Internalization of ISO 9000: an exploratory study

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Abstract

Purpose – The purpose of this paper is to develop the operational definition of the concept of internalization of ISO 9001, a theoretical construct which until recently had not received the attention it deserves in research on quality management.

Design/methodology/approach – Extensive exploratory fieldwork based on both in-depth interviews of general managers, middle managers and employees – 65 in total – as well as on intensive participant observation – e.g. 139 direct field-consults and 240 documents analyzed – was carried out in eight Spanish organizations that adopted the standard a long time ago.

Findings – A set of specific factors and subfactors aimed at operationalizing the ISO 9001 internalization construct are proposed. Moreover, it has been ascertained that the concept of internalization is a clearly relevant one, as in previous works found in the literature in other countries, the conclusion is drawn that organizations do not adopt ISO 9001 homogeneously.

Practical implications – The conclusions may be of interest both for academic and professional spheres of activity. For managers, the key aspects of a substantive adoption of ISO 9001 are highlighted. For academics, certain specific categorization elements are proposed for a relevant construct so that these may be used in subsequent works.

Originality/value – This is a new exploratory work for its field of research. On the one hand, most works to date have tended to assume the principle of homogeneous adoption of ISO 9001. On the other, they tend to be based solely on managers' opinions without giving voice to employees or using participative observation.

Keywords Spain, Quality management, ISO 9001, ISO 9000, Internalization, Construct operationalisation

Paper type Research paper

1. Introduction

Within the quality management (QM) paradigm, ISO 9001 is arguably the most influential contribution that there has been to date. As a result, there have been many empirical works in academic literature which have analyzed the impact of this metastandard from very different standpoints (see Sampaio *et al.*, 2009 for a recent review). As the academic understanding of ISO 9000 has increased, the focus of research has shifted from the analysis of drivers of certification to the analysis of more complex issues such as the internalization of ISO 9000 standards (Nair and Prajogo, 2009).

Despite the fact that most studies into the adoption of ISO 9001 still assume homogeneous adoption – they concentrate on the question of whether or not a company has third-party certification as the sole criterion to demonstrate that adoption has been

completed – a set of empirical studies are now beginning to emphasize the practical differences existing in the adoption of ISO 9001. We have therefore used different terms and theoretical constructs, among which mention should be made of the concept of ISO 9001 internalization (Nair and Prajogo, 2009) and other similar ones proposed by other authors (Naveh and Marcus, 2004; Briscoe *et al.*, 2005; Christmann and Taylor, 2006; Jang and Lin, 2008). This is an interesting and fertile line of study which, as Nair and Prajogo (2009) point out, can contribute much towards clarifying the differences that have been evidenced in previous studies on the impact of ISO 9001 on business performance.

Nonetheless and as experts in research methodology in the field of operations management recommend (Forza, 2002), from the review of literature carried out it is apparent that more research is needed, in order to provide a suitable basis for more in-depth study. Thus, this article aims to develop the operational definition of the concept of ISO 9001 internalization, so as to better understand and measure it.

For this purpose, the remainder of this paper is arranged as follows. Following this introduction, the paper goes on to present the theoretical framework, the review of the literature available on the subject, and the main research question. The following section describes the methodology of the research. The results of the extensive field work carried out are then summarized, and the paper concludes with a summary of contributions and implications for further research (Figure 1).

2. Theoretical framework, literature review, and research question
Nair and Prajogo (2009, p. 4546) point out that internalization of the ISO 9001 standard "entails an active use of underlying practices to modify behaviour
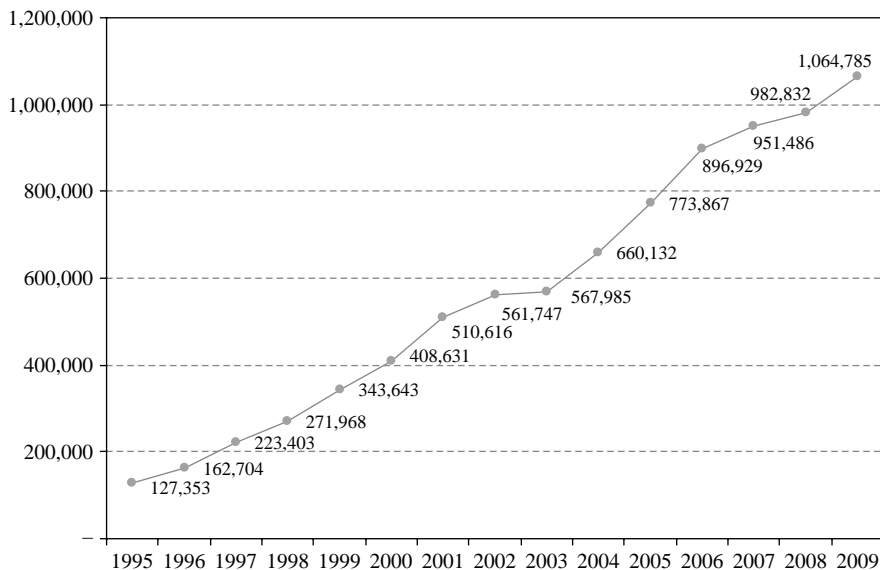
Notes: Up to the year 2000 the certificates are of ISO 9001, ISO 9002 and ISO 9003; from 2001 onwards the certificate are of ISO 9001
Source: Own preparation on the basis of the various executive reports on the global statistics for ISO 9000 published by ISO

Figure 1.
Worldwide ISO 9001
certification

and decision making". These authors base their work on Nonaka's (1994) model of knowledge creation, one of the theoretical frameworks that has been put forward in specialist literature to analyze the interrelationships between ISO 9001 and knowledge management. They sustain that management systems, such as those underlying the QM systems (QMS) of ISO 9000 standards, comprise explicit and implicit forms of embedded knowledge (Nonaka, 1994; Nonaka and Takeuchi, 1995; Nonaka *et al.*, 2000).

Nonaka (1994) argues that information becomes knowledge when it is interpreted by individuals, given a context, and anchored into the beliefs and commitments of individuals. Explicit knowledge is objective and rational knowledge that is context free; it represents the codified version of the information that can be stored and transmitted (e.g. the documentation base of the QMS). On the other hand, tacit knowledge is subjective and experience-based knowledge that cannot be captured in words and stored and transmitted, often because it is context specific; this also includes cognitive skills such as beliefs and intuition as well as technical skills (e.g. know-how). For Nonaka (1994, 1995) the key to knowledge creation lies in the conversion of tacit to explicit knowledge and for him there are four different modes of knowledge conversion when tacit and explicit knowledge interact with each other: the socialization mode (from tacit to tacit), the externalization mode (from tacit to explicit), the combination mode (from explicit to explicit) and the internalization mode, that conveys explicit knowledge into tacit knowledge.

