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ISO 9001 certification pay-off: myth versus reality

ISO 9001
certification
pay-off

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Abstract

Purpose – Despite all the studies carried out in order to analyze the impact of quality management systems' implementation and certification on companies' financial performance, conclusions reached so far have a contradictory nature. Some authors conclude that there is a positive relationship between ISO 9001 certification and companies' financial improvement, while others do not find evidence to support such a relationship. The purpose of this paper is to present the main results derived from a research project developed in order to analyze the economical impact of quality management system implementation and certification on companies' performance.

Design/methodology/approach – This paper describes the results obtained from studying the economic impact of quality management systems, based on the adoption of a case study methodology. The authors' goal was to reconstruct the companies' financial history with the aim of identifying the benefits and costs directly related to their quality management systems. The analyzed time period ranged from the year when the company decided to implement its quality management system up to the present.

Findings – Results show that it is not unanimous that certified companies would be less profitable if they had not implemented their quality management systems.

Originality/value – This paper tries to be an important contribution to the worldwide research related to the quality management systems' impact on companies' financial performance.

Keywords Organizational performance, ISO 9000 series, Quality management, ISO 9001 certification, Economic performance, Case studies

Paper type Research paper

Introduction

A number of studies have been carried out that try to relate the impact of quality management practices over 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 *et al.*, 1997; Curkovic and Pagell, 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).

Results obtained by Gupta (2000) show that ISO 9001 certified companies do differ positively from non-certified ones on “technological management”,



“quality management control”, “causes of poor quality” and “quality control techniques used”. Romano (2000) reports statistically significant improvements after ISO 9001 certification, concerning “quality performance in production and on the reliability of the production system” and “external quality performances”. He also observed that “non-quality costs” diminished significantly after ISO 9001 certification. Ozgur *et al.* (2002) point out that the level of usage for the majority of quality tools is higher in ISO 9001 certified firms. Concerning the services sector, Dick *et al.* (2002) concluded that ISO 9001 certification makes a strong 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, as was just mentioned, there is also a group of authors that did not find enough evidence to support 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.

However, there seems to be a strong relationship between the companies’ certification motivations and the corresponding results obtained. When firms simply react to external pressures for getting certified, they may face ISO 9001 registration as a prime objective *de per se*, adopt a minimalist approach to achieve it, and thus achieve limited internal performance improvements.

Research into the relationship between ISO 9001 certification and the performance of organizations is scarce, and the results seem to be somewhat contradictory. Further empirical research in this area seems to be necessary. From the academic world, there should be more in-depth analysis of the impact of management models on companies, and more empirical studies from a perspective that takes into account the holistic and multidimensional reality of companies should be carried out (Heras and Arana, 2006).

In this paper we do present the main results derived from a research project that was developed in order to analyze the economical impact of the quality management system (QMS) implementation and certification over companies’ performance, supported in the case study methodology. To achieve this goal, the article proceeds as follows. In the next section we do make a literature review, mainly related to the ISO 9001 certification impact over companies’ financial performance. This section is followed by a discussion of methodological issues. The paper proceeds with a presentation of the results obtained. We conclude with a discussion and summary of the implications of this work for research and practice, pointing out also some of our research limitations.

Literature review

ISO 9001 certification motivations can be classified according to one out of two main categories: internal and external motivations. Internal motivations are related with the goal of achieving organizational improvement, while external motivations are mainly related with promotional and marketing issues, customer pressures, improvement of market share, etc. (Buttle, 1997; Jones *et al.*, 1997; Mo and Chan, 1997; Brown *et al.*, 1998; Bryde and Slocock, 1998; Lee and Palmer, 1999; Lipovatz *et al.*, 1999; Escanciano *et al.*, 2001; Gustafsson *et al.*, 2001; Torre *et al.*, 2001;

Gotzamani and Tsiotras, 2002; Poksinska *et al.*, 2002; Corbett *et al.*, 2003; Douglas *et al.*, 2003; Llopis and Tari, 2003; Magd and Curry, 2003).

ISO 9001 certification is frequently used mostly as a marketing tool (Poksinska *et al.*, 2002). Jones *et al.* (1997) defined two organization types, according to their main purpose for achieving certification: the “non-development companies”, which are those whose primary reason for seeking quality certification is driven by the mentality of “achieving a certificate”; and the “developmental companies”, which are the firms that adopt quality certification because of their belief in the internal benefits that can derive from it.

Corbett *et al.* (2003), based in an international survey, concluded that the main motivations for ISO 9001 certification are as follows: “quality improvements”; “improvements in corporate image”; “marketing advantage”; and “customer pressure”. Concerning US companies, one of the most important underlying reasons for becoming certified is the existence of commercial relationships with European markets (Bhuiyan and Alam, 2004).

The ISO 9001 certification benefits can be also classified into external and internal categories (Table I). As was stated for ISO 9001 motivations, the first ones are related to improvements in terms of marketing and promotional aspects, while internal benefits are related with organizational improvements (Buttle, 1997; Mo and Chan, 1997; Brown *et al.*, 1998; Leung *et al.*, 1999; Lipovatz *et al.*, 1999; Ragothaman and Korte, 1999; Staines, 2000; Casadesús *et al.*, 2001; Escanciano *et al.*, 2001; Gustafsson *et al.*, 2001; Stevenson and Barnes, 2001; Torre *et al.*, 2001; Gotzamani and Tsiotras, 2002; Halis and Oztas, 2002; Liebesman, 2002; Poksinska *et al.*, 2002; Coleman and Douglas, 2003; Corbett *et al.*, 2003; Douglas *et al.*, 2003; Magd and Curry, 2003; Bhuiyan and Alam, 2004; van der Wiele *et al.*, 2005).

