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Does ISO 9000 certification affect consumer perceptions of the service provider?

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Abstract

Purpose – The purpose of this paper is to examine whether International Organisation for Standards (ISO) certification affects consumer perceptions of the service provider.

Design/methodology/approach – Data from a questionnaire survey of 204 Spanish consumers of insurance services is used to investigate whether differences exist in consumer perceptions of the services provided by ISO 9000-certified firms and non-certified firms in terms of: quality; satisfaction; and corporate image. Mean and covariance structure analysis (MACS) is employed to provide reliable analysis of any differences detected.

Findings – The paper finds that ISO certification improves consumers' perceptions with regard to all three variables (quality, satisfaction, and corporate image). This was especially the case with respect to perceived service quality and perceived corporate image. The results therefore suggest that ISO 9000 certification enables companies to realise marketing benefits as a result of enhanced evaluation of service by consumers.

Research limitations/implications – An acknowledged limitation of the study is the high variability of the effect size estimates for the three variables. Future studies should use larger samples to reduce such variability.

Originality/value – The paper shows that previous studies of the ISO 9000 standards have tended to focus on management and expert opinion rather than the opinion of customers. The present study addresses this deficiency in the extant literature by seeking the perspective of the customer, which is of critical importance in assessments of quality and marketing benefits.

Keywords ISO 9000 series, Corporate image, Customer satisfaction, Spain

Paper type Research paper

1. Introduction

The advent of international quality standards, such as the International Organisation for Standards (ISO) 9000 series and the European Foundation for Quality Management (EFQM) model, has been a significant development in quality management. Indeed, the development of ISO 9000 certification has been described by Escanciano (2001) as one of the most important events in the quality arena in the past three decades.

In essence, the ISO 9000 standards formalise tasks and systems to achieve uniformity of products/services and conformity with client specifications (Anderson *et al.*, 1999). A wide variety of managerial issues relating to ISO 9000 certification have therefore been canvassed in the literature. However, relatively little research attention has been given to the effect of ISO 9000 certification on consumers' perceptions of the services provided by ISO-certified firms. Moreover, the few studies that have endeavoured to assess the effect of ISO 9000 certification on consumer attitudes have tended to consider the opinions of managers and experts, rather than the opinions of customers (Buttle, 1997; Tsiotras and Gotzamani, 1996).



The purpose of the present study is, therefore, to address this relative deficiency in the literature by assessing the effect of ISO certification on consumer perceptions of three variables:

- (1) Satisfaction.
- (2) Quality.
- (3) Corporate image.

These variables were chosen for analysis because they have been clearly linked to marketing benefits, especially customer retention (Selnes, 1993; Nguyen and Leblanc, 1998; Setó, 2003).

The insurance industry was chosen as the context for this study because a large proportion of companies in the insurance industry are ISO 9000-certified and because quality and security are key differentiating factors among insurance companies that seek to maintain and enhance consumer loyalty.

The remainder of this paper is organised as follows. In the following section, a literature review and conceptual framework is presented; this includes a review of the more important studies of the presumed benefits of ISO standards, followed by proposition of hypotheses to be tested in the empirical study. The paper then details the methodology of this empirical study, followed by a presentation of the results of the study. The paper concludes with a summary of the major findings, an acknowledgment of the limitations of the study, and suggestions for future research directions.

2. Literature review and conceptual framework

2.1 *Benefits of ISO 9000 certification*

ISO 9000 is a generic international quality standard. In theory, certification in accordance with ISO 9000 standards demonstrates an organisation's commitment to quality and customer satisfaction. Indeed, according to the ISO, organisations that implement ISO 9000 voluntarily are doing so because they expect these standards to help them to do things better and to provide real benefits to the company (Dick, 2000).

Many studies have attempted to identify the potential benefits of ISO 9000 implementation, and a wide range of suggestions has been made in this regard (Calisir, 2007). For example, Atwater and Discenza (1993) studied 29 high-tech manufacturers in Colorado Springs (USA) and concluded that ISO 9000 certification leads to:

- improved plant operating efficiency;
- greater customer satisfaction; and
- improved competitive position.

Dale (1994) identified the potential benefits of ISO 9000 certification as being:

- fewer errors;
- reduced audit time (for customers);
- improvements in control, discipline, procedure, documentation, communication, customer satisfaction, problem-handling, and quality awareness;
- identification of ineffective and surplus procedures; and
- a better working environment.

Ho (1994) noted that the British Standards Institution claims the following potential benefits of implementing quality standards:

- marketing tool;
- buyer acceptance as proof of quality and technical expertise;
- diminished likelihood of customers' need for special assessment;
- improved quality performance and morale;
- reduced cost of quality;
- improved customer satisfaction, sales, competitiveness, and profitability;
- increased confidence;
- name appearing in reference books for buyers; and
- assistance in export markets.

Adanur and Allen (1995) identified the following benefits of ISO in a manufacturing context:

- reduced customer complaints and improved supplier quality;
- greater involvement of people;
- reduced number of products of inferior quality;
- increased business; and
- reduced costs.

Calisir *et al.* (2005) also studied the manufacturing context and suggested that that the major benefits of certification related to:

- increased product quality;
- reduced error/defect rate in production; and
- increased overseas market share.

According to Yung (1997), the benefits of ISO 9000 include:

- marketing advantages;
- improved documentation system;
- quality awareness among internal staff; and
- efficiency improvements and/or cost reductions.

As a result of case studies of seven Singaporean small and medium enterprises, Quazi and Padibjo (1997) suggested that the benefits of ISO certification are:

- increased customer preference;
- improved company quality image and competitiveness in the market;
- compliance with customer requirements;
- streamlined procedures and documentation;
- increased awareness of preventive and corrective actions; and
- provision of a foundation for the implementation of total quality management.

Pan's (2003) study of four Asian countries identified the benefits of ISO 9000 certification as:

- improved competitive edge (through increased productivity, quality improvements, increased customer satisfaction, increased profit margin, and cost reduction); and
- improved public relations.

A study of 160 Australian ISO-certified companies by Brown and van der Wiele (1995) identified the benefits of certification as improvements in:

- awareness of company and product quality;
- management;
- customer relations;
- products and services offered;
- relationships within the organisation;
- customer satisfaction; and
- respect from competitors.

Giguere and Smith (1999) stated that the benefits of ISO 9000 for service companies are:

- an improved image;
- enhanced marketing; and
- strategic risk management.

Beattie and Sohal (1999) found that the benefits for Australian service organisations were:

- improved market share; and
- improved customer service.

Buttle (1997) identified 23 benefits of ISO certification, grouped into four factors:

- (1) *Profitability* (productivity gains, improved profitability, cost reduction, reduced waste, survival in adverse economic circumstances, and enhanced staff motivation).
- (2) *Process improvement* (elimination of procedural problems, awareness of procedural problems, better management control, enhanced induction of new staff, improved customer service, enhanced efficiency, and consistency across sites).
- (3) *Marketing benefits* (gaining new customers, retaining existing customers, having ISO standard as a promotional tool, improved market share, growth in sales, and enhanced customer satisfaction).
- (4) *Other benefits* (reductions in fraud exposure, staff turnover, barriers to international markets, and need for quality audits by customers).

