Quality and Financial Performance: a Review of Empirical Studies

Alexandre Pignanelli
Fundação Getulio Vargas (FGV) – São Paulo Business School
Production and Operations Management Department (POI)
Rua Itapeva, 474 – 8th floor
01332-000 – São Paulo, SP – Brazil
Phone #: 55 11 3281 7780
E-mail: alexandre.pignanelli@fgv.br

João Mario Csillag
Fundação Getulio Vargas (FGV) – São Paulo Business School
Production and Operations Management Department (POI)
Rua Itapeva, 474 – 8th floor
01332-000 – São Paulo, SP – Brazil
Phone #: 55 11 3281 7780
E-mail: joao.mario.csillag@fgv.br

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Abstract

The interest for evidence on the impact of quality management in the financial performance of the firms can be retraced to the pioneering studies compiled by David Garvin in 1983, with comparisons between quality practices in Japanese and US firms and their effect in performance. Since then, especially in the last 10 years, a series of researches analyzed the question, provided by either academics or consultant firms concerned to confirm the existence of this positive impact. Although the publicized benefits of quality management, these empirical researches relating quality and performance produced mixed results. This work looks for review this set of researches, exploring its different approaches, operational definitions of quality and performance, sample criteria, forms of data collection, methodologies and findings. Its main contribution is to offer an aggregate vision of that body of knowledge, facilitating the academic community comprehension on the subject.

Introduction

The pioneers and most influential figures of the quality movement during the second half of the twentieth century, such as Deming (1986, 1993), Juran (1964, 1988, 1998), Feigenbaum (1956), Ishikawa (1985) and Crosby (1979), supported the idea that there is a wholesome connection between adopting quality management practices and the financial performance. Nonetheless, this connection has always been based upon anecdotal evidences. Only during the last decade of the century have empirical studies been prioritized by researchers in the fields of operations and strategy, with the objective to show the real effect of quality over
financial performance. In Brazil, this field of research has been practically unexplored.

On the other hand, the analysis of these empirical studies shows results that are not conclusive; some of them show positive effects of quality in financial results, others show the lack of these effects (POWELL, 1995; ITTNER; LARCKER, 1997; STAW; EPSTEIN, 2000; KAYNAK, 2003; HENDRICKS; SINGHAL, 1997, 2001b; YORK; MIREE, 2004). Most of these studies establish a criterion to identify a sample of companies that use the TQM model, and then evaluate its performance by comparing it to a second sample that includes companies that do not use the model and companies for which information about the extension of the quality management utilization is not available. Another common method found in the empirical studies proposed is validating the relationship between quality practices and performance, give by a proposed theoretical model.

The purpose of this work is to review this set of researches, exploring its different approaches, operational definitions of quality and performance, sample criteria, forms of data collection, methodologies and findings. Its main contribution is to offer an aggregate vision of that body of knowledge, facilitating the academic community comprehension on the subject.

**Quality and Financial Performance Literature**

The initial landmark of the empirical research on the relationship between quality and performance can be established with the work of Garvin (1988). Although to recognize that the academic research on the subject was still in its infancy, Garvin consolidated a series of indications proceeding from consulting and academic studies, and concluded that there were correlations between quality and market share, quality and productivity and quality and profitability. For cost the results were different from one sector to another.
In 1991, the United States General Accounting Office conducted a study with the 20 companies that obtained the highest scores among the applicants to the Malcolm Baldrige National Quality Award from 1988 to 1989 (GENERAL ACCOUNTING OFFICE, 1991), in response from a Congress solicitation to understand the impact caused by the adoption of Criteria for Performance Excellence to the results of American companies. The final results show that the firms analyzed went through a global performance improvement, with emphasis on better level of relationship with employees, greater productivity, greater level of customer satisfaction and market share, and increasing of profitability. Another result of this study was the proposition of a model, called GAO Total Quality Management Model, to the interpretation of the relations between the management practices and the benefits reached by the firms, including aspects of product and service quality, leadership for continuous improvement, quality systems and employee involvement, customer satisfaction, and competitiveness.

Adam Jr. (1994) studied the relationship of quality and productivity practices with financial, operational and quality results of 187 North American companies. The findings showed a strong relationship between quality improvement practices and results associated with the quality of products and processes, and a weak relationship, although significant, with the operational and financial results.

Anderson et al. (1995) conducted an empirical exploratory analysis based on the theoretical model developed by the authors in a previous study, deploying the Deming management method (ANDERSON et al., 1994). The analysis found a significant effect between the level of employee satisfaction and the level of customer satisfaction, but the same did not happen between the continuous improvement efforts and the customer satisfaction. Rungtusanatham et al. (1998) replicated the Anderson et al. (1995) study for Italian data, getting opposite results: no significant effect was found between the level of employee satisfaction and the
level of customer satisfaction, but significant effect was evidenced between the continuous improvement efforts and the level of customer satisfaction.

