The Relationship between Quality Approaches and Their Impact on Portuguese Companies´ Quality Performance

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Abstract

Recent research on the link between quality management practices and organization performance, however, often finds contradictory outcomes. That is, quality procedures may not consistently result in a positive or favorable organizational outcome (Foster 2007; Kaynak 2003; Montes, Jover, and Fernandez 2003; Zu, 2009). Jabnoun *et al*., 2003 concluded that although quality management practices have been implemented by many organizations all over the world, such implementations have often failed. Recent studies, underline the importance of causal relations between quality management practices (Cua *et al*. 2001; Sousa and Voss, 2002 and Kaynak, 2003). Many authors suggested a positive association between TQM practices and organizational performance (Anderson *et al*., 1995; Flynn *et al*., 1995a; Mohrman *et al*., 1995; Choi and Eboch, 1998; Terziovski and Samson, 1999; Cua *et al*., 2001; Douglas and Judge, 2001; Kaynak, 2003). However, conflicting reports have been published regarding the effectiveness of TQM programs. Researchers have postulated various reasons for this perplexing outcome, with several researchers suggesting the need to develop more comprehensive models to explain the process by which quality management links to organization performance (Montes, Jover, and Fernandez 2003; Naor *et al*. 2008; Pinho 2008). In this paper, a conceptual model is presented which reflects the relationship between QMPs and their impact in Portuguese companies' performance.

Keywords
Quality approaches, quality management practices (QMPs), performance measurement, Modelling.

1. Introduction

Total quality management (TQM) is generally described as a collective, interlinked system of quality management practices (QMPs) that is associated with organizational performance (GAO, 1991; Tornow and Wiley, 1991; Waldman, 1994; Madu *et al*., 1995). TQM has probably been the most significant approach to managing operations improvement. It is also seen as an approach to the way operations and processes should be managed and, more significantly, improved generally. A grasp of quality management principles is the foundation of any improvement activity (Slack *et al*., 2007). The concept of total quality management (TQM) has been developed as a result of intense global competition. Organizations with international trade and global competition have paid considerable attention to TQM philosophies, procedures, tools and techniques (Zakuan *et al*., 2010). Actually, many companies are implementing TQM approach and quality initiatives for achieving sustainable competitive advantage and enhanced company performance (Talib *et al*., 2010). In fact, numerous studies have examined the positive and negative (or non-significant) relationships or correlations between TQM practices and various performance measures. However, past researchers recognize the need for further testing, observing that recent studies argue that it is important to retest the relationship between quality and performance because past studies have obtained mixed results (Naor *et al*., 2008). Based on the literature review carried out, we recognize there are still many doubts about the relationship presented; therefore we consider it relevant to study in more detail the causal process that links QMPs with quality performance. Thus, with this study, it will be possible to have the perspective of the Portuguese companies' reality.

The aim of this paper is to develop and propose a conceptual model that reflects the relationship between the implementation of quality management practices (QMPs) which are categorized in two different quality approaches and their impact on the Portuguese companies´ quality performance**.**

2. Quality management practices and organizational performance

2.1. Quality management practices (QMPs)

Quality management practices have been investigated extensively (Saraph *et al*., 1989;Flynn *et al*., 1994;Waldman, 1994; Powell, 1995; Ahire *et al*., 1996; Anderson and Sohal, 1999; Najmi and Kehoe, 2000; Zhang *et al*., 2000; Sun, 2001; Sila and Ebrahimpour, 2002; Kaynak, 2003). Table I presents, for each generic practice, a list of similar practices proposed by other authors.

Table 1: Links between practices retained and literature.

