

ISO 9001 Vs. EFQM: A comparative analysis based on external independent data *

Iñaki Heras Saizarbitoria¹, Frederic Marimón Viadiu², Martí Casadesús Fa³

¹ Dpto. de Organización de Empresas. E.U. Estudios Empresariales de Donostia-San Sebastián. Universidad del País Vasco-Euskal Herriko Unibertsitatea. Plaza Oñati,1. 20018. Donostia-San Sebastián. iheras@ehu.es

² Dpto. de Economia i Organització d'Empreses. Facultat de Ciències Econòmiques i Socials. Universitat Internacional de Catalunya. Immaculada, 22. 08017. Barcelona. fmarimon@cir.uic.es

³ Dpto. de Organització, Gestió Empresarial i Disseny del Producte. Escola Politècnica Superior. Universitat de Girona. Campus Montilivi, 17071. Girona. marti.casadesus@udg.edu

Abstract

The aim of this article is to evaluate the adoption and outcomes of both the ISO 9000 and the EFQM self-evaluation model, based on external independent data. To this end, we first performed some objective analyzes of data regarding the impact of the models, data obtained from the ISO and EFQM international organizations themselves. We then conducted an empirical work with a survey of 107 experienced and independent quality-management assessors and data from 242 external evaluations carried out between 1998 and 2007 in 170 Spanish organizations that have adopted the EFQM model. The results obtained refer to the different motives of organizations in implementing ISO 9000 standards and the EFQM model, the obstacles detected to this implementation, and the comparative results of these.

Key words: ISO 9001; EFQM; adoption; self-assesment.

6. Introduction

The aim of this article is to evaluate the adoption and outcomes of both the ISO 9001 and the EFQM self-evaluation model, based on external independent data. To this end, we first performed some objective analyzes of data regarding the impact of the models, data obtained from the ISO and EFQM international organizations themselves. We then conducted an empirical work with a survey of 107 experienced and independent quality-management assessors and data from 242 external evaluations carried out between 1998 and 2007 in 170 Spanish organizations that have adopted the EFQM model. The results obtained refer to the different motives of organizations in implementing ISO 9001 standard and the EFQM model,

* This article has been produced within the framework of the research project entitled "Improvement of the customers' satisfaction of the Spanish companies by quality management standards and models" (ECO2009-12754) financed by the Spanish Ministry for Education and Science under the system of aid grants for R+D projects. The fieldwork was carried out as part of a more extensive study conducted for the Basque Institute of Competitiveness, a member of the worldwide network of competitiveness centres working with the Harvard Institute for Strategy and Competitiveness. Quality model assessors from Euskalit participated in the fieldwork. Euskalit also facilitated very valuable data on the external evaluations. We would like to express our gratitude to all, and specially to Euskalit, for its important cooperation and participation.

the obstacles detected to this implementation, the degree to which both are actually adopted and the comparative results of these.

There are many studies to be found in the literature regarding the impact of both ISO 9001 and EFQM. For example, Karapetrovic *et al.* (2008) name 115 empirical studies that employ surveys aimed at analyzing the impact of ISO 9001 standard around the world. To these, we should add those based on case studies, or the analysis of commercial databases (e.g. Wayhan and Balderson, 2002; Heras *et al.* 2002; Corbett *et al.*, 2005). On the other hand, in parallel to these are all the studies focused on the impact of TQM models, the EFQM model among them (for a literature review see Sila and Ebrahimpour, 2005 and Heras, 2006).

However, in this paper, we will be able to compare the results obtained in a new way. In line with the literature review, this study focuses its analysis on the points of view of quality management system assessors and not of the firms themselves, where focus is generally placed on the opinions of quality managers. This provides us a more neutral vision from the outset, as the assessors have no clear incentive to distort their responses as quality managers have as several authors have already pointed out (Vloeberghs and Bellens, 1996; Heras *et al.* 2002; Wayhan *et al.* 2002 and 2007), and more broadly, due to a greater knowledge of the “quality culture” in their area than the person responsible for a single firm.