As stressed by Nair and Prajogo (2009) internalization is particularly relevant to the examination of ISO 9000 standards as it represents the process of absorbing both tacit and explicit information into the organization and translating it into knowledge. As Lin and Wu (2005a) underlined, QMS proposed by ISO 9000 can be seen as one kind of encoded knowledge and can facilitate knowledge storage, knowledge transfer and finally, knowledge application. Furthermore, as Tan *et al.* (2003) underlined, ISO 9000 encourages information sharing as a key to overcome the communication barriers existing in organizations.

As has been mentioned in the introductory section, several empirical studies have critically examined important aspects related to the internalization of ISO 9001 in recent years (Boiral and Roy, 2007; Jang and Lin, 2008; Nair and Prajogo, 2009; Boiral, 2011). Among these works, mention should be made of that by Nair and Prajogo (2009), a paper that is taken as a reference in our work which contributes to theory and practice by advancing understanding of the internalization of ISO 9000 standards, based on widely referenced previous works (Arauz and Suzuki, 2004; Naveh and Marcus, 2004; Briscoe *et al.*, 2005). Likewise, there also exist other works that may also be of interest, although they may be based on slightly different frameworks and concepts (Christmann and Taylor, 2006; Boiral and Roy, 2007; Jang and Lin, 2008). However, as we shall try to argue below, from the review of empirical literature made it can be ascertained that qualitative empirical research is needed in order to develop the operational definition of the concept of ISO 9001 internalization, which therefore justifies our work being carried out.

In their pioneering work Naveh and Marcus (2004) attempt to measure the internalization of ISO 9001 in daily company activity with a series of more or less extensive closed questions, but ones which are not based on any suitable empirical or theoretical development of this issue. For instance, in their questionnaire Naveh and Marcus (2004) propose three very general items as a way of measuring this:

"Has it [ISO 9001] become part of your regular routine?"; "Are the documents created for the purpose of ISO 9000 registration used in daily practice?"; "Are preparations for external audits made at the last minute?". For their part, Briscoe *et al.* (2005) suggest measuring the greater or lesser extent of use of ISO 9001 in daily activity in accordance with the following three proposals: "ISO 9000 documents used in daily practice"; "ISO 9000 documents are updated regularly" and "top management uses ISO data to solve business problems". Christmann and Taylor (2006) studied the internalization of ISO 9001 in 170 Chinese companies based on the three items proposed by Naveh and Marcus (2004). Similarly, Jang and Lin (2008) analized the internalization of ISO 9001 in 441 Taiwanese companies, measuring the concept of depth of implementation in accordance with eight items that do not derive either from prior theoretical work or any empirical study, but rather, are very general categories directly related to the requirements set out by the ISO 9001 standard itself.

Lastly, Nair and Prajogo (2009) propose the five following elements as underlying practices of ISO 9001:

(1) training all employees regarding total quality concepts and ISO 9001 requirements;

(2) explaining to employees the company's quality policy, objectives and procedures;

(3) clearly documenting the quality policy and procedures for QM and continuously updating them;

(4) maintaining daily practices to comply with the documented procedures based on the ISO 9001 requirements; and

(5) conducting an internal audit regularly for continuous improvement of processes.

They propose these elements for categorization of the concept of internalization by referring to previous work in international literature that has already been analyzed – specifically, to works by Naveh and Marcus (2004) and Briscoe *et al.* (2005).

Therefore, the elements used to measure the theoretical construct of "ISO 9001 internalization" put forward by Nair and Prajogo (2009) – and that of other concepts similar to the one mentioned – were not taken from any prior exploratory empirical work either by these or other authors that were intended to analyze it. For this reason, the content validity of the construct measures, i.e. the extent to which the measure captures the different facets of a construct – is subject to criticism (Forza, 2002). As Jang and Lin (2008) state in the limitations to their study for the depth of implementation construct similar to that of Nair and Prajogo (2009) and which may be deemed to be synonyms, the elements used to measure it are both direct and perceptual and, according to these authors, new research needs to be carried out in order to try and develop the most objective possible measures of a construct as important as the one mentioned.

Internalization is analyzed in a one-dimensional and closed manner both in Nair and Prajogo (2009) and Jang and Lin (2008), in contrast to that proposed in specialist literature to reduce the subjective bias (Forza, 2002). Moreover, as there would seem to exist a decoupling in the adoption of ISO 9001 (Boiral and Roy, 2007), these types of question/approach would experience even more difficulties in detecting any variation in the internationalization of the standard.

Along these same lines, we should refer to another limitation of these two studies. This is a more general methodological limitation of conventional studies on ISO 9001 which, on numerous occasions is also included in them as such. In Nair and Prajogo (2009) and Jang and Lin (2008), as in may other studies, the people who inquire into the field work are solely interlocutors with managerial posts, i.e. people with a certain interest in the ISO 9001 adoption process. As has been pointed out by different authors in this field (Boiral and Roy, 2007; Wayhan and Balderson, 2007; Dick *et al.*, 2008), the results obtained in this way may be subject to considerable bias owing to the fact that they can tend to offer an over-positive view of the standard adoption process.

Taking into account these shortcomings detected in the empirical literature existing on the subject, this article aims to develop the operational definition of the concept of ISO 9001 internalization, by helping to transform that theoretical construct into a more clearly observable and measurable one. Specifically, an attempt is made to respond to the following key research question (Eisenhardt, 1989; Yin, 2003):

RQ. What are the specific factors or elements that best contribute to the operational definition of internalization of ISO 9001?

For the area of operations management, constructs and measurements are needed in order to make advances in investigation and practice in terms of the appropriate definition of concepts (Malhotra and Grover, 1998). As Zhu *et al.* (2008, p. 262) point out, "the identification of appropriate measurement scales for emerging concepts and theories is necessary to complete robust research and to advance in the body of knowledge in a field".