Practice	Related practices
Top management commitment and support	Top management commitment (Ahire *et al.*, 1996; Powell, 1995; Tamimi, 1998), top management team involvement (Douglas and Judge, 2001), leadership (Anderson and Sohal, 1999; Sun, 2001; Zhang *et al.*, 2000)
Organization for quality	Quality management design (Ahire *et al.*, 1996), open organization (Powell, 1995), cross-functional teams (LaHay and Noble, 1998), control and improvement of processes (Zhang *et al.*, 2000)
Employee training	Training (Saraph *et al.*, 1989), education and/or training (Ahire *et al.*, 1996; Kannan *et al.*, 1999; Powell, 1995; Tamimi, 1998; Zhang *et al.*, 2000), emphasis on TQM-oriented training (Douglas and Judge, 2001)
Employee participation	Participation (Zhang *et al.*, 2000), delegation (Ahire *et al.*, 1996; Powell, 1995), employee involvement (Ahire *et al.*, 1996), employee relations (Saraph *et al.*, 1989)
Supplier quality management	Supplier quality management (Ahire *et al.*, 1996; Saraph *et al.*, 1989; Zhang *et al.*, 2000), supplier management (Tamimi, 1998), suppliers (Najmi and Kehoe, 2000; Sun, 2001), supplier relations (Forza and Filippini, 1998; Powell 1995)
Customer focus	Customer focus (Ahire *et al.*, 1996; Anderson and Sohal, 1999; LaHay and Noble, 1998; Zhang *et al.*, 2000), strong relations with customers (Powell, 1995), customer satisfaction (Forza and Filippini, 1998), customer driven (Douglas and Judge, 2001)
Continuous support	Continuous improvement (Douglas and Judge, 2001), recognition and rewards (Zhang *et al.*, 2000)
Quality system improvement	Quality system improvement (Zhang *et al.*, 2000)
Information and analysis	formation and analysis (Anderson and Sohal, 1999; Choi and och, 1998), information (Sun, 2001), information flow (Kannan *al.*, 1999), quality information system (Najmi and Kehoe, 2000), ocess measurement (LaHay and Noble, 1998), use of internal information on quality (Ahire *et al.*, 1996), Quality data (Saraph *et al.*, 1989), measurement of quality (Powell, 1995), benchmarking (Ahire *et al.*, 1996; Powell, 1995)
Statistical quality techniques use	Use of statistical procedure (Ahire *et al.*, 1996), total quality methods (Douglas and Judge, 2001)

Links between practices retained and literature

In this research project the first phase consisted of identification and following selection of the most implemented and more used QMPs. It is important to refer that this selection was based on two sectors which will be target of our study: manufacturing and service.

After the selection of the nine generic QMPs we grouped them into two *Quality Approaches* categories:

- **Quality Governance and Management**: Leadership; customer focus; employee involvement and commitment; HR management (incentive and recognition); strategic planning management; process management; supply chain management and continuous improvement and innovation.
- **Quality Methodologies and Techniques:** Quality tools and Business Excellence Models.

The identification of the nine QMPs that are proposed was based on extent literature review. It is believed that these QMPs are comprehensive because they:

- Have highest frequency of occurrences by different researchers in the service industries and identified as the key practices in TQM implementation in both manufacturing and service industries (example Saraph et al., 1989; Antony et al., 2002; Zhang et al., 2000; Khamalah and Lingaraj, 2007);
- Constitute practices that represent the hard and soft aspects of quality management;
- Encompass the most prestigious quality award and standards criteria widely accepted by quality management scholars and practitioners;
- Have been considered as critical practices in quality management (Sila and Ebrahimpour, 2002);
- Significantly associated in services and in the promotion of service quality (Ueno, 2008; Lakhal et al., 2006; Wali et al., 2003; Behara and Gundersen, 2001).

2.2. Performance measures indicators

Numerous studies have examined the positive and negative (or non-significant) relationships or correlations between QMPs and various performance measures. While examining the relationship between QMPs and performance scholars have used different performance types such as financial, innovative, operational and quality performance.

Through an extensive literature review we were able to identify (table II) the different indicators used for measuring organizational performance (Sadikoglu and Zehir, 2010; Monge *et al.*, 2006; Zakuan *et al.*, 2010). Prajogo and Sohal (2004) measured organizational performance from quality performance (example reliability, performance, durability and conformance to specification) and draw our attention to the strong and positive relationship between QMPs and quality performance. Another author measured organizational performance from quality performance (example quality of product and service, customer relations, customer satisfaction with products quality, and level of quality performance relative to industry norms) (Arumugam *et al.*, 2008). Zakuan *et al.* (2010) in their study measured organizational performance through two categories which are satisfaction level (example employee satisfaction and customer satisfaction) and business results (example productivity, number of successful new products, cost performance and profitability).

In this study, we considered quality performance as our indicator for measuring company's performance. The eight selected indicators are: Product/service quality level; customer relationship; reliability, productivity, durability, conformance to customer requirements; number of non-conforming products and number of complaints. The reasons for choosing quality performance as an indicator for measuring company's performance are: It can be measured and reflected into number of ways as articulated in past empirical studies on TQM (Ahire et al., 1996; Flynn et al., 1994; Su et al., 2001; Yang, 2006; Arumugam et al., 2008; Prajogo and Sohal, 2003; 2004).