7. Fieldwork

The fieldwork was carried out between February and April 2007. The survey was sent to a total of 204 assessors, who had conducted at least one external evaluation during 2006. Of these assessors, those related to the fields of education, health, non-profit organizations and public services were not included. This filter was applied due to the objectives of the study being to obtain a perspective of the phenomenon of quality management implementation in the industrial and service sectors, and not to focus on the education and health sectors, which operate under markedly specific conditions, since most of the organizations that have adopted both ISO 9001 and EFQM are public or semipublic organizations. The backgrounds of the assessors consulted were distributed among the following sectors: 115 dealt with industrial firms (44% of the total), 93 the consultancy sector (35%) and the remaining 56 (21%) the service sector as a whole. After two rounds, 107 valid responses were collected, which represented a response rate of 40.53%, very acceptable for this type of study, and specially in Spain, where the response rates use to be quite low, as several researchers in the management field, since there is not a strong tradition of collaboration of firms with researchers (del Brío *et al.*, 2002). It carries a sample error of 7.32% for a reliability of 95% ($p=q=0.5$). Of all responses received, 46 (43%) came from industrial firms, 32 (30%) from service firms and 29 (27%) from the consultancy sector.

Furthermore, data from 242 external evaluations carried out by the assessors was provided by Euskalit, the Basque Foundation for Excellence. The external evaluations were carried out between 1998 and 2007, in 170 Basque organizations that have adopted the EFQM model. The 20% of the organizations came from the manufacturing sector, the 80% from the services sector. 39.6% of the 170 organizations were certified against ISO 9001 (data by the end of 2007).

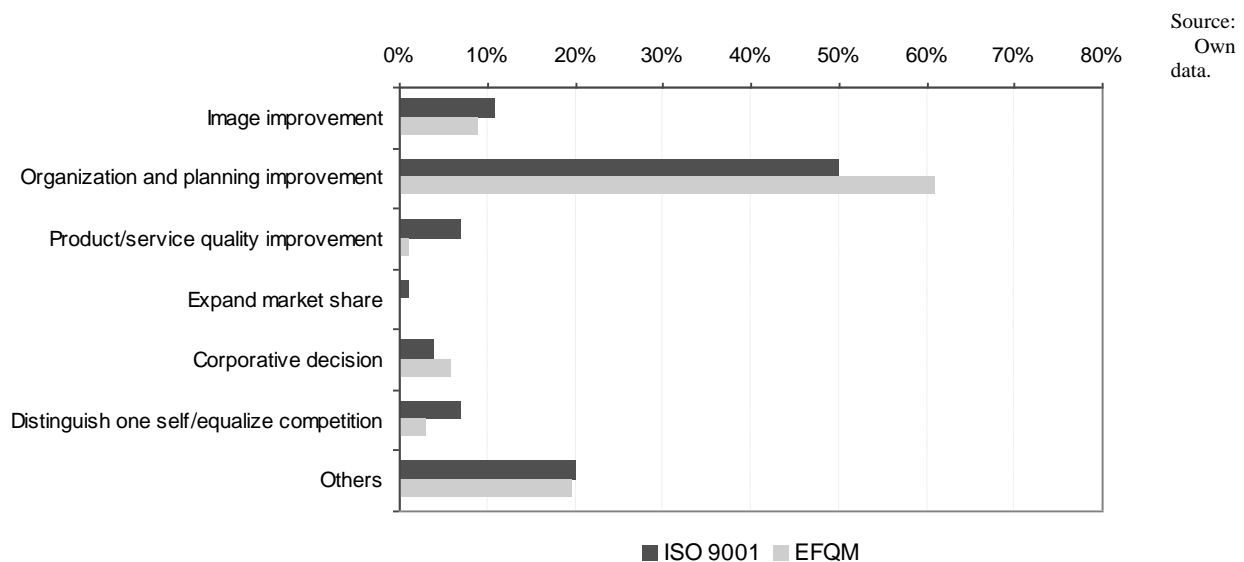
8. Empirical results: a summary

In this section we present a brief summary of our work due to the limitations on the number of pages of CIO 2010.