In complex processes such as the one we are dealing with – the internalization of ISO 9001 – it is highly recommended in the literature (Malhotra and Grover, 1998; Hensley, 1999) that operational definitions be achieved which include multiple elements. Thus, as stressed in methodological literature on the subject (Forza, 2002; Devellis, 2003), that process might include contacting those making up the population of interest from an inductive research perspective. Therefore, an exploratory qualitative study was set in motion (Section 3) in order "to gain practical knowledge of how the construct is viewed in actual organizations" (Forza, 2002, p. 159), aiming to identify the elements (factors and subfactors) so as to insert them in the operational definition and bring together the most objective possible measures. As stressed by Devellis (2003), these types of qualitative study can serve as a foundation for construct and concept development.

3. Empirical method and field work
An empirical exploratory study was designed with a view to responding to the question raised. It was decided to use a qualitative study methodology, owing to its suitability when analyzing the complex process involving ISO 9001 adoption, and because it facilitates greater penetration and understanding of the subject being studied (Eisenhardt, 1989; Yin, 2003).

The field work was developed over a very long period (between September 2006 and January 2010), and had three components. First, a series of semi-structured in-depth interviews were conducted with managers, middle managers and employees from the organization which revolved around a semi-structured script (see the Appendix). This nonetheless proved to be sufficiently open to the extent that it was consistent with

the inductive method for analyzing information chosen and which, as a result, did not distort the evidence obtained (Yin, 2003). Alongside this, intense participant observation work was carried out via a continued series of visits to the organizations being studied, in the course of which a very important set of evidence was gathered from both the analysis of documentation related to the QMS available in the different areas of work of the companies concerned and in non-structured consultation with personnel accessible in them that followed no specific pattern. Third, the organizations analyzed made a very broad-ranging set of documentation available for research related to the QMS (QM manuals, operative procedures, job instructions, records and internal and external auditor's reports, etc.) for their in-depth analysis (see the Appendix).

As recommended in specialist literature on the subject (Yin, 2003; Maxwell, 1996), the validity of factors was guaranteed in the course of the research via the use of diverse sources of information (direct observation, consultation, interviews, documentary databases regarding ISO 9001 from the organizations and other internal and external documentary information). Internal validity was guaranteed via the search for common patterns that help to explain the phenomena subject to study, while reliability was ensured via the use of semi-structured interviews of the same type and with the same number of questions and with an assessment protocol of cases against each factor. To prevent any distortion in the course of the inductive research, an attempt was made to avoid using discourse that was deemed too "academic" or "specialized" in interviews and consultation, in particular in those conducted with employees. To prevent "organizational silence" (Morrison and Milliken, 2000), absolute confidentiality of the research was assured in writing, and the researchers collaborating in the work were meticulously trained – young people with an informal appearance and with a proven track record. Furthermore, the researchers who collaborated on the extensive field work were trained specially to conduct the survey, taking precautions to avoid research bias. Likewise and as recommended in literature on the subject (Eisenhardt, 1989; Yin, 2003) other precautions used to ensure validation and trustworthiness and avoid research bias were triangulation and tandem interviews. Triangulation involves the use of multiple sources to enhance the rigour of the research. The interviews conducted in pairs mean an increase in accuracy of analysis, since reconstruction of the interview is thus easier and more complete, and there was less opportunity for personal bias to enter into the interview.

On the other hand and as stressed by Boiral (2007), the presence of a researcher is not neutral with regard to collected data and may encourage superficial conformity with what is perceived to be legitimate and rational. In other words, researchers can become, despite themselves, actors in the rational myths and organizational paradoxes that they wish to observe. To avoid this type of bias and in accordance with what was agreed with the management of the organizations, employees and middle managers were not informed about the specific objectives of the research, but rather, they were only given an explanation of a very general nature. The employees who took part in the interviews and consultations were also selected at random in all cases, so as to prevent any distortion.

Eight case studies were carried out in Spain, a country that, according to the most recent data (see the introduction), was the third most ISO 9001-certified country in the world in absolute terms, and in the top of the world's ranking if the data are relativized taking into account the economic dimension of each country.

Specifically, the study focused – for reasons of accessibility – on the Basque Autonomous Community, one of the regions in Spain that has experienced the greatest intensity in terms of ISO 9001 certification (Heras *et al.*, 2009).

Companies with at least seven-year experience in the implementation and certification of ISO 9001 took part in the study. The work was confined to these eight case studies because, although the number could have been increased, it became clear as the field work was being carried out that increasingly fewer ideas were being gathered, thus giving rise to theoretical saturation phenomena. For this reason, it was considered that sufficient information and data had been gathered in order to be able to achieve the objectives set out by the research work. For reasons of confidentiality agreed upon with the companies that took part in the study, all the names are renamed with numbers.

The first introductory interviews with the general management of the organizations consulted were of an average 2-h duration. This interview was repeated at the end of the research with an average duration of 1 h. Personal interviews with middle managers were of an average one and a half's duration, while those conducted with employees lasted 1 h (Table I).

In total, 20 semi-structured interviews were conducted with general managers, 17 semi-structured interviews with middle managers and 28 semi-structured interviews with employees. Visits to organizations helped to find out first hand about the reality of the situation in which work is carried out, with over a 100 documented consultations being made with personnel of an average duration of 10-15 min – both with management and with those without assigned managerial duties. Furthermore, 240 documents were analyzed in total, most of these being of an internal nature.

The grounded theory method of a clearly exploratory nature was used with a view to the comparison process between cases and inference aimed at responding to the research question, which can be suitably integrated with the general methodology of exploratory studies (Binder and Edwards, 2010). This is an inductive analytical method with major potential in complex social phenomena such as the one we are dealing with here, and has been used successfully in previous research in this field. To this end, the recordings – in digital format – were transcribed and subsequently analyzed under the supervision of at least two researchers, and with the help of two programmes: Audacity (version 1.2.6.), in order to analyze the recordings, and QSR NVivo (version 2.0), to facilitate the structuring and analysis of the qualitative information.

Data analysis was conducted by grouping and comparing several sources of information, including the transcriptions of interviews and non-structured consultations, QMS documents and the notes of the researchers that participated in the observation work. However, as tends to be customary in this type of work (Boiral, 2007), the written transcription was the main data source for the analysis. The data analysis itself was carried out via an iterative process that involved analyzing the information obtained from the field work in order to categorise the concept on which the work is focused.