As Anderson et al. (1995), Flynn, Schroeder and Sakakibara (1995) used questionnaires answered by managers and employees of North American companies to identify relations in a proposed theoretical framework. The performance construct was measured by quality and operational variables. The results showed positive effects of various dimensions of the theoretical framework in these variables.

The use of financial performance as a dependent variable in quality research has become more frequent since the work of Powell (1995). Powell’s empirical research shows that characteristics commonly associated with quality management, such as process improvement, benchmarking, and training, do not produce competitive advantages for the firms, contrary to some tacit, behavior and non imitable characteristics, such as organizational culture, empowerment and the leadership commitment. According to Powell, these results supported the RBV theory (WERNERFELT, 1984; RUMELT, 1984; BARNEY, 1986a, 1986b, 1991; DIERICKX; COOL, 1989). Powell was also the first to confront the view of quality as a whole, since in his study only three of twelve practices associated to quality management were associated to superior performance, therefore suggesting that companies could capture benefits from quality management without necessarily using the whole “ideology”.

Mohrman et al. (1995) worked, via questionnaires, with the 500 largest industrial companies and the 500 largest service companies of the United States, according to the Fortune magazine's list. The objective was to investigate the impact of improvement initiatives in the performance of the companies, and the results showed no significant relationship between the adoption of quality management and financial results, operationalised by profitability measures.
Hendricks and Singhal published several studies (1996, 1997, 2001a) that proved positive relationship between applying quality management and the performance of the firm, showing positive reaction of the stock market to quality award announcements, through abnormal returns on the day of the announcement, and superior long term growth of companies that won quality awards, in indicators such as sales, operational profit, employment level and total assets.

In other study, Hendricks and Singhal (2001b) focused on the quality management contribution to the shareholder wealth maximization of publicly traded U.S. companies, by means of the evolution, in long term, of the market value of these firms compared to a control group. The results show the inexistence of significant differences in the firm values in the period of quality implementation; in the post implementation period the performance difference in favor of the firms that received quality awards was from 38% to 46%, according to the scenery.

The four works of Hendricks and Singhal’s discussed above dispense with an important characteristic in the formation of the sample, since to choose the firms the only requirement was that each of the selected ones had already received any kind of quality award. That is, it was considered from firms that received awards recognized and of independent evaluation (as the Malcolm Baldrige National Quality Award), to firms that received awards as prominence supplier from their clients. The authors seem to recognize this fact, when showing in the study of 1997 that the results of the companies recognized for independent awards were significantly different of the results of the companies recognized for other prizes.

Adam Jr. et al. (1997) acquire data of companies in North America, Europe and Asia/South Pacific in order to analyze the relationship between practices associated with quality management and the financial performance of these companies. As far as financial
performance, measured by growth and profitability indicators, the results showed the positive impact of the leadership commitment and of the mechanisms of recognizing and awarding employees.

Chenhall (1997) found support for the proposition that relates superior financial performance, operationalised by combined indicators that consider profitability and growth, and the implementation of quality management programs and manufacturing performance measurements. The greatest effects found were the combination of adopting quality management and a management performance evaluation system based on manufacturing indicators.

Ittner and Larcker (1997) adopted a sample of companies in the automotive and computer industries, with operations in Canada, Germany, Japan and the United States, using profitability as the dependent variable. The main interest of the study was linking processes management techniques, usually also associated with quality management, to profitability increase. The results do not support the idea that process management contributes as a whole towards the financial performance, but that certain techniques had a positive impact while other ones practically did not influence the performance; to be specific, long term partnerships with suppliers and clients were related to the improvement of profitability, while training, payment based on quality and team work, and the organizational commitment with continuous improvement were not related to improving profitability.

Easton and Jarrell (1998) used a proxy that looked to establish the landmark of the beginning of use of the TQM by interviews with companies’ representatives and found positive connections between adopting quality management and improvement in growth, profitability and market value.

The creation of a theoretical model linking the practices associated with quality management,
and its subsequent empirical validation, were the research goals of Forza and Filippini (1998). The model included quality orientation, customer relationship, supplier relationship, process control and human resources, which were related to two performance dimensions: quality conformity and customer satisfaction. A structural equation model showed the existence of significant effect of the control process in the results of quality conformity, and of the customer relationship in the level of customer satisfaction.

Choi and Eboch (1998) used a structural equation model to evaluate the effect of TQM in customer satisfaction and performance of industrial plants. The results indicated a stronger impact of TQM in customer satisfaction than in the performance of the plants; it was also evidenced that the performance of the plants had no significant effect in customer satisfaction.