Casadesús *et al.* (2001) proposed a classification for ISO 9001 benefits based upon the perceived benefits obtained, suggesting four organization types: “companies with high internal benefits (HIB)”; “companies with moderate internal benefits (MIB)”; “companies with high external benefits (HEB)” and “companies with moderate external benefits (MEB)”.

External benefits	Internal benefits
Access to new markets	Productivity improvements
Corporate image improvement	Product defect rate decreases
Market share improvement	Quality awareness improvements
ISO 9000 certification as a marketing tool	Definition of the personnel responsibilities and obligations
Customer relationship improvements	Delivery times improvements
Customer satisfaction	Internal organization improvements
Customer communication improvements	Nonconformities decreases
	Customers complaints decreases
	Internal communication improvements
	Product quality improvement
	Competitive advantage improvement
	Personnel motivation

Source: Sampaio *et al.* (2009)

Table I.
Most commonly stated
ISO 9001 certification
benefits reported in the
literature

Even though all organizations do present both kinds of motivations to some extent, only one is usually the most predominant and determines its decision to become ISO 9001 certified. The implementation and certification of a QMS should be both an important organizational improvement tool – internal motivations, as well as a marketing and competitive advantage for the certified companies – external motivations, but the motivation for doing so is usually dominated by one or the other of both factors mentioned (Sampaio *et al.*, 2010).

There is a consensual opinion that ISO 9001 benefits are related with the company certification motivations, i.e. when companies become certified based upon internal motivations the derived benefits are fulfilled on a more global dimension. On the other hand, when companies implement ISO 9001 based mostly on external motivations, improvements obtained are then mainly of an external nature (Jones *et al.*, 1997; Brown *et al.*, 1998; Gotzamani and Tsiotras, 2002; Poksinska *et al.*, 2002; Corbett *et al.*, 2003; Llopis and Tarí, 2003; Williams, 2004).

Companies that sought quality certification for “developmental reasons” have experienced more internal benefits from certification (Jones *et al.*, 1997). Brown *et al.* (1998) argued that companies driven by internal reasons to seek certification have a more positive perception about improvements achieved. The manager that sees certification as an opportunity to improve internal processes and systems, rather than simply wanting to get a certificate on the wall, will get broader positive results from ISO 9001 certification. Gotzamani and Tsiotras (2002) stated that companies seeking ISO 9001 certification mainly based upon external motivations will also achieve mostly external benefits, while those that seek certification based on true quality improvement will get benefits mainly in terms of internal operations improvement (Poksinska *et al.*, 2002; Williams, 2004).

Llopis and Tarí (2003) suggest that companies more concerned about internal reasons are those that:

- obtain higher profits deriving from the implementation of a quality system;
- reach a greater practical implementation of quality management principles; and
- are most likely to progress towards total quality management.

According to the literature, companies maximize their benefits if they achieve ISO 9001 certification based on internal motivations.

According to Garvin (1984, cited in Sousa and Voss, 2002), the effect of quality over business performance, now looked strictly from a financial perspective, can be based upon two main routes: manufacturing and market. In the manufacturing route, improving internal process quality results in better operational performance, which leads to business financial performance. In the market route, improvement of product quality will influence marketing business performance, and from there result in financial performance improvement as well.

According to Sousa and Voss (2002), quality management practices have a significant and strong impact on quality and operational performance. However, their impact over business financial performance is weaker and not always significant. Brust and Gryna (2002) stated the following five economic areas where quality assumes a paramount importance:

- (1) exports competitive advantage;
- (2) national trade deficits;

- (3) economic growth;
- (4) productivity and customer satisfaction; and
- (5) standardization.

A systematic approach to quality improvement results in two key factors that drive financial performance (George, 2002):

- (1) it generates greater value for customers, building market share and revenues; and
- (2) it lowers costs, increasing margins and asset usage.

Despite all the studies carried out in this area, conclusions reached so far have yet 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), while others do not find evidence to support such a relationship (Adam *et al.*, 1997; Kannan *et al.*, 1999; Haversjo, 2000; Lima *et al.*, 2000; Heras *et al.*, 2001, 2002a, b; Aarts and Vos, 2001; Corbett *et al.*, 2002, 2005; Tsekouras *et al.*, 2002; Martínez-Costa and Martínez-Lorente, 2003).

Heras *et al.* (2001, 2002a, b), regarding better financial performance presented by ISO 9001 certified companies, argued that:

- One must consider the multitude of variables that influence or can influence a company's business financial performance.
- It is important that the characteristics of the samples used are analyzed 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.
- Higher profitability rates verified among ISO 9001 companies may be related with the most profitable companies being those that have a greater propensity to become ISO 9001 certified.

Singels *et al.* (2001) have not found a positive relationship between ISO certification and performance of organizations. However, the authors have concluded that the motivation for seeking registration has an influence over the organization performance. On the basis of such research results, the authors concluded that ISO 9001 certification based upon internal motivations results in improved performance.

Most organizations still seem to pursue ISO 9001 certification based upon external pressures, often resulting in a hollow achievement. Only when an organization is internally motivated for an improvement of its organizational processes, will certification result in a real significant improvement of its performance.

Terziovski *et al.* (2003) have found that the quality culture of an ISO 9001 certified organization and the motivation for registration are significant predictors of the value and benefits derived from such a certification. The authors have concluded that the implementation of an ISO 9001 QMS as part of the continuous improvement company's strategy has a significant impact over organizational performance and conduct

to the achievement of higher benefits, than if the quality system is implemented and certified as a reaction to external environmental factors.