In a similar vein, Vloeberghs and Bellens (1996) also categorised the potential benefits into four groups:

- (1) Operational results.
- (2) Financial results.

- (3) Benefits related to customers.
- (4) Benefits related to employees.

It is thus apparent that there is a wide divergence of opinions regarding the potential benefits of implementing ISO 9000 (Casadesús *et al.*, 2001). Nonetheless, a common feature of all of these various suggestions is that ISO 9000 certification brings significant marketing benefits – including increased consumer satisfaction, improved market share, and enhanced corporate image (Rodríguez and González, 2003).

In contrast to the studies noted previously, other studies have questioned the presumed benefits of ISO certification. For example, Terziovski *et al.* (1996) studied more than 1,000 firms in Australia and New Zealand and concluded that ISO 9000 certification does not have a significant positive effect on organisational performance in the absence of a clear commitment to a culture of quality. This view was in accordance with Binney (1992), whose qualitative findings showed that a company that lacks an appropriate culture of quality might, despite ISO certification, continue to provide poor-quality products/services and fail to increase its market share, improve the motivation of its staff, and reduce its costs.

Following case-study research in the UK, Seddon (1997) went further and suggested that if ISO 9000 has any effect on performance, that effect is negative. In a somewhat similar vein, Batchelor (1992) studied 647 certified manufacturing and service organisations and found that only 15 per cent of them had derived any business value on nine dimensions: market share, new customers, customer satisfaction, procedural efficiency, staff motivation, staff attitudes, error rates, wastage and costs.

Casadesús *et al.* (2001) argued that not all companies are able to take advantage of ISO 9000. In particular, these authors noted that some companies emphasise the organisational improvements associated ISO 9000 (interdepartmental relationships, internal organisation, employee motivation, product and service quality), whereas others seek only the marketing benefits (increased market share, maintenance of current customers, quality image). In this regard, Beattie and Sohal (1999) contended that certified quality-management systems, taken in isolation, do not achieve major benefits; rather, quality-management systems combined with quality-improvement initiatives can achieve substantial improvements. In a similar vein, Henkoff (1993) argued that the real benefits of ISO certification would be realised only if companies that apply a quality system have a realistic understanding of both their capabilities and their limitations.

According to Brown and van der Wiele (1995), although many organisations are aware that a wider understanding of quality management is essential, ISO 9000 certification remains a good basis upon which to begin a process of quality improvement. This view was supported by Dick *et al.* (2002), who noted that ISO-certified service firms place much more emphasis on quality measurement (both internal and customer-based measurements) than do non-certified service firms.

In summary, this review of the literature indicates that ISO 9000 certification can deliver business benefits; however, ISO certification should be seen as part of an overall continuous improvement process, rather than an end in itself (Terziovski and Power, 2007).

2.2 Motivation for ISO 9000 certification

In view of the fact that attempts to assess the benefits of ISO 9000 have produced confused and uneven results (Casadesús *et al.*, 2001), some authors have chosen to

emphasise the significance of a company's motivation in seeking ISO certification. In this regard, Terziovski and Power (2007) analysed the relationship between the benefits of ISO certification and various other factors – including the motivation for seeking certification, the “quality culture” of the organisation, and management responsibility. The authors found little empirical evidence for a link between these factors and business outcomes in the context of ISO 9000 certification. In contrast, a study by the Science and Engineering Policy Studies Unit (SEPSU) (1994), which reviewed 28 surveys of ISO 9000, concluded that there was an apparent relationship between managers' motives for adopting certification and gains achieved in business performance. Companies that cited “customer pressure” as their main reason for pursuing certification were less likely to report improvements than those that gave other reasons for adopting ISO 9000.

Jones *et al.* (1997) came to similar conclusions from a study of 272 Australian firms, which demonstrated that firms that sought ISO 9000 certification in response to externally imposed perceptions of the need to “obtain a certificate” experienced fewer benefits than those that had a “developmental” view of quality improvement. The motives associated with such a “developmental view” included a desire to use ISO 9000 to:

- improve the company's internal processes;
- reduce quality costs; and
- increase customer focus.

Zaramdini (2007) also found a correlation between the motives in seeking ISO 9000 certification and the benefits delivered by such certification. For example, the external motivating factor of “following the competitors” was significantly correlated with marketing benefits, and the internal motivating factor of “operational improvement” was significantly correlated with profitability. Similarly, Gotzamani and Tsiotras (2002), who studied the motives of Greek companies in seeking certification, reported that motivation was significant in determining both the degree to which the standards were implemented and the overall benefits that companies gained from the implementation.

2.3 Effects of ISO 9000 certification on customer perceptions

Despite the numerous studies of various issues related to ISO 9000 standards, there has been relatively little interest in measuring the effect of ISO 9000 certification on customers' perceptions of the service provided by ISO-certified firms. Moreover, the majority of the few studies that have assessed the effect of ISO 9000 certification on consumer attitudes have considered managerial perceptions, rather than the perceptions of customers. As a consequence, the results of these studies as true reflections of consumers' attitudes must be treated with caution (Wayhan *et al.*, 2002; Heras *et al.*, 2005).

The failure to seek customers' perceptions is especially significant given that ISO 9000 certification overtly places particular emphasis on the consumer. Indeed, a “customer orientation” is nominated as the first of several quality-management principles on which the standards are based. The principle of a “customer orientation” typically involves:

- researching and understanding customer needs and expectations;
- linking the objectives of the organisation to those needs and expectations;

- communicating customer needs and expectations throughout the organisation;
- measuring customer satisfaction and acting on the results;
- systematically managing customer relationships; and
- ensuring a balance between satisfying customers and satisfying other stakeholders (such as owners, employees, suppliers, financiers, local communities, and society as a whole) (ISO, 2000).

A “consumer orientation” thus plays a fundamental role in formulating ISO quality standards, but few studies have actually assessed consumers’ perceptions of those standards.

According to Buttle (1997), the most valuable benefits of ISO 9000 implementation are those related to profitability, followed by process improvement and marketing. This view has been endorsed by Rayner and Porter (1991), who contended that certification tends to result in improved marketing, and by Casadesús *et al.* (2001), who reported that many companies acknowledged that they had sought certification largely for commercial motives. Throughout the ISO 9000 literature there are multiple citations of theoretical and empirical studies indicating that the marketing benefits anticipated by companies when implementing ISO 9000 are primarily predicated on the expected attitudes of consumers. These expected attitudes include:

- improved perceptions of service quality (Capon *et al.*, 1990; Rust *et al.*, 1994; Buttle, 1997; Santos and Escanciano, 2000);
- enhanced consumer satisfaction (Tsiotras and Gotzamani, 1996; Casadesús *et al.*, 2004); and
- improved evaluations of corporate image (Tsiotras and Gotzamani, 1996; Santos and Escanciano, 2000; Heras *et al.*, 2005).

In view of the importance of customers in both the formulation and expected benefits of ISO 9000 certification, an assessment of consumer perceptions of the services of ISO-certified firms is therefore highly desirable – not only with respect to perceptions of quality, but also with regard to other performance variables, such as satisfaction and image.

