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ISO 9001, ISO 14001 and other global metastandards

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ISO 9001, ISO 14001 and other global metastandards¹

Abstract

This work represents an attempt to synthesize and map out the class of standards known as management system standards (MSSs), also referred to as metastandards (Uzumeri, 1997), and which have been so successful in recent years (e.g., ISO 9001, ISO 14001). This paper has the double objective of carrying out an eclectic review of the substantial advances made in the field of this subject of study which may also be used as a type of route or guide in order to reduce the confusion which still reigns in this domain.

Key words: International standards, standardization, ISO 9001, ISO 14001, Quality Management Systems, Environmental Management Systems.

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1. Introduction

In the last few years we have witnessed an acceleration of the process of standardization with regard to business management, in an economic context characterized by a marked process of globalization and economic integration of markets. Standardization, or harmonization, could be defined in a general way as an activity aiming to apply an ordered system to repetitive functions that take place in the context of industry, technology, science and the economy.

Standardization has been crucial for the development of the industrial society (Blind, 2004). At its origins, in the early 20th century, standardization was introduced in order to curb an uneconomical divergence of components, parts and supplies and to foster their interchangeability so as to facilitate mass production and the repair and maintenance of products and services. Standardization, however, has gone further than this and has come to be applied to the very management processes and systems by which products and services are produced (Heras, 2006).

Standards-based management is a research field that has received a lot of attention in recent years, due to the great success enjoyed by management standards all over the world. In our opinion, therefore, it is important to review the different approaches to the study of standardization in a management context, so as to attempt to synthesize and thus improve academic knowledge with regard to these interesting management tools, which is in the interest of the various different stakeholders involved (e.g., managers, consultants, policy makers and researchers).

This work represents an attempt to synthesize and map out the class of standards known as management system standards (MSSs), also referred to as metastandards (Uzumeri, 1997), and which have been so successful in recent years (e.g., ISO 9001, ISO 14001). This paper has the double objective of carrying out an eclectic review of the substantial advances made in the field of this subject of study which may also be used as a type of route or guide in order to reduce the confusion which still reigns in this domain.

The remainder of the paper is organized as follows. Following this introduction, the paper presents a very short overview of standardization. In the third section an analysis is made of the concept of MSSs or metastandards, followed by a fourth section in which an attempt is made to analyse the different aspects of metastandards. The fifth section contains an attempt to synthesize the main theoretical perspectives or approaches applied to the analysis of metastandards in academic studies, and the sixth constitutes an outline map of the main lines of research undertaken to date and the line which in the authors' opinion should be undertaken in the future. The paper concludes with a summary of the main conclusions.

2. The phenomenon of standardization

Standardization constitutes a mechanism of coordination and an instrument of regulation comparable to other instruments such as public regulations, markets, and hierarchies or formal organizations (Antonelli, 1998; Brunsson and Jacobsson, 2000). In a global economy, without standardization and its results – technical standards or specifications –, interchanges would become exceedingly difficult. Standardization can, then, stimulate international trade by eliminating obstacles arising from different national practices. Thus, standards are important for the promotion of economic efficiency as they provide a basis for reducing information-related transaction costs (Nadvi and Wältring, 2004).

Nevertheless, since such standards are not truly global, they constitute in many cases non-tariff barriers for international trade relations. As various authors have underlined, while tariff barriers are becoming lower and lower, non-tariff barriers (i.e., technical standards and regulations affecting the requirements for products, services and, indirectly, production processes) are acquiring increasing importance (Blanco and Bustos, 2004). In short, the importance of international trade to the global economy has grown dramatically in the last two decades, but while tariffs and quantitative restrictions on trade have been lowered or eliminated, barriers of a

different nature have had an increasingly restrictive effect on trade, especially in the case of a broad range of technical standards (Giovannucci and Ponte, 2005; Henson and Loader, 2001).

In the academic field of standardization studies –a very under-developed field of the social sciences–, there is currently no *standardized* definition of the terms “standard” or “norm”. Brunsson and Jacobsson (2000), in their monograph “*A World of Standards*”, propose the following definition: “*standards [...] could be described as pieces of general advice offered to [a] large number of potential adopters*”. As can be seen, this is a very general or broad definition of the term, and represents a deliberate choice on the part of the authors. It is not for nothing that the outlook of the above-mentioned researchers leads them to study the phenomenon of standards from an analytical perspective of a general sociological nature. Standards are, as Hawkins (1995) states, “*external points of reference*”, by which a product or a service’s performance, its technical and physical characteristics, and/or the process and conditions under which it has been produced or delivered can be assessed.