Within academia there is a significant number of research studies which try to analyze the impact of quality management practices over companies' business results and performance. As is illustrated in Table II, most of the studies carried out were quantitative and supported by survey methodologies (Heras and Arana, 2006).

Study	Methodology	Main conclusions
Haversjo (2000) 800 Danish companies	Database analysis	Certified companies are more profitable than non-certified companies, although certification does not seem to be the cause of the increase in profitability
Romano (2000) 100 Italian companies	Survey mailed to managers	ISO 9000 certification contributes to improving quality costs, internal and external quality, and production times, although it increases inspection costs
Casadesús <i>et al.</i> (2001) 502 companies in Spain	Survey mailed to managers	65 percent 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
Merino (2001) 1,000 companies in Spain	Survey mailed to managers; case study	There are significant sectorial differences between QM practices and their influence on results. The companies reaching the highest indexes of QM implementation obtain the best results
Tarí and Molina (2002) 106 companies in Spain	Survey mailed to managers	The companies in Alicante that have put QM into practice have improved business results, client satisfaction, employee satisfaction and social impact
Gotzamani and Tsiotras (2002) 85 large Greek companies	Survey mailed to managers	In the opinion of the managers, ISO 9000 contributes to improving internal company organization and operating results
Martínez-Lorente and Martínez-Costa (2004) 442 Spanish companies	Survey mailed to managers and databases	TQM has a positive effect on the operating results. However, the simultaneous application of ISO 9000 and TQM systems cancel those positive effects
Dimara <i>et al.</i> (2004) 94 Greek companies	Survey of managers and database analysis	The financial results of certified and non-certified companies are analysed, taking into account their strategic orientation, which is, in the end, the variable affecting company profitability (and not the fact of being or not being certified)
Lagrosen and Lagrosen (2005) 266 Swedish organization	Survey mailed to quality-professionals	The results show that there is a correlation between the adoption of the values of TQM and successful QM. The usefulness of the ISO 9000, Swedish and European Quality-Awards, as well as several of the QM tools is also indicated

Table II.
Principal studies
analyzing the effects
on results of quality
management
implementation in Europe

Source: Heras and Arana (2006)

The authors have stated that those studies are possibly weakened and methodologically distorted by basing themselves only on opinions of company people who had participated in the implementation of the quality systems. As a result of this possible bias, the use of commercial economic and financial databases of information to verify the impact of quality management models on company results has grown in recent years. But such studies are very limited regarding the identification of causes for the relationships analyzed.

Heras and Arana (2006) have used a survey methodology supported by the Delphi method. The authors have concluded that the implementation of quality management models in European companies has a positive influence over company results, mainly through the improvement of operations, efficiency and the costs of companies' internal activities. However, in the opinion of the experts, the direct effect on economic results is not so clear, especially in the case of the ISO 9001 implementation.

As is illustrated in Table II, the use of the case study methodology is scarce. However, one should point out the works carried out by Mo and Chan (1997), Withers and Ebrahimpour (2000), Gustafsson *et al.* (2001), Merino (2001) and Dwyer (2002), which have used the case study methodology.

While ISO 9000 is the most influential set of standards of its kind in the world, there is no compelling evidence that ISO 9001 certification has a positive impact over companies' financial performance. As Bayati and Taghavi (2007) stated certification is viewed very often as a tool for staying competitive in the domestic and international markets, and not as a means of adding value to the organizational processes and improving quality and performance.

Research is often aimed at assessing whether particular organizational practices can deliver sustainable advantages, especially given that other firms can also adopt similar practices. Practices aimed at improving operational effectiveness may benefit adopting firms for a time, but if firm competitors can all adopt the same practice, the benefits will be moved away. Firms are then frustrated in their efforts to translate performance improvements into relative financial performance advantage. If a generic "best practice" can be copied and equally benefit all potential adopters, it cannot confer lasting benefits. However, if an organizational practice is firm-specific, valuable, and difficult to imitate, it may lead to sustainable competitive advantage (Benner and Veloso, 2008).

Companies top managers are more concerned with how to get the best out of the quality standard, or more specifically, what patterns of ISO 9001 implementation can achieve more superior performance. However, the current literature is unclear as to the performance outcomes of different ISO 9001 implementation patterns (Lee *et al.*, 2009). The literature reveals that organizations that pursue ISO 9001 certification willingly are more likely to report improved organizational performance than those that only obtain ISO 9001 certification under customer pressure (Jang and Lin, 2008).

According to Benner and Veloso (2008), one possible explanation for the contrasting results concerning the ISO 9001 economic impact which has not been considered in previous research, is that the financial performance advantages that may accrue to early adopters can disappear for the later ones, as more firms in an industry adopt and achieve similar generic improvements in efficiency and quality. Additionally, the authors stated that as ISO 9000 has gained popularity in practice, researchers have sought to understand its effects on organizations. Often such research has aimed at assessing

the financial performance benefits for firms from ISO 9000 adoption, and a large body of literature that studies the effects of ISO 9000 shares the general assumption that ISO 9000 adoption will improve an organization's financial performance.

The conclusions reached by Martínez-Costa and Martínez-Lorente (2007) are, necessarily, controversial. If the success of ISO 9000 is measured by the number of companies that have decided to obtain the certificate, this success would be clear. However, the data suggest that certification is not positive for companies and may even be negative. ISO 9000 supporters could argue that companies increase in quality but the market benefits do not compensate for the costs of implementing the standard and maintaining it. By another perspective, Bayati and Taghavi (2007) have demonstrated that the performance of small- to medium-sized enterprises within greater Tehran has been improved after getting ISO 9001 certification.