Firstly, we shall analyze the principal motivations highlighted by those surveyed with regard to the process of adopting both management systems. Graph 1, based on the percentage of responses highlighting the indicated factor or a similar one, shows the most important

motivations for implementing the ISO 9001 and the EFQM model. A certain parallel can be observed between the motives which lead to the implementation of one system or another: the motives which lead to implementing the ISO 9000 are the same as those which lead to the adoption of the EFQM. In this graph, we can also see that the majority are internal rather than external motivations. Specifically, the motivation related to improving systems, efficiency and internal control at the firm is quoted most often as being the most important. Nevertheless, the second and third most quoted are of an external character: the demands of clients and improving the public image of the firm. These results do not differ much from those described in previous studies where the firms themselves were consulted (see, for example, Vloeberghs and Bellens, 1996; Buttle, 1997; Jones *et al.*, 1997; Huarng *et al.*, 1999; Poksinska *et al.*, 2003; Heras *et al.*, 2006), even if the use of different variables makes direct comparison difficult.

However, another series of factors has been considered in a very different way to those tracked in previous studies (based on Ruzevicius *et al.*, 2004). This is the case of improvement in the quality of the goods and services sold by the firm, frequently quoted in the aforementioned studies, but of little value in this study. Along the same lines, the factor related to progress towards total quality, which commanded considerable weight in many studies, does not particularly stand out here, perhaps due to the thorough revision of the ISO 9000 standards in 2000 and the general growing consideration of it as a standard related to TQM (Heras, 2006).



Graph 1. Motivation for implementing ISO 9001 standards and the EFQM model

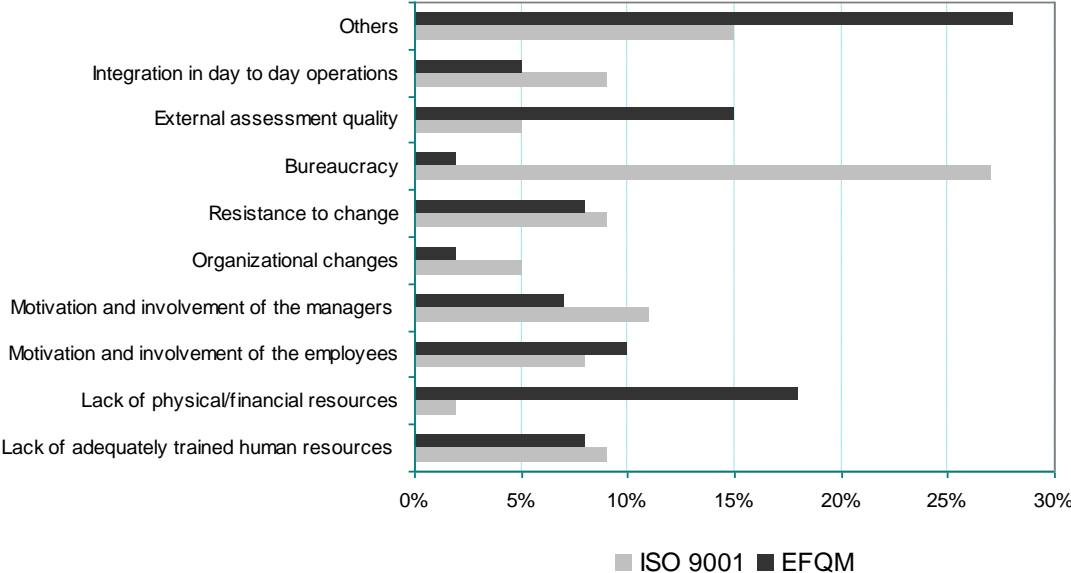
On the other hand, the majority of motives that lead organizations to use the self-evaluating model created by the EFQM are internal. As can be observed in Graph 1, aspects related to improving the planning capability, management and internal control of the organization are the most frequently quoted. Far behind are factors related to the participation of workers, group work, motivation and communication, as well as other factors related to staff management within the firm. Motives related to improving the firm's public image are also to be found far behind. Once again, we can note the little value attached to the motivational factor dealing with improvements in the quality of goods and services sold by the firm.

Analyzing the motivations given by people in industry and the service sector, there were no differences worth noting in either the case of the ISO 9001 standard or the EFQM self-evaluation model.

With regard to the main obstacles the people surveyed said they encountered in their work implementing ISO 9000 standards and the EFQM model, Graph 2 shows that the opinions offered differ greatly depending on the quality management model they refer to. As with the previous graph, this one presents the percentage of responses that highlight the indicated factor, or one similar, as the most significant obstacles in each system.

