenges, but with much hope and optimism for continuous improvement.

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