Pinar and Ozgur (2007) concluded that ISO 9001 certified firms generally seem to have higher returns than non-certified ones, but those returns are not significantly higher. In addition, comparing the average variances of ISO 9000 firms and non-ISO 9000 ones, the authors verified that ISO 9000 firms had lower variances than non-ISO 9000 firms over a nine-year period. It appears that, in addition to higher performance given by higher average stock returns, ISO 9001 certification seems to reduce the volatility (variability) of stock returns, making these stocks less risky. One interesting observation is that the variability (variances) of stock returns for ISO 9000 and non-ISO 9000 firms declined over time and converged after nine years. This may suggest that in the long-run ISO 9000 may not be an important factor in reducing the variability of their performance (or variance of the returns).

More recently Benner and Veloso (2008) found out that the financial benefits of ISO 9000 practices disappear as the majority of competitors in an industry adopt similar practices, and that the performance benefits of ISO 9000 process management practices are indeed moderated by firm-specific technological coherence. The authors concluded that while performance advantages accrue for earlier adopters in an industry, they are moved away over time for later adopters. Additionally, the authors stated that the extent of coherence or relatedness in firms' underlying technologies would influence the performance benefits of process management utilization, specifically firms with medium level of technology diversity, i.e. companies with a broad but not very diverse set of technologies systematically show gains from ISO 9000 adoption. This research also suggest that although relative performance benefits from process management may become elusive as the majority of firms in an industry adopt, creating sustainable advantage from such techniques may be possible if firms use them to link related activities in unique, inimitable ways.

Martínez-Costa *et al.* (2008) stated that certified companies performed better than non-certified ones on internal performance results. However, ISO 9001 certified firms did not do better than non-certified companies on the external performance results. Additionally, the authors verified that internal oriented companies reached better performance outcomes, but also that both for internal and external ones ISO 9001 certification had a positive impact over companies' performance.

If the standard is externally driven, so that it is not really integrated into the daily activities, it is likely that its impact on performance will remain uncertain. Nevertheless, if the standard is internally driven, it is reasonable to expect that the necessary measures will be implemented to improve performance. The depth of ISO 9000 implementation

is not found to significantly affect market performance. Its influence is mediated by operational performance. The mediation effect of operational performance on the relationship between the depth of ISO 9000 implementation with market performance suggests that implementation depth leads to better operational performance and better operational performance leads to better market performance. These findings provide an empirical basis for arguing that it is not ISO 9000 implementation, per se, which improves market performance, but it is rather the associated improvement of all aspects of the operational process, which in turn improve customer perceptions of quality, and as a result enhance market performance (Jang and Lin, 2008). Moreover, operational performance and market share are positively related to business performance. These results confirm that making efforts to implement ISO 9000 will increase market share, thus providing companies with a competitive edge. The implementation of ISO 9000 does not have a direct effect on market and business performance.

The recent research by Martínez-Costa *et al.* (2009), extend the debate involving the ISO 9000's impact on company performance and in essence supports the study of Terziovski *et al.* (1997), since it does not find significant differences between certified and non-certified firms.

According to Boiral and Amara (2009) those companies with a high level of adoption in the quality management principles outperformed those with a relatively lower level of adoption in both overall performance and behavioral response. Based on this research we would like to point out the new insight on the effectiveness of ISO 9000 in service organizations, whereas the majority of the relevant studies in the quality management literature focused on manufacturing operations. With a well-developed ISO 9000 strategy, the implementation of the standard can be better aligned with other standards and thus, by promoting the achievement of a higher performance, organizations should not consider the certification as a single, one-off project and the maintenance of the standard as routine processes. Although the knowledge of ISO 9000 is public to every organization, firms can yield competitive advantages by tailor-making their own approaches in adopting the standard. More specifically, when formulating ISO 9000 implementation strategies, firms do not necessarily place the same level of emphasis on each principle of the standard. Rather, firms should scrutinize their particular internal and external environments and develop their own approaches in implementing the standard.

Based on the research performed by Nair and Prajogo (2009), ISO 9000 internalization was found to be significantly associated with operational performance. According to the authors, operational performance translates into improved business performance characterized in terms of sales, profits and market share. The lack of a significant direct relationship between internalization of ISO 9000 standards and business performance promotes the claim that ISO 9000 does not directly influence business performance. The authors concluded that ISO 9000 benefits, in terms of operational performance, derived from the internalization of practices underlying ISO 9000 standards. However, Nair and Prajogo (2009) did not find support for the direct impact of internalization of ISO 9000 standards on business performance, measured in terms of sales, market share and profits. Instead, they found that lasting improvement in business performance requires that the basic tenets of the management systems underlying ISO 9000 standards can be directed towards improving product quality, reducing cost, improving delivery and innovation performance.

Overall, no consistent evidence could therefore be found in the literature concerning the ISO 9001 impact over companies' business financial performance. Thus, there seems to be room for conducting additional work.

As Heras *et al.* (2001, 2002a, b) have already stated, one must consider that there is a multitude of variables that could influence a company's business financial performance, and thus it is very important to define a group of variables which must reflect the impact of QMS implementation over company financial performance. In order to properly analyze this issue, it is also important to reduce the influence of company activity sectors, sizes or other masking factors, because these may also mislead some of the conclusions that one reaches regarding the impact of ISO 9001 certification over financial results.