2.4 Formulation of hypotheses

2.4.1 ISO certification and perceptions of quality. According to the extant literature, an improvement in product or service quality is the main objective of seeking ISO 9000 certification (Capon *et al.*, 1990; Rust *et al.*, 1994; Buttle, 1997). Although a study of quality-management practices conducted by the Australian Manufacturing Council (1994) found that certification is likely to lead to actual (as well as perceived) quality improvements and overall improvements in organisational performance, the study specifically noted that managers of ISO-certified companies agreed that certification increases customers’ perceptions of product quality. From the marketing perspective, this is significant. According to Zeithaml (1988, p. 3), service quality can be defined as “... the consumer’s judgment about a product’s overall excellence or superiority”. As a consequence, it can be contended that it is the consumer who determines whether the company’s service is of certain quality or not. Moreover, it is reasonable to believe that companies whose procedures are in accordance with prescribed quality norms are likely to offer higher levels of quality than those without such quality certification.

In view of the previous discussion, the following hypothesis is therefore proposed in the context of the insurance industry:

- H1. Consumers' perceive that the quality of service provided by ISO 9000-certified insurance firms is higher than the quality of service provided by non-certified insurance firms.

2.4.2 ISO certification and perceptions of satisfaction. From a marketing perspective, increased consumer satisfaction is a critical success factor (Tsiotras and Gotzamani, 1996). In this regard, it has previously been noted that one of the main principles of the ISO 9000 standards is the enhancement of customer satisfaction. Moreover, it has also been previously noted that the ISO 9000 literature contains multiple citations of studies in support of the contention that increased customer satisfaction is one of the principal benefits of ISO 9000 certification (Casadesús *et al.*, 2004; Casadesús *et al.*, 2001; Tsiotras and Gotzamani, 1996; Buttle, 1997). However, all of these studies were conducted from a managerial perspective, and they therefore failed to ascertain whether the consumers of services provided by ISO 9000-certified companies were more satisfied than the consumers of services provided by non-certified insurance firms.

The following hypothesis is therefore proposed in the context of the insurance industry:

- H2. The consumers of services provided by ISO 9000-certified insurance firms are more satisfied than the consumers of services provided by non-certified insurance firms.

2.4.3 ISO certification and perceptions of corporate image. A relationship between improved corporate image and ISO 9000 certification has been well attested in the literature. Because the ISO 9000 standards are universally recognised and respected (Arora, 1998), an improvement of corporate image has been posited as one of the advantages that companies gain when adopting ISO 9000 certification (Vloeberghs and Bellens, 1996; Tsiotras and Gotzamani, 1996; Buttle, 1997; Giguere and Smith, 1999; Santos and Escanciano, 2000; Zaramdini, 2007). Nevertheless, similar to the research related to satisfaction, all of the aforementioned studies were achieved from a managerial point of view.

To test the proposition that consumers have a more favourable perception of the corporate image of ISO-certified firms (as claimed by managerial studies), the following hypothesis is therefore proposed in the context of the insurance industry:

- H3. Consumers of services provided by ISO 9000-certified insurance firms have a more favourable perception of the firm's corporate image than do consumers of services provided by non-certified insurance firms.

3. Methodology

3.1 Sample and data collection

The convenience sample for the empirical study consisted of customers of insurance companies in the geographical area of Murcia (a south-eastern region of Spain). Data were collected during the last three months of 2005 by personal interview and a self-administered questionnaire. Business and marketing students had been previously trained for this task. Respondents had to fulfil the condition of having used an

insurance service during the previous 12 months (Ryan and Cliff, 1997). The respondents chose one insurance company that they wished to evaluate.

The initial sample included 232 subjects, but 28 of these chose to evaluate online insurance companies. These 28 completed questionnaires were excluded because it is acknowledged that a specific scale is required to assess online service quality (Grönroos *et al.*, 2000; Liljander *et al.*, 2002; Zeithaml *et al.*, 2002).

The demographic data of the sample revealed a heterogeneous sample. Slightly more than half (53 percent) were female. A majority (56 per cent) were between 26 and 45 years of age, and a majority (57 per cent) held a university degree.

Most respondents (60 per cent) chose to evaluate car insurance, with home insurance (25 per cent) being the next most commonly evaluated. The sample was chosen to ensure that similar proportions of ISO 9000-certified and non-certified companies were represented; in the event, a slight majority (52 per cent) of the evaluated companies were ISO 9000-certified. Of the 29 different insurance companies that respondents chose to evaluate, MAPFRE and Allianz were the most commonly evaluated ISO-certified companies, whereas Winthertur and Ocaso were the most commonly evaluated non-certified companies.

3.2 Measures

The measures used in the questionnaire were based on a review of the relevant literature on perceptions of: service quality; satisfaction; corporate image.

- Perceptions of service quality were measured by responses on a five-point Likert-type scale (1 = strongly disagree; 5 = strongly agree) to a single item: "This insurance company offers excellent service" (Cronin and Taylor, 1992). This measurement item had been previously used by Babakus and Boller (1992) and by Bolton and Drew (1991).
- Perceptions of satisfaction were measured by responses on a five-point Likert-type scale (1 = strongly disagree; 5 = strongly agree) to two items: "general satisfaction"; and "confirmation of expectations" (Fornell, 1992).
- Perceptions of corporate image were measured on a five-point semantic differentiation scale using two items from Andreassen and Lindestad (1998): overall opinion of the company; and liking of the company.

In addition, a question regarding the degree of awareness of ISO certification was also included. All of these items (together with the socio-demographic questions) were incorporated in a short questionnaire of one page in length. The wording of each item was adapted to the context of the insurance industry and translated into Spanish. Before proceeding to data collection for the substantive study, the questionnaire was pilot-tested with ten customers of insurance companies to ensure that respondents clearly understood all questions following adaptation of the wording and translation into Spanish. No changes were required as a result of the pilot test.

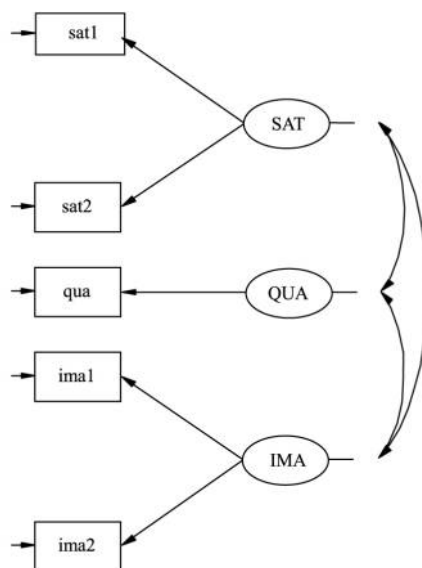
4. Analyses and results

To test for any differences in consumers' perceptions of the performance variables (quality, satisfaction, and corporate image) between ISO 9000-certified companies and non-certified companies, mean and covariance structural analysis (MACS) was conducted (Sörbom, 1974). Numerous researchers have attested to the advantages of

the MACS methodology compared to the traditional general linear model (GLM) (Raykov, 2001; Lubke *et al.*, 2003; Ployhart and Oswald, 2004). The MACS methodology enables simultaneous modelling of latent variance-covariance and latent means within a single integrated statistical framework. This facilitates a comparison of different theoretical models to determine the model that best fits the data. Furthermore, MACS estimates latent mean differences, which accounts for measurement error variance and thus obviates the need for other methods (such as *t*-test or ANOVA).