Categories or codes are tags or labels for allocating units of meaning to the inferential information compiled during the study (Gibbs, 2002). As suggested in theoretical literature (Miles and Huberman, 1994; Gibbs, 2002), codes were established from the research question and from the issues emerging from the data analysis via a cyclical (interim) process using QSR NVivo software. QSR NVivo made this process of creating

	1	2	3	4	Cases 5	6	7	8
Legal status	Ltd	Plc	Plc	Cooperative	Public centre	Plc	Ltd	Ltd
Number of employees	30	25	30	80	30	40	25	35
Sector of activity	Commercialization of industrial products	Manufacturing (parts for machine-tools)	Cleaning services	Machinery construction	Educational establishment	Manufacturing (anchors and hardware)	Old people's home	Accessories for the car industry
Date of first ISO 9000 certification	1999	1998	1999	1996	1999	1995	1999	1995
Motivation behind adoption of ISO 9000[a]	Mainly internal	End customer demands	Corporate and external (image)	End customer demands	Corporate and external (image)	End customer demands	Internal, institutional customer demands and image	Internal and external (end customer demands)
QMS coordination	Quality manager	Production manager	Personnel manager	Quality coordinator	Deputy manager	Quality manager	Quality manager/ externalized	Production manager/ externalized
External consultancy firm	Initial presence	Major presence and dependency	Initial presence	Limited presence (only initial)	Limited presence (only initial)	Limited presence	Major presence and dependency	Major presence and dependency

Note: [a]Declared by the company management at the start of the field work
Source: Put together by the authors based on case studies

Table I.
Main features of the organizations analyzed

new categories according to empirical data easier. As recommended in literature, the reliability, trustworthiness and rigour of the categorization process was assured with the involvement of two coders that participated actively in the field work and with the definition of customary verification strategies to improve intercoder reliability proposed in theoretical literature (Valles, 1997; Gibbs, 2002).

At the end of this iterative segmentation, data analysis, and verification process, more than 4,200 passages of long interviews and short consultations were encoded. All these codes were structured by taking into account the key issue of the study and the objectives set out by the research, reflected in the analysis according to the frequency with which the main factors and subfactors that categorise the concept of ISO 9001 internalization appear (Sections 4.2 and 4.3).

4. Results

4.1 Introduction
Table II summarizes some of the main features of the eight cases analyzed during the course of the empirical study that has been carried out.

4.2 Brief description of the inferred factors
The cases analyzed clearly illustrate the fact that very heterogeneous situations exist in the adoption of ISO 9001. In the cases of the companies 1, 3, 4 and 6, adoption of ISO 9001 may be considered to be deeply internalized (Naveh and Marcus, 2004; Nair and Prajogo, 2009), given that its adoption affects the day-to-day running of organizations. Although they belong to very disparate sectors of activity that also feature very distinct organizational structures, resources and needs, these organizations share the profile of companies that have experienced a high level of ISO 9001 internalization.

Conversely, in cases 2, 5, 7 and 8, adoption of the standard has been of a formal nature, with far more limited influence and even with a superficial (Naveh and Marcus, 2004) or ceremonial (Vasconcelos and Vasconcelos, 2003) touch to them. Major organizational hypocrisy is also in evidence in cases 5 and 8 (Brunsson, 1989), in which at least some inconsistencies are detected between management discourse and employee actions.

For reasons of space, a detailed analysis of the evidence obtained throughout the field work cannot be included in this section. As has already been stated, the qualitative evidence has been categorised and grouped in order to try and interpret it more easily. An attempt is made using this method to suitably understand the phenomena subject to study based on a wide variety of sources, such as interviews, primary documentation and direct observation, among others – in accordance with an iterative process involving analytical induction, until such point that theoretical saturation has been obtained, given that the analysis of new data fails to contribute any modification to the categories and concepts subject to analysis (Glaser and Strauss, 1967).

Following the iterative segmentation process, categorization and verification of the information obtained, the extracts from interviews and documented consultations were encoded, and then structured and arranged in order of importance. By interpreting the rest of the data and evidence available from the field work, a main set of transversal factors was then inferred from that analysis that best categorise the theoretical construct of the internalization of ISO 9001 (Nair and Prajogo, 2009) – to the extent that, in accordance with the information gathered from interviews and direct observation, these factors are the ones that most significantly modify the behaviour and decision making involved

Cases

	1	2	3	4	5	6	7	8
1. Reorganization geared towards management according to processes								
Improvement and reorganization prior to defining QMS	–	**	****	****	**	*****	–	–
Fold-out map of processes	*	**	*******	****	*	*******	–	*
Reassignment of responsibilities	*	*	****	****	*	*******	*	*
2. Involvement of middle management in QMS								
Specific middle manager coordinates QMS	**	*	***	****	*	*****	**	**
Drive towards transversal maintenance of QMS	*	–	****	***	*	*****	*	**
Presence of external consultancy firm	*	*****	*	****	*	*	*****	*****
Periodic meetings with employees	–	–	***	****	–	*****	–	–
3. Features of QMS documentation								
"User-friendly" documentation	*	–	****	*****	*	*****	–	–
Periodic modification of QMS documentation	–	–	***	***	–	*****	–	–
Employee participation modifying documents	–	–	***	*****	–	***	–	–
Accessibility of documentation in the workplace	**	*	*****	*****	*	*****	*	**
4. Qualifications and involvement of employees								
Use of terminology related to QMS	***	–	**	****	*	*****	–	–
Presence of improvement groups for QMS	***	*	*	******	–	*****	–	–
QMS documentation consultation by employees	*	–	***	***	*	***	–	–
Training in QMS for employees in their jobs	**	–	*	***	*	***	–	–
5. Coetaneous implementation of other improvements with ISO 9000								
Technological improvment (e.g. new computer system)	***	–	**	***	*	*	–	**
Other management improvements (e.g QM tools)	**	–	***	******	*	***	–	*
6. Active participation of employees in audits								
In internal audits (at least every six months)	**	–	**	*****	*	****	–	–
In external audits	*	–	*	***	*	****	–	–
Extra work for employees to prepare external audits	*	***	***	–	***	*	***	***
7. Extension of ISO 9000 model implemented								
Extension of the scope of ISO 9000	**	*	**	*****	–	**	–	–
Move towards other QM models (e.g. EFQM)	–	–	*****	**	–	*****	–	–

Notes: Level of each factor evidenced in the case study: non-existent; * – very limited; ** limited; *** moderate; ****high; *****very high
Source: Put together by the authors based on the field work carried out

Table II.
Main inferred evidence
for the categorization of
ISO 9001 internalization

in company activity. Table II summarizes the seven main factors detected (without establishing any priority among them), i.e. those that occur most frequently, which we will comment on below in summarized form, given space restrictions.