Research methodology

According to Sampaio *et al.* (2009) the majority of ISO 9001 certification research studies conducted so far are supported by survey methodologies and descriptive statistics. As such, they express conclusions that are mainly derived from opinions and perceptions about the subject. Thus, it is common to find in the open literature references that point out the highly subjective results derived from such studies (often of somewhat contradictory nature). Thus, in order to avoid some of these issues, the research methodology used to conduct this study was case-based. However, we would like to point out that we were not able to perform a significant number of case studies, which is one of the research main limitations. Based on the six case studies that we have conducted, our main goal was to reconstruct the companies' financial history with the aim of identifying the benefits and costs directly related to the QMS. The analyzed time period ranged from the year when the company decided to implement its QMS up to the present.

Case and field research studies continue to be rarely published in operations management (Meredith, 1998). The case study is a research strategy which focuses on understanding the dynamics present within single settings (Eisenhardt, 1989). According to Voss *et al.* (2002) case research has consistently been one of the most powerful research methods, mainly in the development of new theory. The research base on analysis of a limited number of cases is widely used in Europe but is less common in North American research teams (Drejer *et al.*, 1998).

Case studies typically combine data collection methods and observations. The evidence may be qualitative, quantitative or both (Eisenhardt, 1989). According to Meredith (1998), the case research methods, if combined with rationalist methods, can offer even greater potential for enhancing new theories than either method alone. Rationalism generally employs quantitative methodologies to describe or explain phenomena and includes optimization models, simulation modeling, survey methodology and laboratory experiments. On the other side, case and field study is one example of an alternative research paradigm and uses both quantitative and qualitative methodologies to help understand phenomena. Case/field research methods are useful for situations that require a deeper understanding of what is happening to modify or extend current theory. A case study typically uses multiple methods and tools for data collection from a number of entities by a direct observer in a single, natural setting that considers temporal and contextual aspects of the phenomena under study.

According to Eisenhardt (1989) the single case is particularly appropriate for completely new and exploratory investigations. Regarding the multiple case study of two to eight situations, this methodology is appropriate when there is some knowledge about the phenomenon but much is still unknown. In this paper we used this second methodology, because, in our opinion, there is a lot of research related to the ISO 9000 impact over companies' financial performance, but that do present results of a contradictory nature. Increasing the number of units further into low teens brings us to a situation where both statistical and case methods are equally applicable. According to Boyer and McDermott (1999) and McLachlin (1997) the number of cases suggested to test a theory already proposed ranges from six to seven. Additionally, Voss *et al.* (2002) stated that the fewer the case studies, the greater the opportunity for depth of observation.

Since the focus of this research was exploratory in nature, qualitative data collection methods were used. Field-based data collection methods were used to ensure that the important measures were identified. Eisenhardt (1989) has also demonstrated that field-based data collection methods also help develop an understanding of why these measures might be important. A small detailed sample fits the needs of our research more than a large-scale survey.

Knowledge of how operations systems work can be enhanced significantly through contact with the "real-world" conditions that operations management models seek to describe (McCutcheon and Meridith, 1993). According to the authors, case study research is a primary means of exploring field conditions. However, regardless of their purposes, case study research needs to be conducted in a manner that assures maximum measurement reliability and theory validity. The results of case study research can have very high impact, because they can lead to new and creative insights, development of new theory and have a high validity with practitioners (Drejer *et al.*, 1998).

Sample selection

Based on the authors' previous research, we selected six companies for which we had previously identified their most important ISO 9001 certification motivation, either internal or external (Sampaio *et al.*, 2010). Thus, three companies became certified based mainly on external motivations and the other three companies became certified based mostly on internal motivations.

The external motivations companies' correspond to the following industrial sectors:

- Company A: EAC 12 – chemicals, chemical products and fibers.
- Company B: EAC 28 – construction.
- Company C: EAC 18 – machinery and equipment.

The internal motivations companies' correspond to the following industrial sectors:

- Company D: EAC 18 – machinery and equipment.
- Company E: EAC 12 – chemicals, chemical products and fibers.
- Company F: EAC 4 – textiles and textile products.

Interview protocol

Typically the prime source of data in case research is structured interviews (Voss *et al.*, 2002). Thus, we have developed an interview protocol, which was then tested, by making

a pilot case study in a textile company. With the inputs that were collected in this pilot case study, we reached a revised and final framework version to be used in our interviews. The interviews were performed with the companies' Quality Directors/Managers, since they are directly involved in the process and have first-hand knowledge of quality practices implementation in their companies.

Our interviews comprised five questions. First we asked to the companies when they had decided to implement their QMSs, and, further, which had been their certification year. In the second question our aim was to know which had been the company motivations to implement and certify their QMSs. In question number three we asked companies to make an evaluation of their situation, since the QMS implementation up to the present moment. Finally, in questions number four and five our goal was to reconstruct the companies' financial history, identifying the benefits and costs directly related to the QMS implementation, certification and maintenance.

Data analysis

For each one of the studied companies, we have performed a qualitative and a quantitative analysis. The qualitative analysis was performed over information collected during the interviews with the companies' quality managers. On a more quantitative basis, we have asked companies to characterize two different scenarios, the real one, with certification, and an hypothetic one, without it, concerning the following financial indicators historical time series:

- sales;
- average unit price;
- average production cost; and
- QMS implementation and maintenance costs.

We have defined the financial indicators on an annual historical basis, since de year of the QMS implementation decision all the way until the end of 2007.

Using the previous set of financial indicators, we have estimated the following approximate operational results values:

- Operational results:

$$Sales*(Average\ price - Average\ production\ cost)$$

- Operational results difference:

$$\begin{aligned} &Estimated\ Operational\ Results\ with\ ISO\ 9001 \\ &- Estimated\ Operational\ Cost\ without\ ISO\ 9001 \end{aligned}$$

The goal of our quantitative analysis was to verify if one could be able to perform an investment financial analysis and conclude if companies were able to support the profitability of such an investment.