- It has been used by Malcolm Baldrige National Quality Award (MBNQA) model under the 'quality results', the only criterion used for organizational performance measurement. MBNQA model that represent TQM practices is accepted by several researchers across the world (Ahire et al., 1995; Dean and Bowen, 1994; Juran, 1995; Prajogo and Sohal, 2003; 2004);
- Several past research studies on TQM and organizational performance have taken quality performance as indicator for measuring the performance (Ahire *et al.*, 1996; Zhang *et al.*, 2000; Arumugam *et al.*, 2008; Dow *et al.*, 1999; Flynn *et al.*, 1994; Saravanan and Rao, 2007; Cua *et al.*, 2001; Prajogo and Brown, 2004) and the results were obtained. These studies investigated the relationships between TQM practices and quality performance in different *sectors* and *countries*.

Table 2: Performance measures proposed by different authors

Author(s)	Measure	Indicators
Prajogo and Sohal (2004)	Organization performance	• Quality performance • Innovation performance
Lakhal *et al*. (2006)	Organization performance	• Financial performance • Operational performance • Product Quality
Lin *et al*. (2005)	Organization performance	• Satisfaction level • Business results
Fuentes *et al.* (2006)	Organization performance	• Operational performance • Market and financial performance • Employee performance
Sila *et al*. (2007)	Performance measure	• Organizational effectiveness • Financial results • Market results
Sit *et al*. (2009)	Organization performance	• Customer satisfaction
Shieh and Wu (2002)	Organization performance	• Project performance
Feng *et al*. (2006)	Organization performance	• Quality performance • Innovation performance
Ooi *et al*. (2008)	Organization performance	• Job satisfaction
Zakuan *et al*. (2010)	Organization performance	• Employee performance • Customer satisfaction • Business results

2.3. Relationship between QMPs and quality performance

Although the effects of QMPs on various performance types are inconsistent, quality performance generally indicated strong and positive relations (Prajogo *et al*., 2003). A considerable body of empirical evidence suggests that QMPs implementation improves quality performance of the company. It has been measured in various ways and found that the quality management model and specific practices, which best predict performance varies across the world (Adam *et al.*, 1997; Prajogo and Sohal, 2004; Arumugam *et al.*, 2008).

Flynn *et al.* (1994) in this research framework for quality management proposed suggested that the inputs are the QMPs while quality performance represents outcomes. Brah *et al*. (2000) determined how an organization could benefit from QMPs implementation in terms of improved financial and operating performance. Kunst and Lemmink (2000) investigated the relationship between quality implementation and organizational performance in hospitals and discovered that QMPs leads to higher business performance, which indicates efficiency, cost effectiveness, and higher perceived service quality by patients. Hasan and Kerr (2003) studied the relationship between QMPs and organization performance in service organizations and discovered that QMPs like top-management commitment; employee involvement; training; supplier quality; quality costs; service design; quality techniques, benchmarking; and customer satisfaction leads to higher productivity and quality performance.

Prajogo and Brown (2004) conducted an empirical study employed structural equation modeling (SEM) approach within Australian manufacturing and service organizations to examine the relationship between QMPs and quality performance, and the results indicated a strong and positive linkage and reported that there exist no significant differences in the level of most of the QMPs and quality performance between the two sectors. A study utilizing SEM approach by Sanchez-Rodriguez *et al.*, (2006) provided the insights into the current information technology (IT) and quality management (QM) theory and practice on operational and quality performance. They found QMPs initiatives generate significant positive gains in operational and quality performance. Specific QMPs such as management leadership, process management, employee involvement and customer focus are commonly accepted practices to improve quality performance of companies (Zehir *et al*., 2012).

In contrast, there are some researchers who found that the implementation of QMPs did not improve performance. For example, Dow *et al*. (1999) showed that some QMPs, such as employee commitment, shared vision and customer focus, contribute to superior quality outcome and factors such as benchmarking, work teams, advanced manufacturing technologies and closer supplier relationships do not contribute to superior quality outcomes. The research carried out by Beaumont and Sohal's (1999) showed that the use of QMPs was not correlated to profit levels. Terziovski and Samson (1999) investigated the relationship between QMPs and organizational performance

in Australia and New Zealand and obtained mixed results, showed that a typical manufacturing organization is more likely to achieve better performance with QMPs than without QMPs implementation. Singles *et al*. (2001) studied the effect of certification in the ISO 9000 series and found that ISO certification itself did not lead to an improvement in the performance of organizations. Aarts *et al*. (2001) reported that ISO registration had no effect on the performance of New Zealand organizations. As we already mentioned, the link between QMPs and organization performance, often finds contradictory outcomes and mixed results.