From a very different perspective –that of the very phenomenon which it is intended to comprehend–, reference could be made to a European international standard that defines what a standard is “*a document, established by consensus and approved by a recognized body that provides, for common and repeated use, rules, guidelines or characteristics for activities or their results, aimed at the achievement of the optimum degree of order in a given context*”². This is a definition that is much more specific and regulatory, and also closer to the concept forming the specific objective of our study, the MSSs.

3. Management system standards and metastandards

In our review of the academic literature available, we have not been able to find a single specific definition or a single detailed classification of management standards. In their monograph on standardization Brunsson and Jacobsson (2000) refer repeatedly to *standards for administrative processes*, and Furusten (2000, p.71), in the same monograph, defines them as “*standards on how to design and manage organizations*”. We can explicitly identify these *administrative standards* with what we would define here as MSS, a term that already has a certain tradition of academic acceptance behind it in studies related to quality management and environmental management (e.g., Wilkinson and Dale, 2003; Karapetrovic, 2002; Corbett *et al.*, 1999; Delmas, 2003; Neumayer and Perkins, 2004).

In specialist literature on the subject, MSS are known as *metastandards* (e.g., Karapetrovic and Willborn, 1998; Wilkinson and Dale, 1999; Boiral, 2001; Braun, 2005; Christmann and Taylor, 2006; Corbett and Yeung, 2008), following on from the proposal put forward by Professor Uzumeri (1997), who refers to them as “*lists of design rules to guide the creation of entire classes of management systems. Since systems theorists use the term metasystem for lists of this type, it follows that this type of management standard should be referred to as a metastandard*”. Corbett and Yeung (2008) use the term *metastandard* “*loosely to refer to standards that apply to broad processes (rather than individual products) and to entire families of such process standards*”.

These management standards or norms are, of course, to be distinguished from the technical norms and specifications relating to those requirements with which particular products or processes need to comply. Even so, such a broad definition of standardization in the field of management could encompass, for example, international norms and guidelines dealing with accountancy and audits (the *International Standards on auditing*, for instance) or such general management models as that of the EFQM (*European Foundation for Quality Management*). These guidelines and models are also, in the broadest sense, an ensemble of “guidelines and benchmarks promulgated” by a specific organization and referring to a particular field of management. Nevertheless, although on occasions we may have doubts concerning a specific case as to whether or not to consider it as a management standard, it must be highlighted that

² This is the definition included in the ISO/IEC Guide 2:2004, *Standardization and related activities – General vocabulary*.

there are certain common characteristics in the structures of these standards, in their terminology, their content or the general opportunity for *third-party certification*, that make them specifically identifiable.

From a global perspective, the successful diffusion of these MSS or metastandards would appear to be closely linked to the basic impetus of the process of globalization of the Western economies, to the extending global supply chains and the still growing importance of transnational corporations (Braun, 2005). In the current economic environment, in which outsourcing and relocation of companies' activities have become key strategic elements of global supply chains, it is necessary to foster a certain homogeneity of management systems in order to favour the development of such processes, and MSSs may help to achieve this aim (Heras, 2006). As Boiral states (2001): "*the development of management standards is part of the growing globalization of the world economy, which requires the adoption of international standards that facilitate exchanges and communication between countries*".

4. Mapping the key aspects of metastandards

In our opinion it is possible to establish a differentiation or classification of management standards which may be of interest to those working in the academic field dedicated to their analysis, and which may help in their conceptualization. In this case, rather than a detailed classification of management standards, the aim is to identify the main aspects in terms of which these standards can be classified. In this way the following aspects could be distinguished:

- *Geographical location*: depending on whether the organism promulgating them operates within the sphere of a particular country or in the international sphere, it is possible to differentiate between national management standards (e.g., BS standards in the U.K. or DIN standards in Germany), international ones (e.g., the EN standards established by the European Committee for Standardization), and global standards (e.g., ISO standards).
- *Regulatory organism*: it is possible to differentiate between standards promulgated by an organism with experience and a track-record in the field of standardization (e.g., the ISO, CEN or BSI standards); management standards promulgated by an organism which is set up *ad hoc* for the creation and diffusion of a standard (e.g., the SA 8000 standards or the *Investors in People* standard); and those promulgated by companies or consortia and associations of companies (such as those promulgated by the main manufacturers in the automotive sector: EAQF, VDA, etc.).
- *Sector of activity*: general management standards intended for all independent organizations operating in a particular sector (e.g., the ISO 9001 standard), or specific or sectoral standards (e.g., the ISO/TS 16948 standards for the automotive sector or the planned ISO 22000 standard for food safety management systems).
- *Organizational impact*: it is possible to distinguish those standards which affect an entire organization (ISO 9001 or ISO 14001, for instance) from those which affect a specific process (e.g., ISO 10002 covering complaints and claims).
- *Certiability*: management standards which include the possibility of being certifiable (such as the ISO 9001 and ISO 14001 standards), or those standards for which norms have not been established for certification purposes (such as the ISO 10002 and ISO 26000 standards). It should, however, be borne in mind that a standard for which it is specified that it has not been developed for certification purposes may subsequently offer the possibility of certification. Certifiability is for some authors (see the following section) a crucial distinguishing aspect for metastandards.
- *Content*: here we can differentiate between (among others) MSSs, which govern the implementation and documentation of management systems (e.g., the ISO 9001 and

ISO 14001 standards)³; guideline standards, or definitions for introducing management systems (e.g. ISO 14004 or OHSAS 18002, or the ISO 26000 standards concerning CSR which are still being prepared); performance standards, which establish the need to comply with a pre-determined level of performance (e.g., the SA 8000 standard, which requires a maximum number of hours); and indicator standards, which refer to the need to measure a series of indicators (e.g., the *Investors in People* standard).

It is undoubtedly the MSS that have enjoyed the greatest success in recent years. These are standards which correspond to the standardization of a very wide range of aspects of business activity, such as quality management, environmental management, the prevention of occupational hazards and the provision of health and safety regulations in the workplace, innovation management and corporate social responsibility. All of these standards tend to have a very similar methodology in relation to their creation, structure, process of implementation and monitoring by a *third party*.

In order to ensure the greatest possible precision in our use of terminology, we should be careful to distinguish the concept of MSSs from the concept of *standardized management system*. The latter term corresponds to the result after introducing into the organization concerned a MSS (e.g., ISO 9001, ISO 14001 or another similar standard). A management system could be defined in this context as the inter-related collection of different elements (methods, procedures, instructions, etc.) by means of which the organization plans, implements and monitors specific activities related to the objectives that it wishes to attain (Casadesús *et al.*, 2005).

A management system is nothing more than a map or guide which explains how the everyday activities of a company are managed. It is a map which defines the organizational structure of the company (which can then be portrayed in the form of organigrams); which identifies the key processes and procedures in the company's operations in the field that the standard refers to (quality management, environmental management, etc.); and which tells us who takes responsibility for these processes and procedures. Management systems are therefore based on the essential principles of systematization and formalization of tasks, the importance of which had already been pointed to by authors such as Henri Fayol and Max Weber, who are considered as classic authorities in the field of management studies.

Consequently, the international norms or standards which establish the guidelines for introducing various management systems into an organization are not, generally speaking, norms which deal with the attainment of an objective or a specific result – in other words, they are not performance standards. Rather, they are standards which establish the need to systematize and formalize through a series of procedures a whole range of company processes relating to the various different aspects of company management. For example, as Jacobsson (1993) points out, a standard of this type relating to the field of safety in the workplace does not deal with the characteristics of the working environment, but rather with the planning and procedures that the organization should put in place so as to deal with the subjects relating to this field. The fact that a company implements such a standard, and that a particular independent certifying organism conducts an audit of its implementation and validates it by awarding it a certificate, means that the company concerned has systematized and formalized (in the form of adequate documentation) the activities that the standard concerned is intended to regulate. It is because of this that such standards are often criticized in the field of management studies for their tendency to increase bureaucracy and excessive rigidity (cf., for example, Seddon, 1997; Dick, 2000).

Now, as has already been noted in the classification above, not all management standards are MSS, because not all of them define a model that organizations can use to design and implement a management system. Particularly noteworthy in this respect is the role played by certain ISO guideline standards, such as the ISO 9004 standard, the auditing guideline standard ISO 19011 or the more recent ISO/TR 10017, ISO 10019 or ISO 10014 standards, among other

³ In the relevant literature they are also referred to, in a more specific context, as *production process and method standards*, and also, in a more general sense, as *procedure standards*.

support standards promulgated by this well-known standardization organism, or the promulgation of other management standards with a differentiated character such as the *Investors in People* standard, all of which have been promulgated in the wake of the success enjoyed by the ISO 9000 and ISO 14001 standards.