Results obtained

In this section we describe the results obtained for each one of the performed case studies, in terms of qualitative and quantitative analysis.

QMS positive impact

As is shown in Figure 1, Company A operational results for the scenario with ISO 9001 certification are higher. Until 2003, Company A has similar sales values for both scenarios. However, after 2003, the sales volume becomes higher for the scenario with certification. Regarding average price and average production cost, the company considers that both would be higher for the scenario without ISO 9001 registration. This positive impact was mainly reflected over the company sales turnover, which, according to the company quality manager, has increased, mainly due to new clients that have become company customers after the ISO 9001 registration. Additionally, we could verify that certification costs seem to be constant during the time period analyzed. However, it is important to point out that those costs are quite high, assuming, on average, a score of €146,000.00 per year, including maintenance and calibration costs.

Based on Figure 2, one can conclude that the operational results difference between both scenarios does present a positive evolution since the moment at which the company decided to become ISO 9001 certified.

As is shown in Figure 3, the QMS implementation had a positive impact over the company financial performance. Operational results scores for the scenario with certification are higher. Nevertheless, this positive impact was caused by an increase in the average price and is not due to larger sales turnover. Company F considered that the sales turnover would not change if the company did not become ISO 9001 certified.

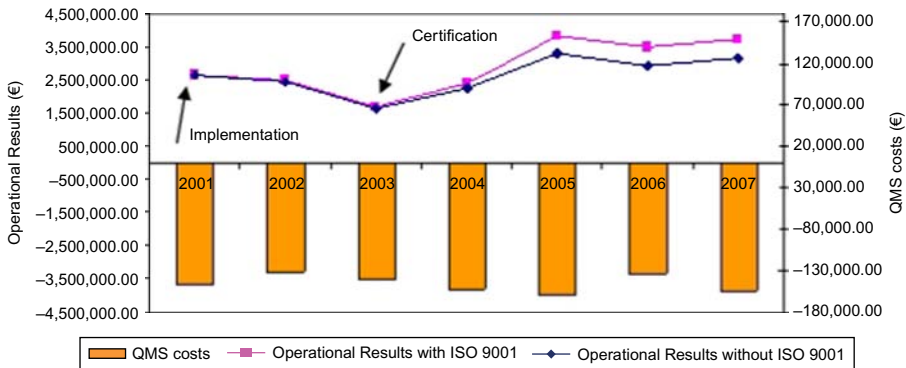


Figure 1.
Company A: operational results

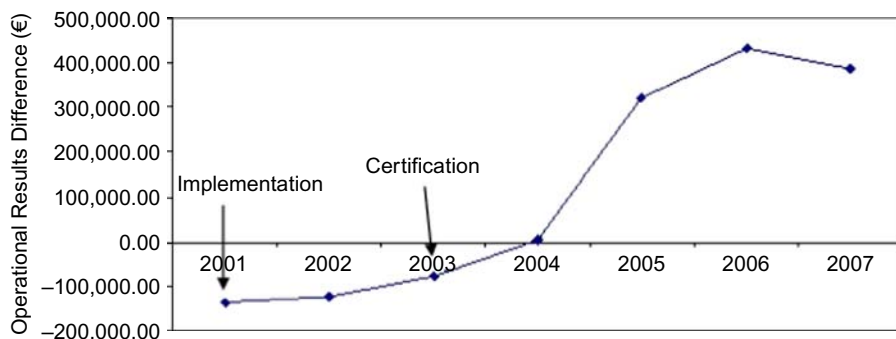
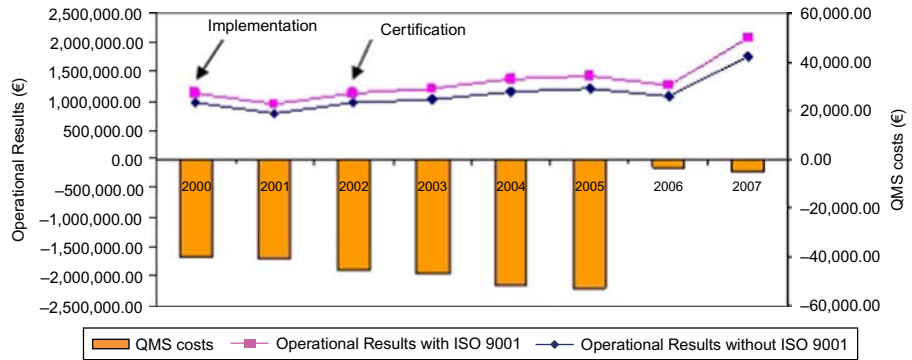


Figure 2.
Company A: operational results difference

Figure 3.
Company F: operational results



Overall, for the real scenario – with ISO 9001 certification, the operational results evolution does present a positive trend. The company certification costs have considerably increased between 2000 and 2005, reaching in the last year a value of €45,000.00. In 2006 and 2007 there was a significant decrease, because the company did not support consulting costs.

Company F was the only company that did present positive values concerning operational results difference for all the time period analyzed. Based upon Figure 4, one can verify that since 2001, one year before certification, the operational results difference does present a growth trajectory, reaching in 2007 the value of €305,869.03.

QMS negative impact

As is shown in Figure 5, the quality manager stated that Company D operational results would be higher if the company were not ISO 9001 certified, because of the following reasons:

- sales turnover was considered to be the same for both scenarios; and
- operational results for the scenario without ISO 9001 certification (hypothetic one) would not be influenced by the costs related to the system implementation, certification and maintenance.