The research model in the present study, which is shown in Figure 1, consisted of three dependent variables (perception of service quality, perception of satisfaction, and perception of corporate image) and one independent variable (certified companies/non-certified companies). This represents a special case of GLM multivariable analysis of variance (MANOVA). The proposed model was in accordance with the recommendations of Martínez and Martínez (2008) regarding the modelling of causal relationships using these attitudinal variables. Given the justified emphasis on the importance of reporting effect sizes (Cohen, 1990; Thompson, 2002), the MACS approach provides more reliable results and more appropriate interpretations because, in showing the magnitude of mean differences, it accounts for measurement error variance in latent variance estimations.

As a prerequisite for testing group mean differences, MACS requires an assessment of measurement invariance (construct equivalence) between groups. The relationship between latent variables and observable indicators in the two groups must be similar to ensure that latent mean differences are not biased by the existence of disparate patterns of causal relationships between constructs and indicators (Lubke *et al.*, 2003).



Notes: SAT = perceived satisfaction; QUA = perceived service quality; IMA = perceived corporate image; sat1, sat2 = perceived satisfaction indicators; qua = perceived service quality indicator; ima1, ima2 = perceived corporate image indicators

Figure 1.
The research model for the
two levels of the
independent variable

Because measurement invariance can occur at different levels, three types of invariance must be analysed (Steenkamp and Baumgartner, 1998):

- (1) *Configural invariance* (which means that similar measurement models and the same pattern of factor loadings exist between groups).
- (2) *Metric invariance* (which implies that indicators have the same causal relationships with their respective constructs across groups – that is, the factor loadings are identical).
- (3) *Error invariance* (which means that indicators are equally reliable across groups – that is, the measurement error is invariant for the two groups considered).

The last of these is the most restrictive condition because factor loadings and error indicator variances must be statistically equal across groups. According to Steenkamp and Baumgartner (1998), the minimum required level of invariance depends on the aim of the study; however, given that full measurement invariance is an infrequent occurrence, at least partial measurement invariance should exist (Byrne *et al.*, 1989). The weaker condition of partial measurement invariance is traditionally accepted for MACS analysis.

If measurement invariance is established, the next step is to undertake a latent mean difference test and estimate the associated effect size. Both the latent mean difference test and the effect size will account for indicator reliability and covariance relationships between model variables. However, before undertaking these steps, the adaptation of the indicators of the three performance variables was checked by the procedure proposed by Hayduk (1996) and Hayduk and Glaser (2000):

- choosing the indicator believed to be the best available indicator of each variable;
- fixing the causal coefficient (λ) for this item at 1.0;
- fixing the error variance (θ) of this indicator at a specific value; and
- entering the free λ and θ variances for the second-best indicator of the concept.

At the beginning of the analysis, ISO 9000-certified companies were selected as the reference group. Subsequently, the restricted model ($M_{1,1}$) was tested with only the best indicator per sub-dimension. The error variances of the indicators were also fixed – with θ being fixed to 15 per cent of the observable indicator variance of all “gold standard” indicators (Hayduk, 1996). The LISREL 8.50 maximum likelihood method was applied (Jöreskog and Sörbom, 2001). The results showed an exact fit of the model (which was saturated), $SB\chi^2$: 0.000 (0); $p = 1.000$. Following this, the second-best indicator was added to the satisfaction and image variables and the parameters λ and θ were fixed. This new model ($M_{2,1}$) yielded an optimum fit to the data $SB\chi^2$: 6.981 (5); $p = 0.222$. It was thus concluded that the selected indicators were appropriate for measuring each of the variables.

Multivariate latent mean and covariance structure analysis was then performed. The series of nested models proposed by Ployhart and Oswald (2004) was adapted for the present study. Configural invariance (M_{0G1} ; M_{0G2}) was tested first, followed by more restrictive models (M_{2IM} and M_{3IE}) to study metric and error variance invariance.

Finally, comparisons were completed with the latent mean contrasts ($M4_{IML}$ and $M5_{DML}$). The features of each model are shown in Table I.

As shown in Table I, the MACS model-testing sequence began with the equivalent forms models ($M0_{G1}$; $M0_{G2}$). This tested the fit of a single-factor measurement model independently for each of the two groups. As shown in Table II, the results revealed an adequate fit to the data in both the certified companies group ($M0_{G1}$) and the non-certified companies group ($M0_{G2}$).

The multiple-groups baseline model ($M1_{MG}$) was then tested. This model simultaneously estimated parameters for the two groups. A reasonably good fit to the data ($SB\chi^2$: 10.340 (10); $p = 0.411$) was achieved, allowing one group to proceed to a metric invariance model test ($M2_{IM}$).

To test this more restricted invariance ($M2_{IM}$), the certified companies were selected as the reference group ($M0_{G1}$). Factor loading estimates in this first group were used to fix the factor loadings in the second group ($M0_{G2}$). The results showed a good fit, with no statistical significance in the chi-square difference. Given that model $M2_{IM}$ yielded an adequate fit, it was necessary to check whether the indicator uniqueness (error variances) were similar across groups, using the invariant uniqueness model $M3_{IE}$. The fit of this model was good ($SB\chi^2$: 15.277 (9); $p = 0.083$), but the chi-square difference test was significant. The existence of partial measurement invariance (rather than full measurement invariance) showed that the indicators were not equally reliable across groups. The fit indices for the model-testing sequence are shown in Table II.

The test of latent mean differences was performed through analysis of models $M4_{IML}$ and $M5_{DML}$. The $M4_{IML}$ established that latent mean differences did not exist, and was built by adding the indicator means to the covariance model $M2_{IM}$ and constraining the latent means to achieve equality. This model fulfilled the requirements of metric invariance. Although this model was adequate, its fit was compared with a model that allowed for the existence of latent mean differences ($M5_{DML}$). Following the recommendations of Kline (2005), the reference group means were fixed to zero. Model $M5_{DML}$ yielded a better relative fit ($\Delta SB\chi^2(gl) = 9.684(3)$), which led to the conclusion that differences existed in latent means across groups.

The differences in each dependent variable (analogous to the MANOVA between-subjects test) are shown in Table III. The results indicate that the possession of ISO certification had a significant effect on the three performance variables (perception of service quality, perception of satisfaction, and perception of corporate image) – thus demonstrating that consumers of ISO-certified insurance companies had a significantly higher perception of service quality ($H1$), consumer satisfaction ($H2$), and corporate image ($H3$) than did consumers of the services of non-certified companies with respect to these variables. These findings support acceptance of all three proposed hypotheses.

