A CASE STUDY APPROACH
TO THE ECONOMIC EVALUATION OF
ISO 9001 CERTIFICATION

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Summary
This paper presents the results obtained from studying the economic impact of quality management systems, based on the case study methodology. The sample of companies that we used comprises three companies that became ISO 9001 certified based on internal motivation, and three companies that have implemented their quality management system driven mostly by external motivation.

Keywords
ISO 9000, Economic-financial performance, Case study methodology.

INTRODUCTION

A number of studies have been carried out that try to relate the impact of quality management practices on organizational performance. The majority of them conclude that there is a positive relationship between the implementation of quality management practices and organizational performance improvement (Mann and Kehoe, 1994; Maani et al., 1994; Wisner and Eakins, 1994; Adam Jr. et al., 1997; Curkovic and Pagel, 1999; Terziovski and Samson, 1999; Gupta, 2000; Romano, 2000; Withers and Ebrahimpour, 2000, 2001; Lee et al., 2001; Singels et al., 2001; Boulter and Bendell, 2002; Dick et al., 2002; Ozgur et al., 2002; Tari and Molina, 2002; Tari and Sabater, 2004; Quazi and Jacobs, 2004).

Gupta’s (2000) results showed that ISO 9001 certified companies differed from non-certified ones on “technological management”, “quality management control”, “causes of poor quality” and “quality control techniques used”. Overall, in these categories, the usage mean values were higher for ISO 9001 companies. Romano (2000) has observed statistically significant improvements after certification, concerning “quality performance in production and on the reliability of the production system” and “external quality performances”. He also verified that “non-quality costs” diminished significantly after certification. Ozgur et al. (2002) observed that, for the majority of quality tools, the level of usage was higher for ISO 9001 certified firms. Concerning the services sector, Dick et al. (2002) have concluded that ISO 9001 certification makes a profound difference in the ways quality is perceived and measured.
Although the majority of the studies carried out state that there is a positive relationship between ISO 9001 certification and performance, there is a group of authors that did not find evidence of such a relationship (Terziovski et al., 1997; Quazi et al., 2002; Conca et al., 2004). Results obtained by Terziovski et al. (1997) showed that the presence or absence of ISO 9001 certification is a poor predictor of organizational performance and quality. Quazi et al. (2002) concluded that there was no statistically significant relationship between ISO 9001 certification status, quality management practices and quality results.

There seems to be a strong relationship between companies’ certification motivations and resultant benefits. When firms are reacting to external pressure for certification, they may face ISO 9001 registration as the prime objective and adopt a minimalist approach to achieving it. Such firms obtain quality certification, but they may not fully value quality management systems, and thus will achieve limited benefits.

According to Garvin (1984, cited in Sousa and Voss, 2002) the effect of quality on business performance (financial perspective) is based on two main routes: manufacturing and market. In the manufacturing route, improving internal process quality results in better operational performance that leads to business performance. In the market route, improvement of product quality will influence marketing business performance.

According to Sousa and Voss (2002), quality management practices have a significant and strong impact on quality and operational performance. However, their impact on business performance is weaker and not always significant. Brust and Gryna (2002) stated that, in the following five economic areas, quality is of paramount importance: (1) exports competitive advantage; (2) national trade deficits; (3) economic growth; (4) productivity and customer satisfaction; (5) standardization.

A systematic approach to quality improvement results in two key factors that drive financial performance: (1) it generates greater value for customers, building market share and revenues; (2) it lowers costs, increasing margins and asset usage (George, 2002).

Despite all of the studies carried out in this area, the conclusions reached still have a contradictory nature. Some authors conclude that there is a positive relationship between ISO 9001 certification and companies’ financial improvement (Maani et al., 1994; Wisner and Eakins, 1994; LRQA, 1996; Chapman et al., 1997; Janas and Luczak, 2002; Lee et al., 2001; Beirão and Sarsfield Cabral, 2002; Nicolau and Sellers, 2002; Wayhan et al., 2002; Chow-Chua et al., 2003; Dimara et al., 2004; Naser et al., 2004). However, others do not find evidence of such a relationship (Adam Jr. et al., 1997; Kannan et al., 1999; Haversjo, 2000; Lima et al., 2000; Heras et al., 2001, 2002a, 2002b; Aarts and Vos, 2001; Corbett et al., 2002, 2005; Tsekouras et al., 2002; Martinez-Costa and Martinez-Lorente, 2003).

Heras et al. (2001, 2002a, 2002b), regarding better financial performance presented by ISO 9001 certified companies, argued that: (1) one must consider the multitude of variables that influence or can influence a company’s business performance; (2) it is important that the characteristics of the samples used are analysed in greater detail, because it is possible that higher profitability of the certified companies may have to do with the fact that certified firms belong to activity sectors that enjoy greater profitability levels; (3) higher profitability rates verified among ISO 9001 companies may be related to the most profitable companies, being those that have a greater propensity to be ISO 9001 certified.
Overall, no consistent evidence could be found in the literature concerning the real ISO 9001 impact on companies’ business performance, thus motivating the fieldwork that we decided to carry out.