Thus, in the case of ISO 9001 standard, the difficulty posed by the bureaucratic demands that still accompany the implementation and use of the standards are noteworthy, despite the revision and reduction of requirements during the review of the standard in 2000.

Many of the people surveyed also highlighted the low levels of motivation and involvement that managers of the respective firms have shown towards these management standards. This factor is very difficult to detect in any of the previous studies, as the firms themselves responded to the surveys. Also mentioned, though to a lesser degree, was the low level of employee motivation and involvement in implementing and maintaining the system. Problems related to integrating standards into the day-to-day running of the firm without it being seen as extra work, as well as the obstacle of inertia and the resistance to change, also deserve to be mentioned.



Source: own data

Graph 2. Principal obstacles to implementing ISO 9001 standards and the EFQM model

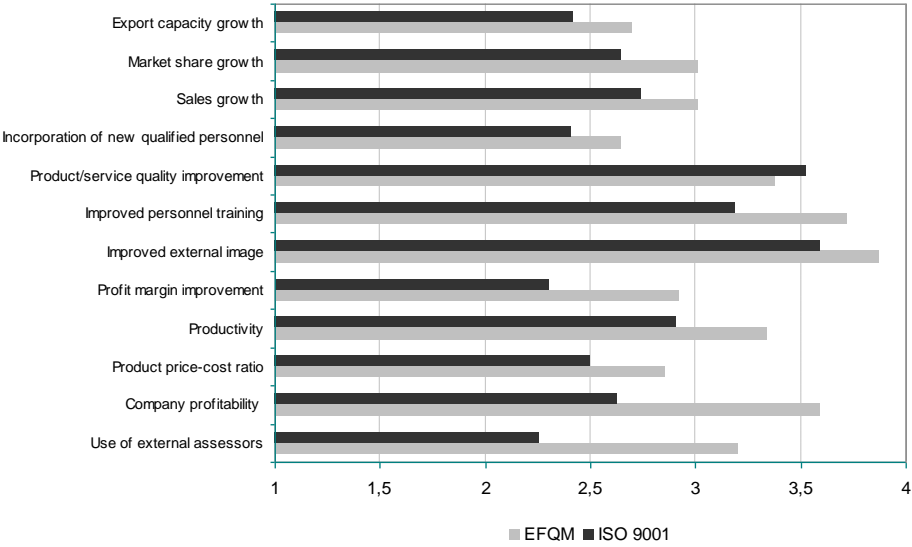
The opinions collected regarding the use of the EFQM model were much more heterogeneous, a point reflected in the significant “others” factor in Graph 2, which captures a whole a variety of opinions. In any case, we must draw attention to the frequency with which those surveyed referred to the problem of the lack of organizational resources to work with the EFQM model; specifically, they highlighted the time and training needs of the model. Another frequently mentioned obstacle related to the quality of the external consultancy and assessment service that firms receive.

Among the other factors cited less frequently but with considerable emphasis, we must highlight the difficulties that some of those surveyed experienced in the organizations with

regard to people assimilating the principles and criteria of the model; in other words, difficulties in interpreting “*the language of the model*”. As happened with ISO 9001, the lack of awareness among the management and employees of the firms was also pointed out by several assessors as something that complicated their work considerably.

Another obstacle to the spread of TQM and excellence emphasized by those surveyed – and afterwards mentioned by some of the interviewees – relates to the difficulties organizations have in establishing a new management paradigm for people that must take into account, in both the strategic plan and the operational plan, the basic principles of the philosophy in question (such as, for example, the participation of employees). Problems with labour relations and collective negotiation do not help to overcome this obstacle. Furthermore, two other aspects viewed as obstacles are related to the complexity of self-evaluations and the time required to write the report as specified by the directives of the model.

Finally, in this section we present responses relating to the evaluation of the effect of ISO 9001 and EFQM use on the firms’ results. As illustrated in Graph 3, we can see that in the opinion of those surveyed, the main result of the implementation of ISO 9001 and the EFQM model is improvement of the firm's external image, followed closely by an improvement in the goods and services being sold by firms. The improved staff training and improved productivity are also noteworthy. Likewise, it is worth noting the low values given to other factors that typically figure highly in the literature (Heras, 2006), such as growth in export capacity for firms that implement and obtain standard certification, or improved sales margins.