5. Approaches to the academic study of metastandards

Standardization of management systems and its end-product, metastandards, constitute a clear example of a phenomenon and concept which are multi-dimensional and the study of which has implications of an extremely varied nature. It is for this reason that they have been studied from the perspective of a variety of disparate but related disciplines such as international economics, management studies (and, more specifically, the study of operations management), and organizational sociology. In this section of the paper an attempt will be made to produce a synthesis of these approaches.

- In terms of the study of the global economy, the metastandards phenomenon has been looked at from a perspective concentrating on the phenomenon of self-regulation. As is underlined by O'Rourke (2006) and Christmann and Taylor (2001), some countries' inability to establish a system of public regulation in relation to particular fields of activity such as the environment or employees' rights, has intensified companies' interest in self-regulation, a subject which is also of great relevance in the field of management standards.

Despite liberalization, the global economy continues to be governed by rules, but the rules are changing, and international standards point to one such set of changes (Nadvi and Wältring, 2002). If it is true, in fact, that in modern nation-states the main burden of regulatory activity is assumed by the public administration, which for this purpose has at its disposal various powers to sanction or to encourage, the new supranational organizations which have arisen out of the decline of the nation-state, such as the European Union, the United Nations or the OECD, do not, however, benefit from the same hierarchical authority and power to sanction, which has led to the emergence of new regulatory institutions that do not belong to the traditional sphere of public regulation. For Mendel (2002), standardization thus represents a form of coordination and hybrid governance that is on the increase.

All in all, from this perspective standardization is thus perceived as a new form of alternative to traditional public regulation. The absence of a regulatory power of a global public nature – the task of designing, implementing and enforcing standards – tends to be assumed by different regional or global institutions of a non-governmental nature in areas that have traditionally belonged to the area of regulations of the authorities (Brunsson and Jacobsson, 2000; Abbott and Snidal, 2001; Neumayer and Perkins, 2005).

Among these *new* regulatory institutions, special mention should be made of the International Organization for Standardization. This body, known by its acronym ISO (*International Standardization Organization*)⁴, along with the IEC (*International Electrotechnical Commission*) and the ITU (*International Telecommunication Union*), together form the main international organizations for standardization. The three bodies have, in conjunction with the WTO (*World Trade Organization*), formed a strategic alliance with the common aim of promoting the creation of a free and equitable global trading system. This agreement, known as the *Agreement on Technical Barriers to Trade*, provides for the establishment of a code of conduct for the preparation, adoption and application of standards based both on the principles of non-discrimination and harmonization and on the stated objective of preventing international standards becoming unnecessary technical barriers to free trade.

⁴ ISO was reconstituted as the successor organization to the short-lived International Standards Association which had already been established in the 1920s (Braun, 2005).

Created in 1947, ISO is an entity made up by more than 100 member states, and its objective is to favour the development of standardization, thus facilitating the interchange of products and services between countries. It has to date published over 14,000 international standards (known as ISO standards), some of which are management standards. Also noteworthy at a European level is the European grouping of national standardization organisms known as CEN (referred to in English as the *European Committee for Standardization*), which issues EN standards (from the acronym for *European Norm*). Created in 1961, it is a non-profit making association of a scientific and technical nature, and which since its creation has approved more than 6,000 standards and documents, the result of the efforts of nearly 300 work groups.

- Another perspective featuring in management studies, closely related to that referred to above, is the analysis of metastandards from the perspective of self-regulatory institutions and signalling models, based on Michael Spence's theory of market signalling (Terlaak and King, 2006; King and Toffel, 2007). This perspective concentrates on analysing the role of metastandards and their certification and the elimination of asymmetries in information. Braun (2005) points out that as supply chains become increasingly global and spatially extended, companies need to have the means available to enable them to differentiate between them in terms of reliability and quality.