This is a somewhat surprising result, since Company D became certified based mainly on internal motivations, and it was unanimous for all the employees that after the QMS

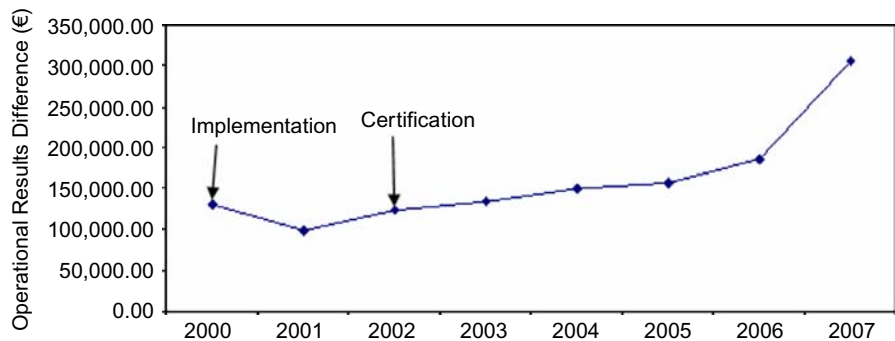


Figure 4.
Company F: operational results difference

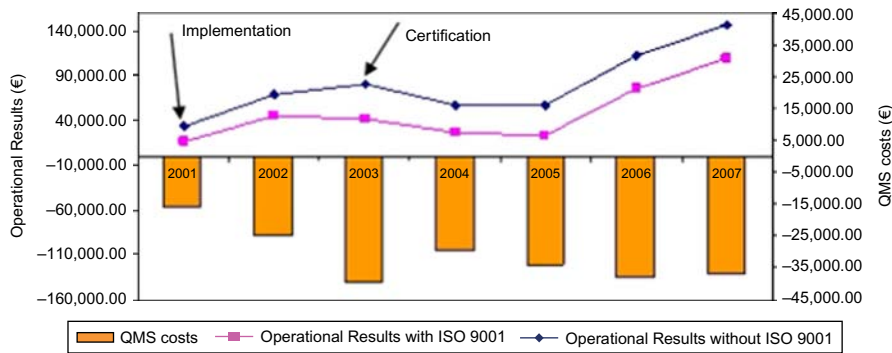


Figure 5.
Company D: operational
results

implementation there was an internal organization improvement. As was already stated, this result is mainly due to the fact that certified companies seem to have significant difficulties in identifying and quantifying the economic benefits derived from their system implementation. The quality manager has the perception that the company internal organization improved, but he was not able to quantify how those improvements translate into economic benefits. Concerning certification costs, there is a decreasing trend between the QMS implementation decision (2001) and the certification year (2003). The certification costs did present the highest value in 2003 (€39,000.00), followed by a decrease and stabilization close to €35,000.00 per year in the forthcoming years.

As Figure 6 shows, the operational results difference, between both scenarios, does present negative values during all the time period analyzed. Between the implementation decision (2001) and the QMS certification (2003) there was a continuous decrease, towards € - 80,000.00. In the last two years there was a stabilization of the operational results difference scores, close to € - 70,000.00.

QMS without economic impact

For the remaining companies (B, C and E) we were not able to identify the economic impact of QMS implementation and certification. In the next paragraphs we synthesize the main conclusions that we reached for this set of firms.

We were not able to identify which had been the QMS impact over Company B operational results. Apparently, the financial performance is related with the company

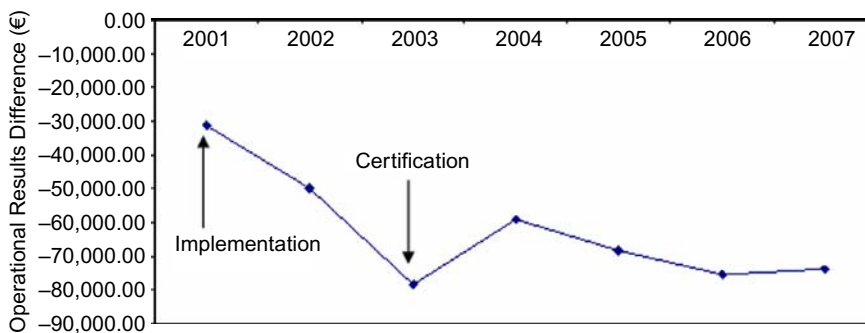


Figure 6.
Company D: operational
results difference

annual turnover, i.e. the operational results are correlated with the company capacity of reflecting the ISO 9001 certification in terms of a profitable sales turnover.

Company C considered the same operational results for both scenarios, thus reflecting that there was no impact over the company financial performance due to the existence of a certified QMS.

Company E quality manager considered the same sales turnover, average price and average production cost for both scenarios, and thus the operational results scores were equal under both situations. Company E has the perception that its internal organization improved as a result of the QMS implementation, but it is not able to quantify those improvements in terms of economic benefits.

Qualitative results

Table III compiles the main conclusions that were reached based on the interviews carried out with the companies' quality managers.

Discussion and conclusions

Despite our sample size limitations, this article contributes to analyze, on an exploratory perspective, the economical impact of the QMS implementation and certification over companies' performance. We presented six case studies that have been developed in ISO 9001 Portuguese certified companies. Based upon such case studies, we reconstructed the companies' financial history in order to try to identify and quantify the economic benefits and costs directly related to their QMSs.

However, before evaluating the QMS impact over companies' financial performance it is important to analyze the company main ISO 9001 certification motivations. There is a consensual opinion that ISO 9001 benefits are related with the company certification motivations, i.e. when companies become certified based upon internal motivations the derived benefits are fulfilled on a more global dimension. On the other hand, when companies implement the ISO 9001 standard based mostly on external motivations, improvements obtained are mainly of an external nature. In our research, the internal motivations companies did present higher benefits perception (mainly in terms of internal organization) than the external ones. Nevertheless, those companies that became certified based mainly on external motivations could more easily quantify the economic benefits that have resulted from their QMS implementation.