Source: Own data. Note: values awarded to each factor by those surveyed on a Likert scale of 1-5, from greater to lesser effect.

Graph 3. Comparative results for ISO 9001 and EFQM

The evaluation awarded by those surveyed to the cited factors according to the firms' background in industry or services also differs: what stood out was the greater weight given by those surveyed from the industrial sector to improved staff training (a positive difference of 16% above the average), the price-cost ratio of the product (14% differential), the improvement of the firm's external image and the incorporation of more qualified personnel (differentials of about 10%). On the other hand, the industrial firms place less value on results related to the greater use of external assessors (valued 22% lower), and the influence of the implementation of ISO 9001 on the profitability of the firm (10% lower).

Regarding the evaluation of the EFQM self-evaluation model, we must emphasize the weight that those surveyed awarded to the factor related to improvement of the firm's external image, as occurred in the case of the ISO 9001. In second place lies the factor of improved staff training and the improvement in the quality of goods and services being sold by firms, followed closely by the factor related to improved productivity. Regarding the evaluations awarded to the cited factors according to the firms' background in industry or services, the EFQM model, as with the ISO 9001, displays some notable differences: the evaluation by people from industrial firms differs to that of people from service firms by an average of 10%. Specifically worth noting are the differences in the higher evaluation given by people in the industrial field to the factors of increased market share (18% higher), productivity (17% higher) and the price-cost ratio of the product (16% higher).

In the comparison of evaluations awarded to the results of the ISO 9001 and EFQM, we must highlight the better average evaluation received by the European self-evaluation model. Specifically worthy of attention is the better evaluation offered by those surveyed on the impact of the EFQM on improving firms' profitability, followed closely by the more positive evaluation differential given to the EFQM model for the factor regarding improvements coming from the use of external consultancies in conjunction with the models. By contrast, the effect of improving goods and services is the only factor where the ISO 9001 receives a higher average evaluation than the EFQM.

Finally, we'll analyze briefly the impact of ISO 9001 certification in the scores of the criteria of the EFQM model. We will analyze here whether the companies certified under the ISO 9001 standard have different average scores than those that are not certified in the various criteria of the EFQM model. For this purpose we have used a nonparametric test: the Mann-Whitney test (see Table 1).

EFQM subcriterion	p-value between groups	Impact of ISO 9001 on each subcriterion	Impact of ISO 9001 on each criterion	EFQM subcriterion	p-value between groups	Impact of ISO 9001 on each subcriterion	Impact of ISO 9001 on each criterion
1a	0.349	No impact	No impact	4b (*)	0.000	Positive	Slight positive impact
1b	0.540	No impact	Positive impact	4c (*)	0.000	Positive	
1c	0.377	No impact		4d (*)	0.000	Positive	
1d	0.126	No impact		4e (*)	0.022	Negative	
1e	0.539	No impact		5a	0.227	No impact	Slight positive impact
2a (*)	0.000	Positive	5b (*)	0.002	Positive		
2b (*)	0.000	Positive	5c (*)	0.020	Positive		
2c (*)	0.000	Positive	Slight positive	5d (*)	0.021	Positive	

2d	0.226	No impact	impact	5e	0.833	No impact	No impact
2e (*)	0.040	Positive		6a (*)	0.022	Positive	
3a (*)	0.003	Positive		6b (*)	0.043	Negative	
3b	0.066	No impact	Positive impact	7a	0.237	No impact	No impact
3c	0.388	No impact		7b	0.436	No impact	
3d	0.999	No impact		8a	0.062	No impact	No impact
3e (*)	0.020	Positive		8b	0.111	No impact	
4a (*)	0.000	Positive		9a (*)	0.000	Positive	Positive impact
				9b (*)	0.008	Positive	

Source: Own data, from information obtained in survey. Note:* indicates that the Mann-Whitney test is significant ($p < 0.05$)

Table 1. EFQM scores in ISO 9001 certified and non-certified organizations

The general conclusion is that the companies certified with ISO 9000 are scored higher in the EFQM model than those that are not certified. ISO 9001 enables getting a better score on the EFQM model. The only two subcriteria where having ISO 9001 certification is an obstacle to get a better score are the 4a (Managing information and knowledge) and 6b (Performance indicators). A more detailed analysis shows a greater difference in behaviour between certified and uncertified firms is in the enablers criteria. Actually, only in the first criterion (leadership) there is not found any statistically significant difference between the two groups of companies. In all other enablers criteria, the score in the certified companies is higher than the non certified group.