In an article entitled “Revisiting the Stock Price Impact of Quality Awards”, Adams, McQuenn and Seawright (1999) revisited and expanded the work of Hendricks and Singhal (1996). Based on the new results, the authors present four reasons for the original results of Hendricks and Singhal (1996) should be analyzed with caution. The first reason was that in the replication of the original study the evidence of a stock price response on the quality award announcement day is only marginally significant. The second was caused by a configuration of the research that considered only companies recognized by state awards and found that the announcement day relationship between stock returns and winning awards was not significant. The third reason appeared when evidences of positive abnormal returns were not found when companies rewarded in a most recent period were considered. Finally, the fourth reason arose from the discovery that the marginal significance obtained with the replication were actually driven by just four companies, which if removed from the sample modify the result to the point of totally eliminate its significance.
In publications originated from similar researches, Dow, Samson and Ford (1999), and Samson and Terziovski (1999) used structural equations and multiple regressions to analyze the effects of practices associated to TQM in performance indicators as satisfaction of clients, product conformity, productivity and delivery performance. The data came from questionnaires answered by approximately 1200 companies in Australia and New Zealand. In general, the results were coherent with the research done by Powell (1995), as the behavioral practices had the bigger influence in the quality and operations results.

In a provocative article named "What Bandwagons Bring: Effects of Popular Management Techniques on Corporate Performance, Reputation, and CEO Pay", Staw and Epstein (2000) analyze the impact of the use of the “popular management techniques” being TQM one of them. The researchers did not find any evidence of higher level profits of organizations applying effectively TQM. Meanwhile these companies were admired and considered innovators. High management of organizations associated with these management techniques, earned higher wages than in other companies. According to the authors, this connection among reality and institutional image bring support for an institutional theory with obvious implications for agency theory (COASE, 1937; JENSEN; MECKLING, 1976). The proliferation of the “popular management techniques” can be explained by the bandwagon effect.

Wilson e Collier (2000) studied the causal relationship among the different criteria composing the Malcolm Baldrige National Quality Award in 1995 utilizing structural equations technique. The financial results were considered as an aggregate measure, showed evidence of Process Management (coefficient 0.193) and Information’s and Analyses (coefficient 0.245). The research also concluded that the other criteria did not influence the performance directly, but indirectly by means of its effects on the Process Management and Information and Analysis
The research done by Das et al. (2000) follows the same thought used by Wilson and Collier (2000), but using its own causal relations model, not based in the Malcolm Baldrige National Quality Award structure. These authors innovated by including in the model the moderator influence of a factor based in the external context, the international competition. In this context, the financial outcome also had an aggregated variable. The effect of the quality management practices on the financial outcome was detected only indirectly, via customer satisfaction.

Ahire and Dreyfus (2000) did a research on the impact of process management, together with the product design management, in results related to the internal and external (perceived by the customer) quality, finding positive impacts in performance indicators such as rejects, rework, defects level, customers complaints, warranty and payment of warranty services. Fynes and Voss (2001) have also included design in their model, which was tested in a sample of 200 companies of the electronic sector in Ireland. They found evidence that the customer satisfaction is impacted positively by the quality and design practices but no significant effect was found on the customer satisfaction in the aggregate finance performance, a conclusion that is contradictory to the results found by Das et al. (2000).

Douglas and Judge (2001) have conducted a very similar research to that one of Powell (1995), but considering only hospitals in the sample (229 answered questionnaires). The results showed that the degree of TQM implementation effectiveness was positively associated to the financial performance.

The empiric work done by Kaynak (2003) tested the theoretical model proposed by her, containing relations among associated practices to the quality management and performance indicators (inventory, quality market and finance). The results validate the direct and indirect relations among the practices and the various performance indicators.
Interesting results were also demonstrated by York e Miree (2004). These authors looked for answers to an old dilemma, verbalized mainly by the skeptics in relation to quality management: do companies get better results due to quality management adoption (causal relation), or are the companies that already have better results are inclined to adopt quality management (co-variation)? The results showed that Malcolm Baldrige Award winners as well as state quality award winners in USA had better results than companies in a control group, both before as well after winning the award, which supports the idea of co-variance between better results and TQM adoption.

Cho and Pucik (2005) proposed a theoretical model including quality and also innovation, trying to test the direct effect of these practices, as well as its mediator effects on growing, profit and market value. The model was tested utilizing structural equations, finding evidence of the relations among quality and profit. But it was not possible to observe the quality effect in growing, except when innovation was present as a mediator effect. Now, the effect on market value was not tested directly, but only together with the moderator effects of growth and profitability.

Entities like American Society for Quality (2005) and National Institute of Standards and Technology (2005a, 2005b), have been conducting studies since the nineties about the subject, finding always contradictory results.