CASE STUDIES FOR ISO 9001 PERFORMANCE IMPACT EVALUATION

We conducted six case studies, in order to analyse the impact of ISO 9001 on companies’ financial performance. Our goal was to reconstruct the economic-financial company history with the aim of identifying the benefits and costs directly related to their quality management systems. The time period analysed ranged from the year when the company decided to implement its quality management system up to the present (2007).

Our case study methodology was split into three main phases. First we developed the framework that we would use in interviews. Then we tested the framework in order to validate and improve it, by making a pilot case study in a textile company.

Finally, with a revised framework, we selected six companies for which we had previously identified what had been their most important ISO 9001 certification motivation, either internal or external. Thus, we selected three companies that became certified based mainly on external motivation, and another three companies that became certified based mostly on internal motivation. We tried to choose companies that belonged to the same industrial sector, but with different ISO 9001 motivations. However, that was not possible, since some of the selected companies declined to participate in the project. To have six companies willing to participate, we contacted 11 companies overall. These companies were chosen from a sample of 48 companies for which we were pretty sure about what was their most important ISO 9001 certification motivation (Sampaio et al., 2006, 2008, 2009).

The external-motivation companies are from the following industrial sectors:

- Company A: EAC 12 – Chemicals, chemical products and fibres.
- Company B: EAC 28 – Construction.
- Company C: EAC 18 – Machinery and equipment.

The internal-motivation companies are from the following industrial sectors:

- Company D: EAC 18 – Machinery and equipment.
- Company E: EAC 12 – Chemicals, chemical products and fibres.
- Company F: EAC 4 – Textiles and textile products.

The interviews were performed with the companies’ quality managers, and for each of the companies we performed a qualitative analysis and a quantitative analysis. The qualitative analysis was performed on information collected during the interviews with the companies’ quality managers. In the quantitative analysis we asked the companies to characterize two different scenarios: the real one, with certification, and another one, without it, concerning the following financial indicators:

- Sales.
- Average price.
- Average production cost.
Quality management system implementation and maintenance costs.

Using the previous set of financial indicators, we estimated the following indicator values:

**Operational Results**

\[ \text{Sales} \times (\text{Average price} - \text{Average production cost}) \]

**Operational Results Difference**

Estimated Operational Results with ISO 9001 - Estimated Operational Cost without ISO 9001

We asked the companies to define the above financial indicators on an annual basis, from the year of the decision to implement the quality management system, until 2007.

The goal of our quantitative analysis was to verify if there was any variation in the Operational Results from the scenario with ISO 9001 certification as compared with the one without ISO 9001 certification.

**MAIN RESULTS OBTAINED**

Based on the developed work we were able to find that ISO 9001 certification motivations (internal or external ones) influence the derived benefits. We have also found out that companies’ motivations can influence the organization’s involvement and commitment to the quality management system. In those companies that became certified based mainly on internal motivation, there is often the perception that all the organization is committed to the system. That is not the case when we talk about external motivation-driven companies.

We would like to point out that the certified companies easily identified the costs related to their quality management systems. However, it was very difficult for the quality managers to quantify the direct profits (or cost reductions) associated with the quality management systems. Quality managers have the perception that the company’s internal organization has improved, but they are not able to quantify how those improvements translate into economic benefits.

Those companies that did present internal motivations have perceived higher benefits than those that became certified based on external motivations. However, in the external-motivation companies it was easier to quantify increased profits and sales deriving from ISO 9001 certification.

Concerning the costs related to quality management system implementation and maintenance, it is important to point out that the total amount is significantly higher for companies that had consultants helping to implement the systems.

For the majority of the case studies we have concluded that companies are not able to support the fact that quality management system implementation does have a positive impact on companies’ economic-financial performance.
ACKNOWLEDGEMENTS
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REFERENCES


A Case Study Approach to the Economic Evaluation of ISO 9001 Certification

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Session agenda

- Session learning objectives.
- Literature review.
- Methodology.
- Case studies.
- Main conclusions.
Session learning objectives

(LO)
Learning objectives

At the conclusion of this session, attendees should be able to get partial answers to the following questions:

- What is the real ISO 9001 certification impact over business financial performance?

- Are “ISO 9001 quality organizations” indeed more profitable and competitive than the others?

- Do companies that become certified base upon internal motivations achieve different results, also from a financial perspective, as compared to the ones that become certified base mostly on external motivations?
Literature review
(LR)
The literature (1/3)

Relationship between Quality Management Systems implementation / certification and business financial performance improvement.