In the results criteria, we have not found out significant differences between the two groups. There are only differences (favorable to the certified companies group) in the last criterion (key results). However, it is interesting to note that criterion 6 (customer results) shows that perceptual measures are better in certified companies, but the indicators are worse. How to explain this apparent contradiction? The certification helps improve the perception that customers have of the company, although the indicators suggest the opposite. The apparent paradox confirms that ISO 9001 has a reputation and instill customer confidence, but the reality is just the opposite.

9. Conclusions

Based on research carried out with the participation of more than one hundred quality management system assessors, a set of conclusions can be established.

Regarding the drivers to adopt the models, we have found out that the motivations of organizations to adopt the international ISO 9001 standard are diverse in nature, while the motivations to use the EFQM model, seem to be generally internal.

With regard to obstacles detected, it seems that the main obstacles to implementing ISO 9001 standard relate to the bureaucratic workload it generates for some organizations and also the lack of motivation and involvement that this seems to generate. The obstacles experienced by

organizations using the EFQM model are, among others, related to the lack of resources to work with the EFQM model, and the complexity of the model itself.

Finally, with regard to the results obtained regarding implementation of ISO 9001 standard, the main result improvements pointed out has been related to the improvement of the efficiency and internal control of the firm; especially in improvements in the decision-making process and as a consequence, an important reduction in the amount of improvisation. Reference is also made, though to a much lesser degree, to the satisfaction, guarantee or trust offered to the client and the commercial and competitive advantages stemming from the capacity to access new markets or client bases. It is worth noting how organizations in the industrial sector place greater importance on improving systemization, efficiency and internal control, while on the other hand, organizations in the service sector place it on the commercial advantages included in the standards. The use of the EFQM model has resulted in an improved view of the firm as a whole, improved internal efficiency and an improved decision-making process. It has also had a notable influence on leadership, motivation and internal communication.

On the other hand, the view of the assessors allows affirming that those companies that have been certified against the ISO 9001 standard score higher in the EFQM model, especially in the enabler criteria. It is interesting to note that criterion 6 (customer results) shows that perceptual measures are better in certified companies, but the indicators are worse. A certified company instills confidence in its customers, although the real performance may be in discordance with these indicators.

References

Corbett, C.J.; Montes-Sancho, M.J.; Kirsch, D.A., (2005). "The financial impact of ISO 9000 Certification in the United States: An empirical analysis", *Management Science*, Vol. 51, No. 7, pp. 1046-1059.

Heras, I.; Dick, G.P.M.; Casadesus, M. (2002). "ISO 9000 registration's impact on sales and profitability. A longitudinal analysis of performance before and after accreditation", *International Journal of Quality and Reliability Management*, Vol. 19, No.6, pp. 774-791.

Heras, I. (2006). "How quality management models influence company results", *Total Quality Management & Business Excellence*, Vol. 17, No. 6, pp. 775-794.

Heras, I. (Dir.); Arana, G.; Camisón, C.; Casadesús, M.; Martiarena, A. (2008). *Gestión de la Calidad y competitividad de las empresas de la CAPV*, Instituto Vasco de Competitividad, Publicaciones de la Universidad de Deusto, Bilbao.

Karapetrovic, S.; Casadesús, M.; Heras, I. (2008). "What happened to the ISO 9000 lustre? An eight-year study", Working Paper, Departament d'Organització, Gestió empresarial I Desenvolupament de producte, Universitat de Girona, Spain.

Sila, I.; Ebrahimpour, M. (2005). "Critical linkages among TQM factors and business results", *International Journal of Operations & Production Management*, Vol. 25, No. 11, pp. 1123-1155.

Wayhan, V.B.; Kirche, E.T.; Khumawala, B.M. (2002). "ISO 9000 certification: The financial performance implications", *Total Quality Management*, Vol. 13, No. 2, pp. 217-231.