Having demonstrated a statistical difference between the two groups, the effect size was then considered to ascertain the substantive difference. Utilising the T -values provided by LISREL, Cohen's (1977) d effect size and the confidence interval for d were then calculated. The power of the test was calculated with the iterative procedure proposed by Smithson (2003), and was implemented in SPSS 13.0 (SPSS, 2004). The results showed significant variability in the effect size estimates, which were reflected in wide confidence intervals. This complicated the interpretation of the obtained differences, which were quite similar with respect to the three variables.

Table I.
Nested models tested within a mean and covariance structure framework

Symbol	Model type	Model constraints	What to interpret	What it means	Analogy to MANOVA
M0 _{GI} ; M0 _{G2}	Configural invariance	Separate assessment of factor structure within each group	Model fit indices; statistically significant parameters	Similar measurement models in each group	None
M1 _{MG}	Multiple groups baseline model	Overall model fit across groups	Model fit indices; statistically significant parameters	A good-fitting baseline for model comparisons	None
M2 _{MI}	Metric invariance model	Equal factor loadings (λ) across groups	$\Delta \chi^2$ M2 _{MI} -M0 _{Group2} ; fit indices	Indicators are measured on the same metric	None
M3 _{IE}	Equal uniqueness (error variances)	Equal factor loadings and uniqueness (δ) across groups	$\Delta \chi^2$ M3 _{IE} -M2 _{MI} ; fit indices	Indicators are assessed with equal error	None
M4 _{IML}	Equal or free item intercepts	Equal factor loadings, uniqueness, and possibly item intercepts (τ) across groups	Fit indices only if τ free and no mean differences are expected	Indicators have similar intercepts (means)	Multivariable test
M5 _{IML}	Latent means model	Latent means model equal factor loadings, uniqueness, and item intercepts across groups; introduce latent mean differences (κ)	$\Delta \chi^2$ M4 _{IML} -M5 _{IML} ; fit indices; examine statistical significance test of latent mean differences and effect size	Differences in latent scale means	Pairwise comparisons (t tests)

Source: Adapted from Ployhart and Oswald (2004)

Table II.Fit indices for the
model-testing sequence

Model	$SB\chi^2$ (<i>gl</i>)	<i>p</i> -valor	$\Delta SB\chi^2$ (<i>gl</i>)
M0 _{G1}	6.981 (5)	0.222	
M0 _{G2}	3.534 (5)	0.618	
M1 _{MG}	10.340 (10)	0.411	
M2 _{IM}	6.631 (7)	0.468	2.556(2)
M3 _{IE}	15.277 (9)	0.083	8.788 [*] (2)
M4 _{IML}	23.417 (17)	0.136	
M5 _{DML}	12.852 (14)	0.538	9.684 [*] (3)

Note: ^{*}*p* < 0.05

	Indicator scores in a [0,1] interval		Latent mean differences (standard error)			Effect size (Cohen's <i>d</i>) ^a	95 per cent CI for effect size	Power		
	Certified companies	Non-certified companies			<i>T</i> -value					
Satisfaction	0.651	0.646	0.579	0.564	0.284	0.113	2.506 [*]	0.351	(0.074; 0.628)	0.703
Service quality	0.667		0.554		0.456	0.132	3.453 [*]	0.484	(0.205; 0.762)	0.930
Image	0.651	0.672	0.564	0.546	0.387	0.112	3.466 [*]	0.486	(0.206; 0.764)	0.932

Notes: ^{*}*p* < 0.05; ^a*d* effect size conventions (Cohen, 1988): small: 0.20; medium: 0.50; large: 0.80**Table III.**
Latent mean differences

According to Cohen (1988), the interpretation of the effect size should be made in accordance with the study context. In the current context of the insurance sector, it is apparent that the influence of certification on consumer perception of organisational performance was primarily mediated through perceived service quality and perceived corporate image. The findings with respect to perceptions of satisfaction should be treated with some caution because the lower limit of the confidence interval was close to zero. Although the confidence intervals for the effect size were undesirably wide, the differences were sufficient to avoid making a Type III error (Leventhal and Huynh, 1996) – that is, to make a correct decision by rejecting a null hypothesis (that differences between groups do not exist), but to fail to discern the correct direction of the difference that does exist. In the present study, it can at least be claimed that ISO 9000 certification produced a significant difference with respect to the three analysed variables.

Table III also shows indicators scores. These values have been transformed to a [0,1] scale (Cohen *et al.*, 1999). It is noteworthy that scores for the indicators were greater than 0.5 for both certified and non-certified companies, which shows that both groups of companies were evaluated positively. In addition, the differences between them were not at the extreme of the scale (for example, the third quartile; 0.75); rather, they were between the second and the third quartiles. This finding has implications with regard to repurchase intentions and word-of-mouth recommendation (as discussed further in the Conclusions).

Finally, data from the interviews excluded the possibility of a so-called “halo effect” on consumer opinion (that is, an effect generated by the fact of ISO certification *per se*). Of the interviewed customers, 40.7 per cent did not know of the ISO 9000 standards,

and of those who were aware of the standard, only 16.5 per cent knew the certification status of the evaluated company.

5. Conclusions, limitations, and further research

A growing body of opinion in the management and marketing literature holds that a major motivation for adopting a quality-assurance scheme is the expectation of marketing benefits (Achilleas and Anastasios, 2008). However, despite the growing interest in this subject, most studies of the ISO 9000 standards have focused on managerial and expert opinion, rather than the opinions of consumers. From a marketing perspective, this represents a significant research deficiency – because service quality is essentially based on the perceptions of consumers, and it is those consumers who ultimately determine whether marketing benefits ensue.

The present study has addressed this deficiency by demonstrating, from a consumer perspective, that ISO 9000 certification enables insurance companies to realise certain marketing benefits. In particular, three important performance variables – perceived quality, perceived satisfaction, and perceived corporate image – have been shown to be higher among customers of ISO-certified insurance companies than among customers of non-certified insurance companies. This was especially the case with respect to perceived service quality and perceived corporate image.

5.1 Managerial implications

There are several managerial implications that deserve to be highlighted.

With regard to the first of these variables, the enhanced perception of service quality offered by ISO-certified insurance firms is likely to be due to these firms offering improved service processes and better responses to consumers' requirements. Such superior perceived service quality is likely to be crucial in winning new customers, retaining customer confidence, and penetrating international markets (Australian Manufacturing Council, 1994). It is also likely to reduce complaints and increase repeat purchases (Heras *et al.*, 2005).

With regard to the second variable, ISO 9000 certification was also shown to be associated with a better corporate image among consumers. According to Heras *et al.* (2005), an improved image is due to two main reasons:

- (1) Improved consumer satisfaction as a consequence of the application of a quality-management system.
- (2) The universal recognition of ISO 9000 as a reliable quality standard.

According to Grönroos (1984), a positive corporate image is of the utmost importance to service firms in attracting new consumers and retaining current customers. A strong corporate image promotes the relative attractiveness of a firm (Andreassen and Lindestad, 1998) and stimulates purchases by simplifying consumer decision making (Andreassen, 1994).