3. Conceptual model proposal

3.1. *Structural Equation Modeling (SEM)* Review

SEM is a method that can examine a series of both dependence and independence relationships simultaneously (Rohani *et al*., 2006). Prajogo and Sohaj (2003) examined the relationship between total quality management (TQM) and innovation performance and compare the nature of this relationship against quality performance. The empirical data were obtained from a survey of 194 managers in Australian industry encompassing both manufacturing and non-manufacturing sectors. The results suggest that TQM significantly and positively relates to both product quality and product innovation performance although it appears that the magnitude of the relationship is greater against product quality.

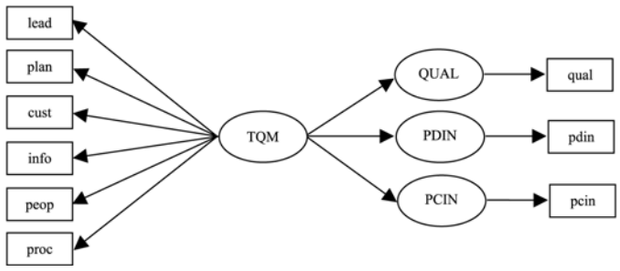

Figure 1: Conceptual SEM for Australian manufacturing and non-manufacturing data.

Lin *et al*. (2005) conducted a comparative study between Taiwan and Hong Kong manufacturing companies. The aim was to investigate supply chain quality management and organizational performance using SEM. The results showed that QMPs are significantly correlated with the supplier participation strategy and this influences tangible business results and customer satisfaction.

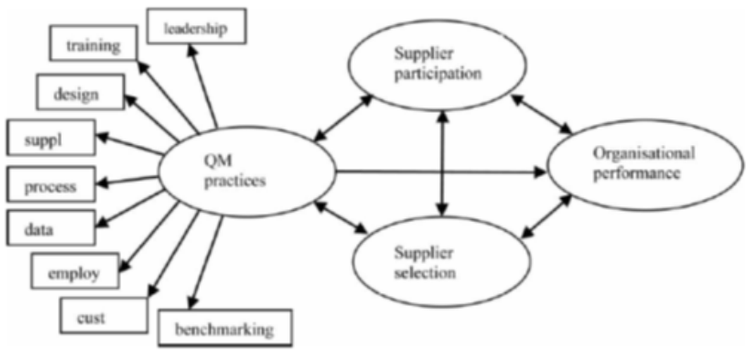

Figure 2: Conceptual SEM for Taiwan and Hong Kong manufacturing data.

Sanchez-Rodriguez *et al*. (2006) used the SEM approach to provide insights into current information technology (IT) and total quality management (TQM) theory and practice on operational and quality performance. The results indicate that the sampled firms make considerable use of IT to support their TQM initiatives and that overall such efforts generate significant positive gains in operational and quality performance.

Figure 3: A proposal theoretical structural equation model.

Arumugam *et al*. (2008) explored the relationship between total QMPs and quality performance with special emphasis on ISO 9001:2000 certified manufacturing organizations in Malaysia. The findings revealed that total QMPs were found to be partially correlated with quality performance of the Malaysian ISO 9001:2000 certified manufacturing organizations. It is also found that where customer focus and continual improvement were perceived as dominant total QMPs in quality performance.

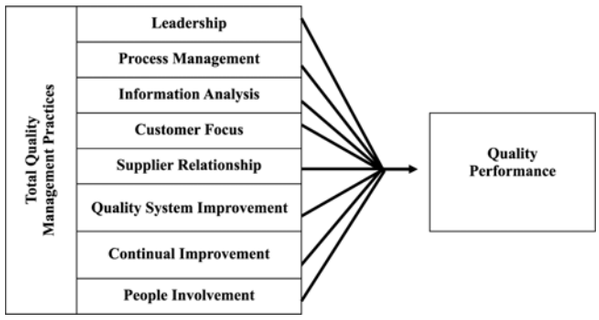

Figure 4: Conceptual SEM for Malaysia certified manufacturing data.

Zakuan *et al*. (2010) investigated the relationship between TQM implementation and organizational performance using structured equation modeling.