King, Lenox, and Terlaak (2005) theorize that companies use the public act of certification to reduce "information asymmetries" between suppliers and potential buyers, basing their observations on the seminal work of Akerlof. In fact, as Tirole (1988) maintains, standards are expected to reduce customers' search costs and to mitigate transaction costs by reducing information asymmetries between buyer and seller. In the case of ISO 9000 certification of original equipment manufacturer (OEM) suppliers, purchasers' direct costs of inspection of incoming goods, suppliers' costs of compliance with diverse customer-specific quality standards, and the joint costs of contracting services are all reduced (Anderson *et al.*, 1999). Anderson *et al.* (1999) also found strong evidence to support the idea that North American manufacturing companies adopted ISO 9000 certification as a means of providing credible signals to external parties of their application of effective quality assurance practices.

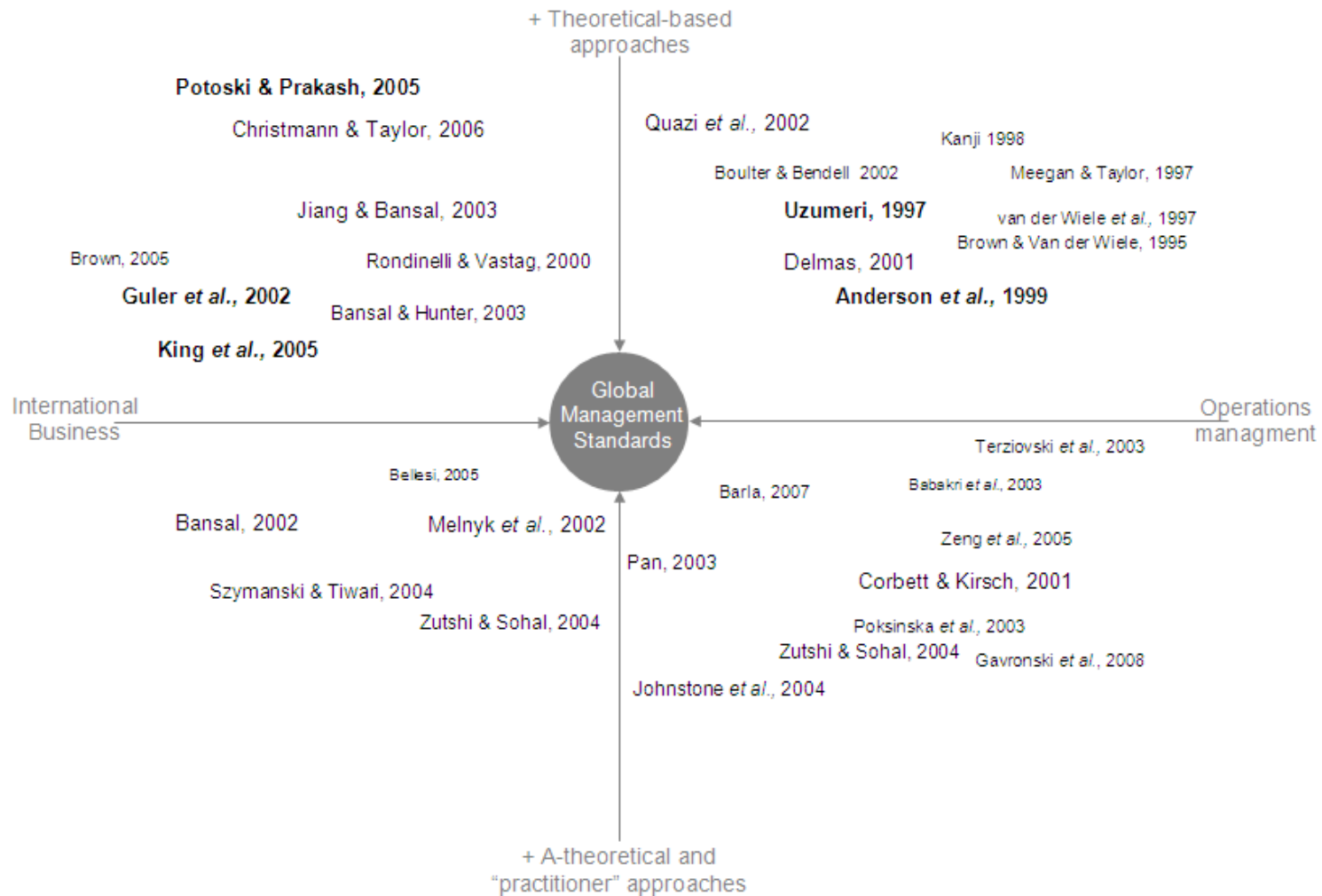
Following the same line, Terlaak and King (2006) argue that many studies of the available academic literature that have tried to analyse companies' motivation for adopting metastandards have failed to fully explain the nature of certified management standards. They affirm that, from a theoretical perspective, they do not explain why organizations implement and certify such metastandards, given that, since the requirements of the standards are public and consultancy firms are available to aid the adoption of practices, companies do not need to certify the systems that they implant in order to gain an operational benefit (Terlaak and King, 2006). They point out that certified management standards constitute a form of private decentralized institution, because participation is voluntary and because a wide variety of stakeholders, rather than a single central authority, provide rewards for participating or sanctions for not participating. They emphasize the process of certification itself, which is, in their opinion, the distinguishing element of these decentralized institutions: "certification as a critical determinant of the function of management standards" (Terlaak and King, 2006).