In addition, the study has demonstrated that consumers of the services of ISO-certified insurance companies are more satisfied than the consumers of the services of non-certified companies. Consumer satisfaction is one of the basic principles of ISO 9000:2000. According to Heras *et al.* (2005), enhanced customer satisfaction in quality-certified companies is due to improved operational control, with consequent

improvement in the quality of the products and services that are offered. Customer satisfaction has become a very important issue in determining the success of all businesses in the increasingly competitive contemporary environment. If firms do not recognise and respond rapidly and effectively to customers' needs, increased levels of customer dissatisfaction and lost revenue will inevitably follow (Gurau and Ranchhod, 2002).

Given the influence that customer evaluations of quality, satisfaction, and corporate image can exert on customer loyalty and commitment to the company (Bitner, 1990; Fornell, 1992; Selnes, 1993; Brady *et al.*, 2002), ISO certification has thus been shown to be a potential source of competitive advantage. Non-linear and asymmetric relationships between service evaluations, repurchase intentions, and word of mouth have been noted in prospect theory (Kahneman and Tversky, 1979) and in studies of the discrete nature of emotions (Herzberg *et al.*, 1959). These perspectives have been analysed by Mittal *et al.* (1998) and by Hennig-Thurau and Klee (1997). In the present study, because consumers of both certified and non-certified companies had positive attitudes to the services offered, the asymmetric and non-linear effect of negative emotions did not exist. In addition, because the indicator scores were not at the positive extreme of the scale, the "diminishing return" effect of attitudes on consumer future intentions can be excluded. If these differences had been located in the fourth quartile, a small difference in the effect of satisfaction, quality, and image on repurchase intentions and word of mouth (non-linear and asymmetric effect) might be expected. However, given that these differences were located in the third quartile, a linear effect on consumer future intentions can be assumed. It can therefore be concluded that ISO certification might help to enhance customer retention and word of mouth through improved consumer attitudes.

5.2 Limitations and future research

Certain methodological limitations in the present study are acknowledged. First, the high variability of the effect size estimates for the three variables does not allow clearer conclusions to be drawn with respect to the importance of the differences. Further research should attempt to obtain more precise estimates of effect size. Future studies should use larger samples to reduce such variability.

A lack of similar research in the literature meant that there was little comparable material to evaluate the effect size. Nevertheless, the fact that the present study has provided empirical evidence that these differences do exist is an important advance. Although the effects of certification on the three variables are likely to have been due to the implementation of certain standardised quality procedures by the certified firms, the findings of the present study should be supplemented with data on such factors as market evolution, sales levels, and positioning. This additional information would provide a more complete view of the company at the marketing level. Multivariate analysis was performed to test the proposed hypotheses and increase the validity of difference tests among groups. However, it is acknowledged that the sizes of the groups could be considered small for the asymptotical characteristic of the chi-square test. In addition, although the sample was deliberately chosen to be representative, with certain quotas fulfilled, it is acknowledged that it was not a random sample; as such, some degree of bias cannot be definitely excluded.

Another acknowledged limitation of the study is, therefore, potential “multi-causality”. For example, it is plausible that different financial investments in advertising by the various firms might have affected the findings. It is acknowledged that the study did not control for variables such as this. Nevertheless, the existence of a so-called “halo effect” on consumer opinion (generated by the ISO certification *per se*) can be excluded because only 9.7 per cent of the interviewed consumers knew the certification status of the evaluated company. Despite this finding, it would be prudent for future studies to assess whether an interaction effect exists between consumer knowledge of ISO standards and consumer attitudes to ISO-certified firms. For this to be achieved, it would obviously be necessary for future samples to include a greater proportion of consumers with knowledge of ISO standards than the relatively small proportion (9.7 per cent) of consumers in the present sample.

Finally, future research could also analyse the influence of certification on other specific dimensions of service and performance. For example, the relationship between certification and such dimensions as trust, perceived value, and consumer commitment could also be investigated.

In conclusion, this study has demonstrated that the implementation of a quality-management system can lead to measurable improvements in consumer attitudes in a sector characterised by significant growth and increasing competition. Insurance companies should therefore consider implementing this valuable managerial tool to improve customer perception of their services.

References

- Achilleas, K. and Anastasios, S. (2008), “Marketing aspects of quality assurance systems. The organic food sector case”, *British Food Journal*, Vol. 110 No. 8, pp. 829-39.
- Adanur, S. and Allen, B. (1995), “First results on the effects of ISO 9000 in the US textile industry”, *Benchmarking for Quality Management & Technology*, Vol. 2 No. 3, pp. 41-52.
- Anderson, S.W., Daly, J.D. and Johnson, M.F. (1999), “Why firms seek ISO 9000 certification: regulatory compliance or competitive advantage?”, *Production and Operations Management*, Vol. 8 No. 1, pp. 28-43.
- Andreassen, T.W. and Lindestad, B. (1998), “Customer loyalty and complex services. The impact of corporative image on quality, customer satisfaction and loyalty for customer with varying degrees of service expertise”, *International Journal of Service Industry Management*, Vol. 9 No. 1, pp. 7-23.
- Andreassen, T.W. (1994), “Satisfaction, loyalty, and reputation as indicators of customer orientation in the public sector”, *The International Journal of Public Sector Management*, Vol. 7 No. 2, pp. 16-34.
- Arora, S.C. (1998), “Developing a quality management system”, *International Trade Forum*, Vol. 1, pp. 22-7.
- Atwater, J.B. and Discenza, R. (1993), “ISO 9000: implication for US business”, *Proceedings of the 1993 Decision Sciences National Meeting, Washington, DC, November*, Vol. 3.
- Australian Manufacturing Council (1994), *Leading the Way: A Study of Best Manufacturing Practices in Australia and New Zealand*, Australian Manufacturing Council, Melbourne, pp. 59-63.
- Babakus, E. and Boller, G.W. (1992), “An empirical assessment of the SERVQUAL scale”, *Journal of Business Research*, Vol. 24, pp. 235-68.