Factor 1: reorganization geared towards management according to processes. Despite the fact that the reorganization of activities and the process model approach is central to ISO 9001, as highlighted in institutional and professional literature regarding ISO 9001 (Hoyle, 2009), above all since the reform of the ISO 9001:2000 version, this key aspect related to the adoption of ISO 9001 has not been given much importance in academic literature. This turned out to be one of the most important inferred factors in the field of work carried out. In the case of companies where adoption of ISO 9001 entailed major changes, a clearly productive and/or organizational reorganization took place. As the quality manager at 6 points out, the implementation process of ISO 9001 entailed a key reorganization for those companies:

> We changed the company from top to bottom. [. . .]. We reorganized the entire activity according to processes, in so doing creating a far more efficient structure. ISO 9000 meant a before and after for the company [. . .]. However, it's true to say that implementing the ISO [9001] was a very tough job (quality manager at 6).

In the aforementioned company, as was also the case with 4 and 3, before formalizing the way in which the processes were to be carried out in the QMS documents (e.g. in procedures and job instructions), an improvement and reorganization programme for company activity was set in motion. The different people interviewed tended to relate this reorganization and prior improvement to adoption of ISO 9001:

> The toughest phase of the ISO [9000] is the first – that involving having to analyze every activity you have in order to improve it and, once compared with the improvement group, then including it in the draft for the job instruction (employee 3 at 4).

In cases 4 and 6, this reorganization was specifically geared towards management according to processes. In all these cases, a process map was designed showing a clear reorganization of the companies according to processes, albeit with differing degrees of complexity. In these cases, there was a clear reassignment of responsibilities as a result of the implementation of ISO 9001.

In contrast to these cases, adoption of the standard in 1 and 7 did not entail any reorganization or significant change at all in the way of doing things, although some processes were improved to a greater or lesser extent:

> Even though some processes were corrected, we didn't change that much in the warehouse – the day-to-day rate of orders didn't allow us to (production manager at 1).

> With ISO we have gained in terms of systematics, in order, in a reduction in improvisation (managing director at 7).

Conversely, in other companies such as cases 2, 5 and 8, it became clear from both interviews and direct observation that it entailed neither any reorganization nor any substantive change. In the very words of one the middle managers interviewed:

> We have not dealt with reorganization or changes of any importance. For us, we have enough with getting our orders out on time. That's the challenge facing us – responding to our orders [. . .]. ISO 9000 means extra work, which in turn means we also have to answer to external audits (person in charge of the area of quality at 8).

In these cases, neither was any improvement or reorganization work carried out on processes before defining and formalizing them in the QMS documents. Only what was being carried out was documented – if anything was carried out. Otherwise, they were defined broadly, taking another QMS provided by the external consultancy service as a reference.

Factor 2: involvement of middle managers in charge of the QMS. In academic (Dale, 2003) and professional (Hoyle, 2009) literature on QM and ISO 9001, the importance of the involvement of general managers is also stressed in order to ensure its successful adoption. In contrast, the operative involvement of quality managers and other middle managers has not received so much intervention. In the empirical study carried out, it was ascertained that, broadly speaking, the importance of the involvement of general management in companies was not a key factor in terms of the greater or lesser internalization of the standard in organizations. In contrast, in the intervention carried out, it was ascertained that both the qualifications and involvement of these managers proves essential for proper internalization of ISO 9001. Thus, the personnel interviewed and consulted drew attention to the involvement of quality managers in the successful adoption of ISO 9001:

> X [omitted, name of the Quality Manager at 6] brought us ISO and the change that this entailed – a change for the better. [. . .] No comparison. We used to be disastrous at planning (employee 1 at 4).

> The people from the Quality Control Department have preached by example with this ISO. They have become very involved. [. . .] And in the end, you also get involved, of course (employee 2 at 6).

Likewise, the existence of two clearly distinguished profiles of middle manager who coordinates the QMS was also ascertained: on the one hand, professionals who focus this duty either centrally or specifically on their professional work (e.g. in 1 and 7), possibly influencing more or less independent or transversal development of it, thus enabling there to be greater involvement on the part of the rest of the personnel in this latter case; on the other, managers who assume this post as a complement to another previous post (e.g. in 1-3), and who also view it as a more or less independent or transversal issue. From among this last-mentioned profile of middle managers (e.g. in 2), ISO 9001 was for instance viewed as an administrative activity that was considered to be the middle managers' responsibility. As the middle manager at 2 pointed out to us very clearly: "ISO 9000 is my job".

Evidently, this question is also closely related to the standpoint with which the function of QM is integrated into the company. In the cases analyzed, in the companies that resort to a major extent to external consultancy for the implementation and monitoring of the QMA (Table I), there is less participation on the part of employees when making the system documents "their own":

> [The consultant] devoted his time above all to checking whether the chapters in the [quality] manual and the procedures he had brought to us had been properly adapted [by the production manager]. [. . .] Even though some processes were corrected, we didn't change that much in the warehouse – the day-to-day rate of orders didn't allow us to (production manager at 2).

> [The consultant] never asked us anything about our duties. He just devoted himself to doing paperwork (employee 2 at 8).

In companies 4 and 6, attention should be drawn to the involvement of middle managers in the day-to-day running of the company due to different tasks that are related to the implementation of ISO 9001. Likewise, periodic meetings of improvement groups are held at the plant in which, on many occasions, modifications to the QMS's documentation are proposed which subsequently materialize.

Factor 3: features of the company's quality system documentation. The importance of the features of the QMS documentation was ascertained in the study. First, the importance of its user-friendliness and extent of adaptation to the specific needs of the companies was proven; second, the major importance of the accessibility and availability of this documentation in the employees' workplace; and third, the conclusion was drawn that participation by employees in preparing/modifying the QMS documentation is a very important factor when categorizing the internalization of ISO 9001 in the cases under consideration. Thus, it was also ascertained that in companies in which QMS has been highly internalized, personnel without managerial duties in the company either take part or have taken part in drafting and/or modifying the system's documentation. For instance, in the course of direct observation, it was clearly noted in 3, 4 and 6 that operative procedures regarding QM, job instructions, the parts and forms are made available to all the employees from the company. Likewise, there were several cases where an improvement in the procedures carried out was requested by employees themselves. In cases 3, 4 and 6, unplanned consultations were witnessed on various occasions regarding operative procedures concerning quality and job instructions by company employees, owing to some procedural doubt. These consultations were, in turn, a source of doubt and analysis leading to subsequent modification and improvement of such documentation.