Results of a contradictory nature are reported!
The literature (2/3)

Principal studies (2000-2005) analyzing the effects on results of quality management implementation in Europe (Heras and Arana, 2006).

<table>
<thead>
<tr>
<th>Authors</th>
<th>Main conclusions</th>
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<tbody>
<tr>
<td>Haversjo (2000)</td>
<td>Certified companies are more profitable than non certified companies, although certification does not seem to be the cause of the increase in profitability.</td>
</tr>
<tr>
<td>Romano (2000)</td>
<td>ISO 9000 certification contributes to improving quality costs and production times, although it increases inspection costs.</td>
</tr>
<tr>
<td>Casadesús et al. (2001)</td>
<td>65% of the companies obtained improvements, internal as well as external, following implementation of the ISO 9000. The profit-motivation relationship stands out, given that the companies certified for internal reasons obtain greater profits.</td>
</tr>
<tr>
<td>Merino (2001)</td>
<td>There are significant activity sectors differences between QM practices and their influence on results. The companies reaching the highest indexes of QM implementation obtain the best results.</td>
</tr>
<tr>
<td>Tarí and Molina (2002)</td>
<td>Those companies that have put QM into practice have improved business results, client satisfaction, employee satisfaction and social impact.</td>
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</table>
### The literature (3/3)

<table>
<thead>
<tr>
<th>Authors</th>
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<tbody>
<tr>
<td>Gotzamani and Tsiotras (2002)</td>
<td>In the opinion of the managers, ISO 9000 contributes to improve internal company organization and operating results.</td>
</tr>
<tr>
<td>Martínez-Lorente and Martínez-Costa (2002)</td>
<td>TQM has a positive effect on the operating results. However, the simultaneous application of ISO 9000 and TQM models cancel those positive effects.</td>
</tr>
<tr>
<td>Dimara et al. (2004)</td>
<td>The financial results of certified and non certified companies are analyzed taking in account their strategic orientation, which is, in the end, the variable affecting company profitability.</td>
</tr>
<tr>
<td>Lagrossen and Lagrossen (2005)</td>
<td>The results show that there is a correlation between the adoption of the values if TQM and successful QM.</td>
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Methodology

(M)
Methodology: Case study – six companies.

Goal: reconstruct the economic-financial companies’ history with the aim of identifying the benefits and costs directly related to the quality management system, since the QMS implementation year up to the present (2007).
Methodology (2/4)

Phases

- Development of the framework used during the interviews.
- Pilot case study in order to validate and improve the framework.
- Revision of the framework based upon pilot case study feedback.
- Companies’ selection (three external motivation companies and three internal motivation ones).
- Case studies – interviews with the companies’ quality managers.

Notes

- In order to have six companies willing to participate, we have contacted 11 companies overall.
- These companies were chosen from a sample of 48 companies, for which we have previously indentified what was their most important ISO 9001 certification motivation (Sampaio et al., 2006, 2008, 2009).
Methodology (3/4)

Case Studies

- Qualitative and Quantitative analyses.
  - Qualitative – analysis performed over information collected during the interviews with the companies’ quality managers.
  - Quantitative – the quality managers were asked to characterize two different scenarios, the real one, with certification, and an hypothetic scenario, without it, in terms of:
    - Sales.
    - Average price.
    - Average production cost.
    - QMS implementation and maintenance costs.
Methodology (4/4)

Financial indicators analyzed

Operational Results

Sales * (Average price – Average production cost)

Operational Results Difference

Estimated OR with ISO 9001 – Estimated OR without ISO 9001
Case studies

(CS)
Case study A – External Motivations (1/3)

Company A, EAC 12 – Chemicals, chemical products and fibers

Qualitative analysis

- ISO 9001 motivations – (1) company internationalization; (2) access to new foreign markets.
- Top management commitment decreased over time.
- ISO 9001 benefits – (1) internal organizational improvements; (2) improvement of the NC identification and treatment processes; (3) access to new markets; (4) corporate image improvement; sales growth as a result of the QMS certification.
- The company is better organized than it was before ISO 9001 certification and the company best clients only become company clients after certification.
Case study A – External Motivations (2/3)

Quantitative analysis – Operational Results

Operational Results with ISO 9001 and without ISO 9001 are compared in the chart. The costs (€) and operational results (€) are shown for the years 2001 to 2007. The chart illustrates the impact of ISO 9001 certification on operational results and costs over the specified period.
Case study A – External Motivations (3/3)

Quantitative analysis – Operational Results Difference
Case study B – External Motivations (1/3)

Company B, EAC 28 – Construction

Qualitative analysis

- ISO 9001 certification main motivation – access to public contracts.
- The company internal organization significantly improved after the QMS implementation. However the quality manager was not able to quantify those improvements.
- The organization commitment and involvement decreased over time, with exception of the days before the audits take place.
Case study B – External Motivations (2/3)