- Batchelor, C. (1992), "Badge of quality", *Financial Times*, 1 September.
- Beattie, K.R. and Sohal, A.S. (1999), "Implementing ISO 9000: a study of its benefits among Australian organizations", *Total Quality Management*, Vol. 10 No. 1, pp. 95-106.
- Binney, G. (1992), *Making Quality Work: Lessons from Europe's Leading Companies, Management Guides*, The Economist Intelligence Unit, London.
- Bitner, M.J. (1990), "Evaluating service encounters: the effects of physical surrounding and employees responses", *Journal of Marketing*, Vol. 54 No. 2, pp. 69-81.
- Bolton, R. and Drew, J. (1991), "A longitudinal analysis of the impact of service changes on customer attitudes", *Journal of Marketing*, Vol. 55, January, pp. 1-9.
- Brady, M.K., Cronin, J.J. and Brand, R.R. (2002), "Performance-only measurement of service quality: a replication and extension", *Journal of Business Research*, Vol. 55, pp. 17-31.
- Brown, A. and van der Wiele, T. (1995), "Industry experience with ISO 9000", *Asia Pacific Journal of Quality Management*, Vol. 4 No. 2, pp. 8-17.
- Buttle, F. (1997), "ISO 9000: marketing motivations and benefits", *International Journal of Quality & Reliability Management*, Vol. 14 No. 9, pp. 936-47.
- Byrne, B.M., Shavelson, R.J. and Muthén, B. (1989), "Testing for equivalence of factor covariance and mean structures: the issue of partial measurement invariance", *Psychological Bulletin*, Vol. 105, May, pp. 456-66.
- Calisir, F. (2007), "Factors affecting service companies' satisfaction with ISO 9000", *Managing Service Quality*, Vol. 17 No. 5, pp. 579-93.
- Calisir, F., Kulak, O. and Dogan, I. (2005), "Factors influencing Turkish textile companies' satisfaction with ISO 9000", *Total Quality Management & Business Excellence*, Vol. 16 No. 10, pp. 1193-204.
- Capon, N., Farley, J.U. and Hoening, S. (1990), "Determinates of financial performance: a meta-analysis", *Management Science*, October, pp. 1143-59.
- Casadesús, F.M., Giménez, G. and Heras, S.L. (2001), "Benefits of ISO 9000 implementation in Spanish industry", *European Business Review*, Vol. 13 No. 6, pp. 327-35.
- Casadesús, F.M., Heras, I. and Arana, G. (2004), "Costes y Beneficios de la Implantación de la Normativa de Calidad ISO 9000", *Evolución Temporal*, XIV Congreso Nacional de ACEDE, Murcia.
- Cohen, J. (1977), *Statistical Power Analysis for the Behavioral Sciences*, rev ed., Academic Press, New York, NY.
- Cohen, J. (1988), *Statistical Power Analysis for the Behavioural Sciences*, 2nd ed., Erlbaum, Hillsdale, NJ.
- Cohen, J. (1990), "Things I have learned (so far)", *American Psychologist*, Vol. 49 No. 12, pp. 997-1003.
- Cohen, P., Cohen, J., Aiken, L.S. and West, S.G. (1999), "The problem of units and the circumstance for POMI", *Multivariate Behavioral Research*, Vol. 34, pp. 315-46.
- Cronin, J.J. and Taylor, S. (1992), "Measuring service quality: a reexamination and extension", *Journal of Marketing*, Vol. 56, pp. 55-68.
- Dale, B.G. (1994), *Managing Quality*, Prentice-Hall, New York, NY.
- Dick, G. (2000), "ISO 9000 certification benefits, reality or myth?", *The TQM Magazine*, Vol. 12 No. 6, pp. 365-71.
- Dick, G., Gallimore, K. and Brown, J.C. (2002), "Does ISO 9000 accreditation make a profound difference to the way service quality is perceived and measured?", *Managing Service Quality*, Vol. 12 No. 1, pp. 30-42.

- Escanciano, C. (2001), "La Empresa Española y su opinión sobre el ISO 9000. Análisis de los resultados de un estudio Empírico", *Economía Industrial*, Vol. 341, pp. 151-9.
- Fornell, C. (1992), "National satisfaction barometer: the Swedish experience", *Journal of Marketing*, Vol. 56, January, pp. 6-21.
- Giguere, M. and Smith, P.E. (1999), "ISO 9000: service companies can benefit", *Ivy Business Journal*, Vol. 63, pp. 13-16.
- Gotzamani, K.D. and Tsiotras, G.D. (2002), "The true motives behind ISO 9000 certification. Their effect on the overall certification benefits and their long term contribution towards TQM", *International Journal of Quality & Reliability Management*, Vol. 19 No. 2, pp. 151-69.
- Grönroos, C. (1984), "A service quality model and its marketing implications", *European Journal of Marketing*, Vol. 18 No. 4, pp. 36-44.
- Grönroos, C., Heinonen, F., Isoniemi, K. and Lindholm, M. (2000), "The Netoffer model: a case example from the virtual marketplace", *Management Decision*, Vol. 38 No. 4, pp. 243-52.
- Gurau, C. and Ranchhod, A. (2002), "How to calculate the value of a customer", *Journal of Targeting, Measurement and Analysis for Marketing*, Vol. 10 No. 3, pp. 20-220.
- Hayduk, L.A. (1996), *LISREL Issues, Debates and Strategies*, Johns Hopkins University Press, Baltimore, MD.
- Hayduk, L.A. and Glaser, D.N. (2000), "Jiving the four-step, waltzing around factor analysis, and other serious fun", *Structural Equation Modeling*, Vol. 7, pp. 1-35.
- Henkoff, R. (1993), "The hot new seal of quality", *Fortune*, 28 June, pp. 68-71.
- Hennig-Thurau, T. and Klee, A. (1997), "The impact of customer satisfaction and relationship quality on customer retention: a critical reassessment and model development", *Psychology and Marketing*, Vol. 14 No. 8, pp. 737-64.
- Heras, I., Arana, G., Cabezudo, S. and Casadesús, M. (2005), "Los Modelos de Gestión de la Calidad y su Influencia sobre los Resultados de las Empresas", XV Congreso Nacional de ACEDE, Tenerife.
- Herzberg, F., Mausner, B. and Snyderman, B.B. (1959), *The Motivation to Work*, John Wiley, New York, NY.
- Ho, S.K.M. (1994), "Is the ISO 9000 series for total quality management?", *International Journal of Quality & Reliability Management*, Vol. 11 No. 9, pp. 74-89.
- ISO (2000), *ISO 9000:2000. Quality Management Systems. Fundamentals and Vocabulary*, International Organization for Standardization, Geneva.
- Jones, R., Arndt, G. and Kustin, R. (1997), "ISO 9000 among Australian companies: impact of time and reasons for seeking certification on perceptions of benefits received", *International Journal of Quality & Reliability Management*, Vol. 14 No. 7, pp. 650-60.
- Jöreskog, K.G. and Sörbom, D. (2001), *LISREL 8.50*, Scientific Software International, Chicago, IL.
- Kahneman, D. and Tversky, A. (1979), "Prospect theory: an analysis of decision under risk", *Econometrica*, Vol. 47 No. 2, pp. 263-91.
- Kline, R.B. (2005), *Principles and Practice of Structural Equation Modeling*, 2nd ed., Guilford Press, New York, NY.
- Leventhal, L. and Huynh, C. (1996), "Directional decisions for two-tailed tests: power, error rates, and sample size", *Psychological Methods*, Vol. 1, pp. 278-92.
- Liljander, V., Van Riel, A.C.R. and Pura, M. (2002), "Customer satisfaction with e-services: the case of an on-line recruitment portal", in Bruhn, M. and Stauss, B. (Eds), *Jahrbuch Dienstleistungs Management*, Gabler Electronic Services, Wiesbaden, pp. 407-32.