From the direct observation carried out in companies 3, 4 and 6, it could be ascertained that most of their workers had the documentation related to the QMS made available to them in their respective workplaces. The procedures, job instructions and formats are characterized by their user-friendly design. The companies have specific panels where all these documents are on display, and these are continually used by employees (to contrast measures, review tasks, take preventive action, etc.), together with other informative elements geared to improvement such as indicator panels, control graphs and cause-effect diagrams. This would seem to be a very highly regarded issue, for instance, by a recently hired employee at 4:

> Things work better like this. Everything's clear, more controlled with indicators, procedures to prevent mistakes. Everything was a disaster in the company where I worked before – you'd spend half an hour looking for the drill or arguing about the machining of a part (employee 2 at 4).

It was also noted in the specific analysis that this documentation was very well adapted to company needs in cases 4 and 6; for instance, some very simple photographic instructions are made available to users to help clarify points, and they are well accustomed to using them. On many occasions, for example, the employees refer to them according to the document traceability code.

Conversely, in cases 2, 5, 7 and 8 they possessed documentation related to very conventional QMS, with very general procedures and job instructions. From an analysis of the internal documentation, it was ascertained that in the case of these organizations, this involved very general documents which in many cases had not been adapted to the internal contingencies and realities of the organization. From the observational

participation carried out, the conclusion was also drawn that the work behaviour of middle managers and employees often deviated from that prescribed in the documents.

Along the same lines, once the documentary basis for the system had been analyzed in case 7, it was noted that the procedures, job instructions and formats are characterized by their classical design, which many consultants and auditors associate with the "bureaucratic" version of the standard in force prior to ISO 9001:2000 (Hoyle, 2009). In these cases, the above is always little adapted to the reality of the situation facing the company and, to give a more graphic example, in the case of 8, there is a workshop without any type of special protection for the plant. Furthermore, from the *in situ* consultations made in these companies, it was ascertained that most of the workers were not familiarized with this documentation.

Factor 4: qualifications and involvement of employees. Although not very widespread, the contribution made by non-managerial employees to the implementation of ISO 9001 has been verified in some prior academic studies (Sanolabor and Dolinsek, 2006). In the exploratory studies carried out it was noted that this was another of the prominent factors when distinguishing between cases of adoption that significantly modified behaviour which, as was evidenced, they failed to achieve. In cases 1, 4 and 6, personnel who have no managerial duties at the company have managed to internalize the functioning that the QMS entails, except for a few workers with limited experience in the company. Perhaps, one of the best indicators we found in this sense was the customary use of the terminology and rhetoric typical of the QMS and ISO 9001:

> The job instructions give you a kind of security that we didn't have before. It's much better defined now [. . .], there's no more improvisation (employee 1 at company 1).

> It sometimes tends to be difficult to reach an agreement on a specific corrective action (employee 4 at company 4).

> Document traceability is also important. Nothing gets put to one side. The ISO [9000] is logical and gives you a sense of security about what you are doing (employee 2 at company 6).

Clear involvement of non-managerial personnel is evidenced in the maintenance and improvement of the QMS as being a key factor. To this end, some rules of action and different scopes were defined and given a name in cases 1, 4 and 6 –in each case, improvement groups for the design and maintenance of the QMS. These groups played a very prominent role in case 4.

In contrast, in other organizations such as 2, 5, 7 and 8, it can be clearly seen that maintenance and improvement of the QMS is a specific task carried out by the middle manager. In the literal, very explicit words of one of the middle managers interviewed:

> ISO is my job; [. . .] it means extra work. When we have an audit [external], people get scared because of the pressure, but otherwise [the operators] see it as a little job I've given them (production manager at 2).

In cases 3 and 4, unplanned consultations regarding operative QM procedures and job instructions on the part of employees from the company resulting from some doubt concerning such procedures were witnessed on different occasions. Likewise, employees turned on several occasions to the documentation pertaining to the system in order to deal with small conflicts or internal disputes.

In cases 4 and 6, company employees seem very accustomed to using procedures and job instructions; for instance, on occasions they refer to them by their document

traceability code and there were several examples where an improvement in the procedures carried out by the employees themselves was evidenced.

Specific training of employees in ISO 9001 also constituted a factor to be greatly taken into account. Practically, all employees from 1, 4 and 6 had received practical, relevant training in their job regarding ISO 9001 and other related QM tools, either from the director or the person in charge of quality control, or from the external consultancy firm.

In contrast, employees from 2, 7 and 8 had not received any formal training or had received very general training on seminars or general courses. For instance, from the interviews, consultation and visits made in case 5, it could be ascertained that the great majority of personnel from the organization had not received any substantive training in ISO 9001. Indeed, a large number of 5 personnel (both teaching and admin staff) who were consulted about the objectives, content and effects of 9000 in their daily work were unable to offer any response, owing to their absolute lack of knowledge about the standard:

> They mention it from time to time, but the truth of the matter is that I couldn't explain what it [ISO 9001] consists of, what its objectives are [...] It's a matter involving improvement [...] it affects me to the extent that I receive certain specific forms regarding vocational training (admin employee 1 at 5).

> It's something emanating from the Dean of the School management. [...] I imagine it's done for reasons of image, but I don't really have much idea about it. [...] But watch out! Nowadays these things can prove to be very important for the external recognition of the school (teacher 2 at 5).

Factor 5: contemporary implementation of other both technological and managerial improvements. Another major element in distinguishing types of behaviour with regard to adoption of ISO 9001 is that which refers to the implementation of other improvement programmes of a very diverse nature, such as computer systems, supplier assessment system, new tools for quality control (e.g. cause-effect graphs, control graphs) and 5S methodology. In 3, for instance, by way of a complement to the implementation of ISO 9001, an implementation programme of a workplace organization methodology (5S) was also set in motion in the general warehouse, which had the support of an independent body for the purpose of fostering this type of initiative. The programme proved very successful – at least that is how it is defined by the people interviewed who, in many cases, refer in general terms to "improvements in quality" (employee 7 at 3), when referring to the adoption of such initiatives.

For its part, 6 set in motion a supplier assessment system involving inspecting the products purchased and assessing the capacity and their sensitivity towards the appearance of faults. Very similar concomitant implementations were also apparent in case 4.

In case 1, a computer package aimed at improving identification of the different items in the warehouse was also implemented concomitant to adoption of ISO 9001. This aspect was also highly regarded and commented on by those people interviewed and consulted in the course of visits. Indeed, many of them understood that such technological improvements were part of the ISO 9001 adoption process:

> With the implementation of the computer package (referring to an ISO 9000 integrated warehouse management programme), we have everything much better organized (employee 2 at 1).