Quantitative analysis – Operational Results

![Graph showing Operational Results with ISO 9001 and without ISO 9001]
Case study B – External Motivations (3/3)

Quantitative analysis – Operational Results Difference

Operational Results Difference (€)

-20.000.000,00
-15.000.000,00
-10.000.000,00
-5.000.000,00
0,00
5.000.000,00
10.000.000,00
15.000.000,00
20.000.000,00

2002 2003 2004 2005 2006

Implementation
Certification
Case study C – External Motivations (1/3)

Company C, EAC 18 – Machinery and equipment

Qualitative analysis

- The company became ISO 9001 certified because in the year 2000 it was “fashion” for companies to have a certified QMS.
- The QMS implementation process was extremely bureaucratic and the system maintenance costs were significantly higher for the reality of the company.
- The ISO 9001 benefits were not higher than the costs needed to maintain the QMS certified.
- The top management involvement with the system was very scarce.
- Company C was not able to quantify the economic benefits that have been derived from the system. However the costs directly related with the QMS were easily pointed out.
Case study C – External Motivations (2/3)

Quantitative analysis – Operational Results

![Operational Results Graph]

Certification Implementation Certification withdrawn

QMS costs Operational Results with ISO 9001 Operational Results without ISO 9001
Quantitative analysis – Operational Results Difference

-35.000,00
-25.000,00
-15.000,00
-5.000,00
5.000,00
15.000,00
25.000,00
35.000,00

Operational Results Difference (€)

2000 2001 2002 2003 2004 2005 2006 2007

Certification
Certification withdrawn
Implementation
Company D, EAC 18 – Machinery and equipment

Qualitative analysis

- The company became certified with the aim of improving its internal organization.
- The company has the perception that its internal organization improved after the system implementation, but the quality manager was not able to quantify those improvements.
- All the organization is committed and involved with the QMS – the quality manager belongs to the company top management.
Quantitative analysis – Operational Results

The chart shows the operational results with and without ISO 9001 certification from 2001 to 2007. The results are presented in euros, with a clear improvement in operational results after the implementation and certification of ISO 9001.
Case study D – Internal Motivations (3/3)

Quantitative analysis – Operational Results Difference

![Graph showing operational results difference from 2001 to 2007. The graph indicates a decrease in operational results with a significant drop during the Certification period, followed by a slight increase before stabilizing towards 2007.](image-url)
Case study E – Internal Motivations (1/3)

Company E, EAC 12 – Chemicals, chemical products and fibers

Qualitative analysis

- The QMS was implemented mainly to achieve internal organizational improvements. However, the quality manager opinion is that, actually, ISO 9001 certification does not represent significant competitive advantages.
- Company E was not able to quantify the organizational improvements and translate them into economic benefits.
Case study E – Internal Motivations (2/3)

Quantitative analysis – Operational Results

Operational Results (€)

![Chart showing Operational Results with ISO 9001 and without ISO 9001 for years 2003 to 2007. The chart includes a line graph and bar graphs for QMS costs and Operational Results with ISO 9001. The years 2004 and 2005 show a decrease in Operational Results with ISO 9001.](chart.png)
Case study E – Internal Motivations (3/3)

Quantitative analysis – Operational Results Difference

![Operational Results Difference Graph]

- Certification
- Implementation

Operational Results Difference (€)

Year:
- 2003
- 2004
- 2005
- 2006
- 2007
Case study F – Internal Motivations (1/3)

Company F, EAC 4 – Textiles and textile products

Qualitative analysis

- Company F became certified based upon a strategic decision of the top management in order to improve the company internal organization.
- The QMS is being used as a continuous improvement tool.
- The organization is committed with the QMS – quality manager belongs to the company top management.
- The quality manager has the perception that the company internal organization improved as a result of the QMS implementation. However, he was not able to quantify the economic value of those improvements.
Quantitative analysis – Operational Results

Operational Results (€)

QMS costs
Operational Results with ISO 9001
Operational Results without ISO 9001
Case study F – Internal Motivations (3/3)

Quantitative analysis – Operational Results Difference

![Graph showing Operational Results Difference (€) from 2000 to 2007, with arrows indicating Implementation and Certification milestones.](image)
Main conclusions
(MC)
Main conclusions

- The internal motivations companies do present higher benefits perception, but they are not able to quantify how those improvements translate into economic benefits.
- In the external motivations companies it is easier to quantify increased profits and sales deriving from ISO 9001 certification.
- For the majority of the internal motivations companies that were analyzed there is often the perception that all the organization is committed with the system. This is not the case when we talk about external motivation driven companies.
- It is not unanimous that the certified companies would be less profitable if they had not implemented their QMS.
- We were not able to support the thesis that QMS implementation does have a positive impact over companies’ economic-financial performance.
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