- Lubke, G.H., Dolan, C.V., Kelderman, H. and Mellenberg, G.J. (2003), "On the relationship between sources of within-and between-group differences and measurement invariance in the common factor model", *Intelligence*, Vol. 31, pp. 543-66.
- Martínez, J.A. and Martínez, L. (2008), "Building useful models; how to model causal relationships using attitudinal performance variables. The case of perceived quality, satisfaction and corporate image", *International Journal of Market Research*, Vol. 50 No. 4, pp. 437-47.
- Mittal, V., Ross, W.T. and Baldasare, P.M. (1998), "The asymmetric impact of negative and positive attribute-level performance on overall satisfaction and repurchase intentions", *Journal of Marketing*, Vol. 62, January, pp. 33-47.
- Nguyen, N. and Leblanc, G. (1998), "The mediating role of corporate image on customers retention decisions: an investigation in financial services", *International Journal of Bank Marketing*, Vol. 16 No. 2, pp. 52-65.
- Pan, J.N. (2003), "A comparative study on motivation for and experience with ISO 9000 and ISO 14000 certification among far eastern countries", *Industrial Management & Data Systems*, Vol. 103 No. 8, pp. 564-78.
- Ployhart, R.E. and Oswald, F.L. (2004), "Applications of mean and covariance structure analysis: integrating correlational and experimental approaches", *Organizational Research Methods*, Vol. 7 No. 1, pp. 27-68.
- Quazi, H.A. and Padibjo, S.R. (1997), "A journey towards total quality management through ISO 9000 certification – a Singapore experience", *The TQM Magazine*, Vol. 9 No. 5, pp. 364-71.
- Raykov, T. (2001), "Testing multivariable covariance structure and means hypothesis via structural equation modelling", *Structural Equation Modeling*, Vol. 8 No. 2, pp. 224-56.
- Rayner, P. and Porter, L.J. (1991), "BS 5759/ISO 9000 – the experience of small and medium sized firms", *International Journal of Quality & Reliability Management*, Vol. 8 No. 6, pp. 16-28.
- Rodríguez, J.A. and González, J. (2003), "Un estudio de la Insatisfacción Generada por la Certificación ISO 9000 en la Pequeña Empresa", paper presented at XIII Congreso Nacional de ACEDE, Salamanca.
- Rust, R.T., Zahorik, A.J. and Keiningham, T.I. (1994), "Return on quality (ROQ): making service quality financially accountable", *Journal of Marketing*, Vol. 59 No. 2, pp. 58-70.
- Ryan, C. and Cliff, A. (1997), "Do travel agents measure up customer expectation? An empirical investigation of travel agencies service quality as measured by SERVQUAL", *Journal of Travel and Tourism Marketing*, Vol. 6 No. 2, pp. 1-31.
- SPSS (2004), *SPSS 13.0 for Windows*, SPSS, Chicago, IL.
- Santos, L. and Escanciano, C. (2000), "Análisis de la Influencia de la Certificación ISO 9000 sobre los Resultados Empresariales: Implicaciones en el ámbito de la Calidad Total y de la Orientación al Mercado", *ICADE*, Vol. 55, pp. 177-204.
- Science and Engineering Policy Studies Unit (SEPSU) (1994), *UK Quality Management-Policy Options*, Royal Society and Royal Academy of Engineering, London, Policy Study No. 10, pp. 1-99.
- Seddon, J. (1997), *In Pursuit of Quality: The Case against ISO 9000*, Oak Tree Press, London.
- Selnes, F. (1993), "An examination of the effect of product performance on brand reputation, satisfaction and loyalty", *European Journal of Marketing*, Vol. 27 No. 9, pp. 19-35.
- Setó, D. (2003), "La influencia de la calidad de servicio, la imagen, la satisfacción y la confianza en al fidelidad del cliente", *Revista Española de Investigación de Marketing ESIC*, Vol. 7 No. 1, pp. 27-55.

- Smithson, M.J. (2003), *Confidence Intervals*, Quantitative Applications in the Social Sciences Series, No. 140, Sage, Thousand Oaks, CA.
- Steenkamp, J.B. and Baumgartner, H. (1998), "Assessing measurement invariance in cross-national consumer research", *Journal of Consumer Research*, Vol. 25, June, pp. 78-90.
- Sörbom, D. (1974), "A general method for studying the differences in factor means and factor structures between groups", *British Journal of Mathematical and Statistical Psychology*, Vol. 27, pp. 229-39.
- Terziovski, M. and Power, D. (2007), "Increasing ISO 9000 certification benefits: a continuous improvement approach", *International Journal of Quality & Reliability Management*, Vol. 24 No. 2, pp. 141-63.
- Terziovski, M., Samson, D. and Dow, D. (1996), "The business value of quality management systems certification: evidence from Australia and New Zealand", *Journal of Operations Management*, Vol. 15, pp. 1-18.
- Thompson, B. (2002), "Statistical, practical and clinical: how many kinds of significance do counselors need to consider?", *Journal of Counseling and Development*, Vol. 80, pp. 64-71.
- Tsiotras, G. and Gotzamani, K. (1996), "ISO 9000 as an entry key to TQM: the case of Greek industry", *International Journal of Quality & Reliability Management*, Vol. 13 No. 4, pp. 64-76.
- Vloeberghs, D. and Bellens, J. (1996), "Implementing the ISO 9000 standards in Belgium", *Quality Progress*, Vol. 29 No. 6, pp. 43-8.
- Wayhan, V.B., Kirche, E.T. and Khumawala, B.M. (2002), "ISO 9000 certification: the financial performance implications", *Total Quality Management*, Vol. 13 No. 2, pp. 217-31.
- Yung, W.K.C. (1997), "The values of TQM in the revised ISO 9000 quality system", *International Journal of Operations & Production Management*, Vol. 17 No. 2, pp. 221-30.
- Zaramdini, W. (2007), "An empirical study of the motives and benefits of ISO 9000 certification: the UAE experience", *International Journal of Quality & Reliability Management*, Vol. 24 No. 5, pp. 472-91.
- Zeithaml, V.A. (1988), "Consumer perceptions of price, quality, and value: a means-end model and synthesis of evidence", *Journal of Marketing*, Vol. 52, July, pp. 2-22.
- Zeithaml, V.A., Parasuraman, A. and Malhotra, A. (2002), "Service quality delivery through web sites: a critical review of extant knowledge", *Journal of the Academy of Marketing Science*, Vol. 30 No. 4, pp. 362-75.

Further reading

- Bergkvist, L. and Rossiter, J.R. (2007), "The predictive validity of multiple-item vs single-item measures of the same constructs", *Journal of Marketing Research*, Vol. 44 No. 2, pp. 175-84.
- Rossiter, J.R. (2002), "The coarse procedure for scale development in marketing", *International Journal of Research in Marketing*, Vol. 19, pp. 305-35.
- Satorra, A. and Bentler, P.M. (1999), "A scaled difference chi-square test statistic for moment structure analysis", *Psychometrika*, Vol. 66, pp. 507-14.

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ISO 9000
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161

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4. Luz María Marín Vinuesa. 2013. Gestión de la Calidad Total e indicadores no financieros: reflejo del valor de la certificación ISO 9001:2000. *Revista Europea de Dirección y Economía de la Empresa* **22**:2, 97-106. [[CrossRef](#)]
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7. Jānis Priede. 2012. Implementation of Quality Management System ISO 9001 in the World and Its Strategic Necessity. *Procedia - Social and Behavioral Sciences* **58**, 1466-1475. [[CrossRef](#)]