In contrast, ISO 9001 did not entail the adoption of other tools or systems aimed at improvement in the other organizations analyzed.

Factor 6: employee participation in internal and external audits. The widespread and active participation of employees without managerial competences in internal and external audits was also a prominent factor. As pointed out by Sanolabor and Dolinsek (2006), internal audits can be used by companies for the improvement of processes; they can be planned at least once a year, and more often in weak areas or areas where problems still exist. In our study, it was ascertained that these audits constituted a key factor in the internalization of the standard.

For instance, in cases 6 and 4, it was ascertained from direct observation that in-depth internal audits are carried out every six months – audits in which most employees take part. This internal audit was viewed in the company as an important internal examination in the course of which improvements and the contribution made by each group towards improvement of the system as a whole "were in jeopardy" (employee 3 at 4).

In cases 2, 7 and 8, the situation was diametrically opposed to the above, as the employees pointed out to us that they did not take part actively either in internal audits, or even in external ones:

> When it's time for the audit, I'm asked about some processes. I tell them how it's going and then get the papers ready (employee 1 at 8).

> The first time we had an ISO audit, I was given time off. I was told it was better that way, that there were problems dealing with the audit. [. . .] The truth of the matter is that audits are pretty stressful. But well, once they're over, everything calms down again (employee 2 at 8).

Indeed, it was ascertained that once the confidence of different members of the organizations consulted has been gained, external audits are prepared while failing to adhere to the basic rules of compliance with a QMS as far as filling in and controlling the documentation pertaining to the system is concerned – in the case of organizations that have adopted ISO 9001 on a very superficial or ceremonial level. In such cases, on dates when an external audit was approaching, it was very common for a very significant number of employees to have to take on extra work under the supervision of the person in charge of the QMS and the external consultancy service in order to prepare them.

For example, the existence of a huge number of formats was also ascertained that were not being used on a day-to-day basis, although these did not appear in the records from other financial years. Both the area manager and different employees maintained that these documents were filled in on an *ad hoc* basis for external audits. In the words of one of the employees:

> I don't fill out forms any more [on a day-to-day basis]. When there is an audit, I'm brought a fistful of different biros [. . .] and I spend an hour signing autographs (employee 2 at 2).

In short, in those organizations personnel did not receive specific training in ISO 9001 audits, nor did the majority of them take part in internal audits. This is at least what employees and the production manager maintained emphatically without any decoupling.

Factor 7: extension of the ISO 9001 model implemented. From the study carried out, the significant effect of ISO 9001 extension was also inferred – this extension being deemed to take very diverse forms, e.g. as an extension in terms of the scope

of the QMS of ISO 9001. Indeed and is well-known, the standard states that it can be extended either to the entire organization or just to certain activities (Dale, 2003). In this latter case, companies may opt for subsequent extension of the scope of the standard. This is the case with company 4, where the QMS had been extended, making the definition of the scope of ISO 9001 more demanding two years after being certified via the standard for the first time. According to the general manager of 4, this extension occurred due to "logic in terms of continuous improvement, to set out new challenges for ourselves." In contrast, in cases 3 and 6 there was a move towards more complex QM models (Heras *et al.*, 2010), as they chose to adopt the EFQM model of excellence.

Contrary to the above, it is interesting to refer in more detail to the paradigmatic case of 5. In this organization, the scope of the system and, consequently, of certification, is confined to the area of management, administration and services, which contributes towards "better planning and management of the different processes that are carried out within the school" (director 1 at 5).

Nonetheless, in such case, as in most Spanish university centres (Heras *et al.*, 2010), the scope of the system does not affect one of the fundamental processes within these organizations: the teaching-learning process. In 5, since the time of its initial certification, a decision has not been made to extend the scope of the QMS to all activities within the school (including the teaching process), despite the fact that such an extension was put forward by the school's decision-making governing body. This was due – as was justified by the management of the school – to the difficulty that applying the standard to the field of teaching would entail, although it is interesting to point out that another university centre belonging to the same institution has extended the system.

4.3 Summary of factors and subfactors
To conclude this section, Table II summarizes the main factors and subfactors that categorise the concept being analyzed of ISO 9001 internalization. These factors and subfactors were concluded in accordance with an iterative process in which the interview and consultation passages selected, as well as the main notes by the researchers, were encoded using QSR NVivo software.

In short, the information obtained from the extensive field work was structured within a hierarchy of main concepts and issues (factors) that best categorise the concept of ISO 9001 internalization, which in turn depended on a series of issues with a greater degree of precision (subfactors). In total, 17 factors and 93 subfactors associated with them were identified, which were treated according to the extent to which they appear in interviews, consultation and researchers' notes, and their capacity to differentiate better between the greater or lesser internalization of ISO 9001 among the different cases of organizations analyzed. Two coders carried out the work for this categorization and derivation process (two researchers who participated in the field work), and intercoder reliability was analyzed by comparing the judgments of the two coders regarding the process. Very positive results were obtained (e.g. level of agreement between the two coders higher than 80 per cent), which went way beyond the standards established in literature on the subject (Valles, 1997; Gibbs, 2002).

Owing to space restrictions on the paper, we are unable to include detailed information about the complex derivation process involving categorization, and so we only include a summary of results in Table II. As can be seen, this table summarizes the seven main factors detected and the 22 main subfactors or more specific categorization elements

required for the internalization of ISO 9001. It is noted that each factor was characterized by two to four subfactors which were evidenced in accordance with the derivation process. The greater or lesser presence of each of the factors and subfactors that categorise ISO 9001 internalization in the organizations analyzed are shown in Table II on a simple graphic scale of 1-5 that varies from one extreme of non-existence of the factor in the organization to the highest level on the scale. This rating was agreed via a derivation process in which four researchers who carried out the field work took part.

5. Discussion and conclusions

From the exploratory study carried out, a series of evidence is gathered whose aim is to improve the operational conceptualization of the theoretical construct of ISO 9001 internalization. Specifically, seven factors and 22 specific subfactors in total were inferred to help develop this concept.

It has been ascertained that most of the inferred factors and subfactors are not taken into account, at least directly, by Nair and Prajogo (2009) in their categorization based on previous works by Arauz and Suzuki (2004), Naveh and Marcus (2004) and Briscoe et al. (2005).