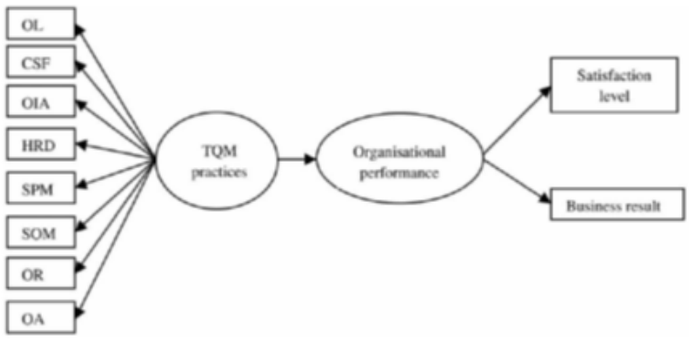

Figure 5: A proposal conceptual model of TQM practices

It is evidenced that the number of studies using SEM approach has been growing and that can be used in determining those QMPs implementation and the relation to quality performance. In this research will use SEM approach to examine the relationship between QMPs and quality performance measures. In a more detailed way, we can say that the aim is to study, in two different sectors, manufacturing and services, which impact these two quality approaches and their respective QMPs do have on the quality performance in the Portuguese organizations. In the following figure it is showed our conceptual model proposal.

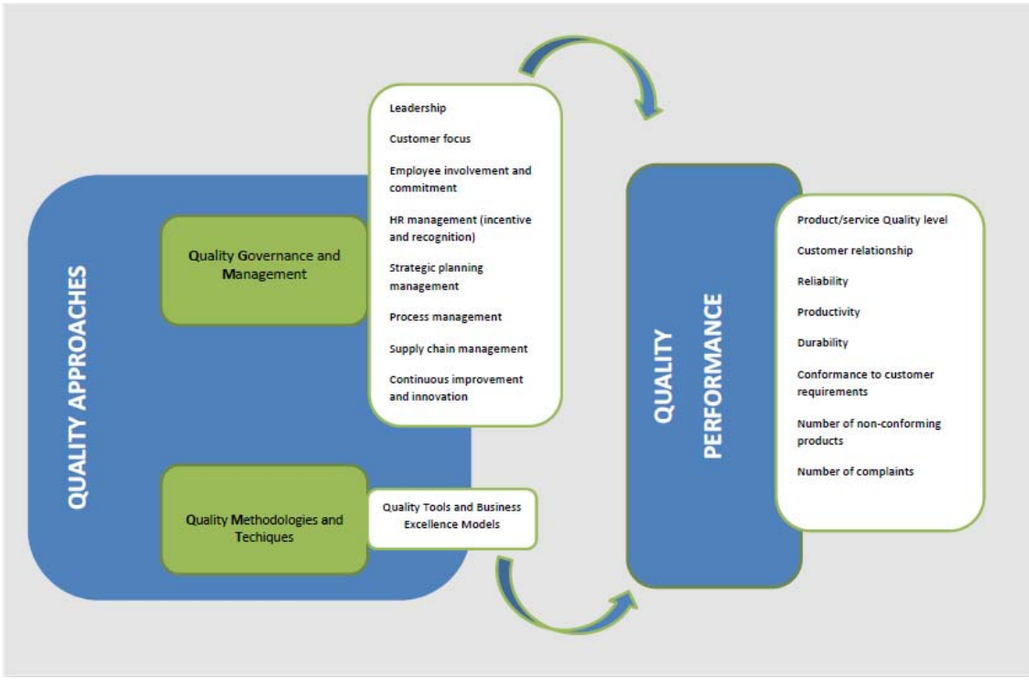

Figure 6. Conceptual model: Relationship between quality approaches and their impact on quality performance.

4. Research Methodology

Our next phase will be based on the validation of the conceptual model at hand. At first, it will be made a series of semi-structured interviews with international *Quality Leaders*, such as: academics, specialists in this area, managers and consultants. Then, about 15 *Case Studies* will be carried out. Relating to the selection of the *case studies* it will be adopt the quality tool "Design of Experiments" – DOX, so that we can consider case studies in all combination of factors. The next phase will have with its main target a survey based on the conceptual model presented and validated in the previous phase. This survey will be previously validated by a panel of specialists and, subsequently, sent to Portuguese companies. Statistical analysis of all information collected in previous phases will be performed, using the statistic software *SPSS.* This analysis will allow us to have a global sight which is essential to the following phase. Finally, the conceptual model developed will be validated based on the *SEM* approach, so that we can identify which are the approaches and consequent QMPs that have a significant impact on the quality performance.

5. Final remarks

This paper presents the first result of a research project that we are conducting in order to analyze the relationship between quality approaches and practices and consequently their impact on Portuguese companies' quality performance. As far as we were able to find out in the literature review phase, this conceptual model is an innovative approach to characterize the direct results and effects of QMPs in the companies' quality performance. Further, there is a high number of studies that suggests that more research is needed in the area and we think that this conceptual model proposal will fulfill some of the gaps related in other works. The validated model might be used by the quality professionals as an approach for an efficient quality management implementation and may be also used by researchers to develop the quality management theory.

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Biography

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