The study done by ASQ (2005), shows the evolution of the market value of a fictitious fund of stocks, named Q-100, composed by 100 companies of open capital which are, in the ASQ way of thinking, “oriented to quality”, and compares it with the Standard & Poor’s (S&P) indicator. The last results presented in March 2006, have demonstrated from the beginning of the calculations, a valorization of 44, 0% Q-100 against 32, 7% S&P. In one year period, from 31/12/2004 e 31/12/2005, S&P had an advantage over Q-100, of 4, 7 against 2, 5%. The
week point of this study, therefore, is in the lack of independence among the company groups (the Q-100 companies also compose the 500 companies forming Standard and Poor’s, representing, therefore, approximately 20% in weight of indicator of the control group) and also in the subjectivity of the classification criteria of companies considered “quality oriented”.

The NIST study (2005a, 2005b) considers a fictitious fund of stocks, formed by open capital companies, which were Malcolm Baldrige National Quality Award winners. Each company is included in the fund in the next month from the moment the award was announced, staying there for a 10-year period. The last available results representing a period from 1994 to 2003 showed a 46.3% devaluation for the fund and a valorization of 35.6% for S&P. That was the last time this study was realized, because according to NIST, the market value is not anymore an indicator to follow the performance of the Malcolm Baldrige National Quality Award winners (in the last years, the majority of the winners are companies without representation in the stock market).

Nair (2006) conducted for the first time a meta-analysis study on the impact of quality on performance, using data from 23 studies published recently. The research focus was the evaluation of the relationship among different practices associated to TQM and the dimensions of the finance, operational, service to the client and product quality. Considering financial performance calculated in an aggregate form, results showed positive effects of leadership practices, people management, process management and customer focus. On the other hand, no positive effects were found of design practices, product management, supplier management and quality data analysis.
Another important finding from Nair's (2006) study was the fact that the positive effects described above only happen when the analysis unit is the company. In the plant level analyses, the positive effects do not occur.

The main objective in Sila's study (2007) was to study the effect of contextual factors on quality management and in its impact on performance. A theoretical model was proposed by the author, relating different practices associated to quality management with the dimensions of financial and market performance. The model was then tested including five factors based on context – to have or not have adopted "TQM ideology", to have or not have ISO 9000 certificate, country of origin of the company's capital, size and scope of operations – trying to find out differences of quality impact on performance when in the presence or not of these factors. The results did not show these differences, thus not reinforcing the argument that the impact of quality management on performance be dependent on context.

In Brazil, empiric studies on the impact of TQM on companies' performance practically do not exist. In academia, it has only been identified the work of Brito, Csillag and Brito (2006). The researchers had data on PNQ evaluation process from 2000 to 2004, which permitted that the financial performance (profit and growth), was studied for three different groups: the PNQ winning and finalists group, the group of companies that entered the second phase of the evaluation process and the group composed of the rest of the companies from the same sectors. Results showed that Brazilian companies that adopt quality management according to FNQ model have profits above the average. On the other hand, growth results showed that these same companies present growth rates equivalent to the averages in their market.

In the corporate market, there is a study published by the company Serasa (2005) that compares a series of economic-financial results of companies that are members of Fundação Nacional da Qualidade (National Quality Foundation) with those of other companies of the
same macro-markets (industry, services, commerce and banks). There is no statistical analysis of the data, only absolute values of the indexes are shown, which normally reveal a better performance of company’s members of FNQ. The weakest point of the study is the lack of causal relations between the fact of the company is a member of FNQ and has superior results. Going back to the issue of co-variation or causal relation, it is not possible to conclude if the companies had better performance due to becoming FNQ members (or for having used FNQ proposed management model), or if the companies that already have superior performance become FNQ members in a rate proportionally higher than the other companies.

Conclusions

As was seen, the empiric studies that associate quality management to company performance showed different results, sometimes pointing to the existence of this association and others to its lack. Searching for a wide view of these results, Figure 1 presents the positioning of the results of the studies that dealt with financial performance, more precisely those that individualized this performance in growth, profit and market value components. Each numbered circle represents an empiric study, identified in the references below the figure.

In this proposed positioning, the empiric results were classified in three levels, translating the strength of the relationship found between quality management and the three financial performance dimensions. This analysis should be seen in a qualitative and careful manner, since the studies that generated these results used the most diverse forms of operating the constructs, motivations, sources of data, statistical methodologies and techniques, among other characteristics that could affect an analysis.

Among the financial performance dimensions, profitability seems to be the one that has a clearer tendency coming from the empiric studies, standing out the cases where significant
relations were found between quality and profitability. Now for growth and market value, the situation is not so clear, with the results of the studies being distributed in a manner where it is not possible to point out a tendency.

Figure 1 – Synthesis of the empirical studies on the impact of the quality in the financial performance

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(2) ADAM JR., 1994  
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