Only some of the inferred elements (specifically, factors 3 and 6) are related to two of the five elements used by Nair and Prajogo (2009) in their categorization of the construct (specifically, with their element numbers 3 and 5), although greater precision can be noted in the inferred elements – necessary, as has already been stated, for greater objectivization in quantitative empirical studies. Indeed, the lack of precision reduces the effectiveness of the categorization elements to ensure suitable validity when designing and carrying out conventional studies on ISO 9001 – above all, if one takes into account the possible existence of inconsistencies between talk and action, along the lines highlighted by the neo-institutional perspective (Brunsson, 1989).

In short, these inferred factors and subfactors that develop the operational concept of the theoretical construct analyzed can be transformed into specific analytical elements in order for researchers in the field to test them for content validity in the future (Forza, 2002). Of course, once the operational definition has been developed, it should be afterwards tested for content validity (Devellis, 2003). This can be done, for instance, by including them in scales that could be contained in questionnaires for their subsequent empirical validation in confirmatory survey research.

On the other hand, from the evidence obtained in the case studies carried out, it could be ascertained that if the ISO 9001 adoption process is analyzed from a standpoint that takes into consideration the opinion of some of the main internal stakeholders of the organizations (management, middle managers and employees), the purpose of the study is shaped into a complex process which makes it difficult to rely on homogeneous guidelines for adoption. It is clear that the recipient organizations play an active role in idea adoption.

In our exploratory analysis, it was ascertained that adaptation to similar institutional pressure of ISO 9001 certified organizations is very heterogeneous. ISO 9001 tends to be adopted in organizations in such a way as to be adapted to the various needs and internal contingencies of the organizations. There is evidence to suggest that even when organizations adopt these types of standard in view of isomorphic pressure (Guler et al., 2002), these are not passive, and they adopt them in a very different way owing to the fact that companies interpret them according to their own internal

regulations, their resources and needs. This results in heterogeneous organizational behaviour as far as adoption is concerned. It occurs due to the fact that processes for adopting new management models are social processes (Collins, 1998), with active adaptation and reformulation processes of the new ideas as these are received in different and institutional environments.

For practitioners, the study also has certain managerial implications. Managers could use the factors and subfactors we have evidenced in the exploratory work to benchmark their internalization or the depth of adoption of ISO 9001 in their organizations. To this end, we provide a list of the most important subfactors we have evidenced in the work by way of a brief guide to achieving greater ISO 9001 internalization in companies:

- fold-out map of processes;
- reassignment of responsibilities;
- periodic meetings with employees;
- "user-friendly" documentation;
- employee participation modifying documents;
- accessibility of documentation in the workplace;
- presence of improvement groups for QMS;
- coetaneous implementation of other management improvements (e.g. QM tools); and
- move towards other QM models (e.g. EFQM).

Likewise, these results should encourage managers considering adoption of ISO 9001 to think of it as a heterogeneous and complex process, where certification is not an end in itself and where internalization of the standard is what makes the difference in obtaining better operational and business performance. Furthermore, this work could help industrial practitioners to better categorise and understand the strengths and weaknesses of the complex adoption of ISO 9001. The reality of the heterogeneous adoption of ISO 9001 described in the paper might also be of interest of public decision makers who still maintain intensive support programmes for adopting the metastandard, especially in transition economies.

Looking to the future, we should refer to the need to make advances in knowledge related to the real incidence of superficial, symbolic or ceremonial cases of adoption. Indeed, as Briscoe *et al.* (2005) pointed out, if the practices associated with ISO 9001 are not internalized despite implementation and formal certification, it will prove difficult for them to have an effect on company performance. This line of study is a very thought-provoking one, owing both to its profound academic and professional implications for the different interest groups involved and the management of those companies that have been certified, certification and accreditation bodies and, in particular, for public decision makers themselves.

As should be clear, the conclusions drawn from this paper are preliminary ones, due to the obviously exploratory and explanatory nature of their objectives and the use of a qualitative study methodology. The limitations existing in making the generalizations provided by these conclusions are inherently related to the methodology selected, the aim of which is to try and make complex phenomena such as that we are dealing with more

comprehensible (Maxwell, 1996). For instance, the analyzed organizations are rather similar in terms of their size, and that could be a contingential factor of the utmost importance to be taken into account, despite the fact that the limited academic literature that has analyzed the effect of the contextual factor of the size of organizations in terms of the extent to which ISO 9001 is adopted (Huarng, 1998; Gotzamani and Tsiotras, 2001; Sila, 2007; Lee *et al.*, 2009) does not ascertain whether this is a crucial variable.

On the other hand, the fact that the cases selected are concentrated within a specific geographic area also gives rise to a further limitation. Although it can be argued that the influence of institutionalized standards does not differ much from one region to another, since the organizational field in which the ISO 9001 standards have been disseminated is a global one and the influence of cultural or institutional political factors is limited, specific conditions within other countries and regions may alter the findings (Guler *et al.*, 2002; Beck and Walgenbach, 2005). The validation of this scale is an ongoing process, and validity is established only over a series of studies that further refine and test the measurement items across manufacturers and countries (Devellis, 2003).

Despite the limitations referred to above, or perhaps encouraged by them, researchers who are interested in this line of work may perhaps make advances in understanding the ISO 9001 internalization process by basing their work on some of the contributions obtained from this exploratory work.

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Appendix. Synthetic script of the semi-structured interviews
Section 1: context of the sector and the company

- main agents/actors and their power of negotiation;
- main changes in the past (forces, objectives, etc.); and
- future trends (reasons, objectives, etc.).

Section 2: motivation and adoption process

- external and internal motivation behind adoption;
- training received;
- external and internal help with adoption (consultants, auditors, coordinators, etc.);

- main obstacles to and benefits of adoption; and
- influence of adoption on operative performance (costs, productivity, etc.).

Section 2: daily work and ISO 9001
- prevention of problems;
- improvement of processes;
- use of system documents;
- changes in the way of doing things and behaviour; and
- preparation of audits.

Section 3: other personal experience with ISO 9001
- Non-structured narration of the experience.

Summary of aspects consulted and the type of document analyzed in situ

Most common aspects consulted in situ
- influence of the system on the task carried out by the interlocutor on the day of consultation;
- changes in the way of doing things;
- doubts about the job instructions associated with a specific task;
- doubts about the completing of forms and records; and
- examples of actions aimed at preparing internal and external audits.

Types of document analyzed
- scoreboards;
- forms on display at the place of work; and
- system documents on display at the place of work.

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