It is important to point out that companies' quality managers had significant difficulties when they were asked to quantify the direct profits (or cost reductions) associated with their QMSs on economic grounds. Quality managers had the perception that the company internal organization has improved, but they were not able to quantify how those improvements translate into economic benefits. Those companies that did present internal motivations have perceived higher benefits than the ones that became certified based on external motivations. However, on the external motivations companies it was easier to quantify increased profits and sales deriving from ISO 9001 certification. On the other hand, ISO 9001 registered companies can easily identify and quantify the system implementation and maintenance costs. It is important to point out that the total amount is significantly higher for companies that had consultants helping to implement such systems.

We have also found out that companies' motivations can influence the organization involvement and commitment to the QMS. In those companies that became certified

QMS economic impact	Company	Description
Positive impact	Companies A and F	<p>Company A most important ISO 9001 certification motivations have been the company internationalization and the access to new foreign markets. The top management involvement in the QMS decreased over time, influencing the remaining company workers involvement. Concerning the main ISO 9001 benefits, the company pointed out the following ones: (1) internal organization improvements; (2) improvement of the non conformities identification and treatment processes; (3) access to new markets; (4) corporate image improvement; and (5) sales growth, as a result of the QMS certification</p> <p>Company F became certified based upon a strategic decision of its top management, in order to improve the company internal organization. For company F the QMS is a very important continuous improvement tool. According to the information gathered, the company top management is fully committed with the system, extending this involvement to the remaining organization. There is the perception that the internal organization improved as a result of the QMS implementation</p>
Negative impact	Company D	<p>For this company, the main ISO 9001 certification motivation was of internal nature. This company became ISO 9001 certified with the aim of improving its internal organization. However, when we asked the quality manager to quantify the economic benefits that have directly derived from the QMS implementation, he was not able to do so. The company had the perception that its internal organization improved after the system implementation, but was not able to quantify such improvements on economic terms</p>
No impact	Companies B, C and E	<p>Company B quality manager stated that the most important ISO 9001 certification motivation had been the access to public contracts. It is important to point out that one cannot conclude that all the Company B successful contracts were obtained because the company was ISO 9001 certified. Nevertheless, if the company were not ISO 9001 registered it would not certainly win those contracts. The company quality manager pointed out that the company internal organization was significantly improved after the QMS implementation, mainly in terms of the reduction of the amount of documents</p> <p>Based on the case study performed in Company C, we were able to reach the following main conclusions: (1) Company C became ISO 9001 certified mainly because in the year 2000 it was very common for a company to certify its QMS; and (2) the quality manager stated that the QMS implementation process had been extremely bureaucratic and that the system maintenance costs were significantly higher for the company situation. On the other hand, benefits were not higher when compared with the system maintenance costs, and thus Company C has withdrawn ISO 9001 certification in 2007</p> <p>According to Company E quality manager, the QMS was implemented mainly to achieve internal organizational improvements. For this company it was not possible to quantify the organizational improvements achieved by the QMS implementation according to economic terms. However, the organization had the perception that there were internal organizational improvements deriving from its QMS</p>

Table III.
Most important case
study qualitative results

based mainly on internal motivations, there is often the perception that all the organization is committed to the system, but that is not the case when we talk about external motivations driven companies.

This research allows one to conclude that it is not unanimous that the analyzed companies would be less profitable if they had not implemented their QMSs. For the majority of the case studies conducted we have concluded that the companies were not able to support the fact that QMS implementation does have a positive impact over companies' financial performance.

Our research has some limitations concerning methodology and research scope. Methodologically one should point out the case studies small sample size. In case-based research, as in other types of research methodologies, we need a sample size large enough to make some inferences and generalizations. We were not able to conduct more case studies mainly because of human and time research limitations. However, this is something that we will take into account in future research. In terms of the scope of our study, this research is limited to the study of Portuguese ISO 9000 certified companies. Nevertheless, by including a considerable number of internationally based corporations in our study, our findings may be also valid in other countries.

Based on the literature review that supported our research and in our case study findings, we would like to propose the following set of specific research hypotheses that will deserve further attention in the future:

- H1.* Is it possible to reconstruct the economic-financial companies' history of a company, with the aim of identifying the benefits and costs directly related to their QMSs implementation and certification?
- H2.* Are certified organizations more profitable than similar non-certified organizations?
- H3.* Is there a relationship between ISO 9001 certification motivations and companies' financial performance?
- H4.* Are internal motivations driven companies more profitable than the firms that became certified base on external motivations?

We would like to point out that we cannot generalize our conclusions, because of research limitations, pointed above, mainly the one related to the limited sample size, and our conclusions must be looked at as having an exploratory nature. At a future time we will try to go deeper in our research, conducting a larger scale empirical study.

Given the economic and social relevance of the ISO 9000 phenomenon, as well as the increasing availability of data related to it, we feel that more and more fact-based and statistically oriented studies should be conducted in this area. Regardless of the panoply of research projects conducted so far, in order to analyze the QMSs impact over companies' financial performance, the results reached here are of a contradictory nature. Based upon our findings, this issue is far from being answered, and mixed results were obtained. We have seen that the majority of ISO 9001 certified companies is not able to support the fact that QMS implementation does have a positive impact over companies' financial performance. Furthermore, it is not possible to state, from our data, that ISO 9001 certification does lead to better financial performance.

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