- Following an approach clearly related to that above, the phenomenon of metastandards has also been studied (and, also in this case, especially in relation to ISO 14001) from the viewpoint of the theory of cartels and clubs which can be applied to voluntary programmes in which certifiable metastandards may also be included (particularly noteworthy for these purposes are the contributions of Prakash, 2002; Potoski and Prakash, 2005; Prakash, Potoski and Hargrave, 2008; Kerret, 2008). Basing their observations on the theoretical model proposed by Buchanan, Potoski and Prakash

(2005a) point out that, for companies, the benefits of membership (the so-called “club goods”) are the excludable branding certification that allows members to publicize their club membership and thus claim credit for their pro-environment activities. The key conceptual distinction made by the authors is that “clubs’ excludable benefits are not the rewards members receive from external audiences for taking specific environmental action. Rather, excludable benefits stem from membership in ISO 14001, which provides a credible signal of a company’s overall approach to environmental governance” (Potoski and Prakash, 2005a).

- Metastandards have also been analysed as management practices or management technology which are viewed by companies as exemplary forms of management tools and are for this reason propagated across national borders (e.g., Guler *et al.*, 2000; Vasconcelos and Vasconcelos, 2003; Beck and Walgenbach 2005). This approach to the study of standards takes as its reference point institutional and neo-institutional theories of the study of organizations, as we shall analyse in depth below.

Figure 1. Most noteworthy contributions* in the academic literature to the study of the metastandards



Source: Own reparation on the basis of the reviewed works. * Note: work-in-progress

- Finally, many other authors have approached the study of metastandards – especially in the case of ISO 9001 – from a viewpoint involving a much smaller theoretical element and a greater desire to study the phenomenon in a pragmatic fashion. Many such authors could be categorized as researchers conducting studies in the field of operations management and in the specific field of quality management (for a review, see Sampaio *et al.*, 2009).

In Figure 1 [work-in-progress] an attempt has been made to summarize in graph form the most noteworthy contributions in academic literature to the study of the multi-disciplinary phenomenon of metastandards, broken down into four quadrants defined by the greater or lesser degree of theoretical content of the studies concerned and the more or less general or specific perspective adopted by each study. The font-size of the lettering of the reference concerned is larger or smaller in accordance with the impact of the journal in which the contribution was published, while the works highlighted in bold type are those most frequently referred to.

6. The genesis of metastandards: the paradigm of quality

The first MSSs were created in the field of quality management, and specifically in the field of quality assurance, which, according to the definition given in the ISO 8402 standard, is defined as being all those planned and systematic actions applied within the framework of the Quality System so as to provide adequate confidence that an entity will satisfy given requirements for quality.

The origin of these systems goes back, according to Professor Dale (2003), to the military sphere, which is not surprising if we analyse the genesis of many of the tools and techniques which are employed in company management, as is also the case for certain decision-taking tools that also originate from this sphere. In the former case, it is in the 1950s that the U.S. Department of Defense becomes aware of the need to increase the reliability of the products that it purchases or contracts out, attempting at the same time to reduce its high level of dependence on the suppliers' inspection programmes that operated as its principal source of quality assurance. The first MSSs were the contractual requirements applied to this type of purchaser or contractor operating in markets characterized by a monopsony or semi-monopsony. Such standards were specific to particular customers and/or sectors of activity, and were heavily biased towards the inspection and monitoring of internal quality. Particularly noteworthy in this respect was the creation in the late 1970s of the American military standard MIL-Q-9858, or the production by NATO of its *Allied Quality Assurance Publications*. Outside the military sphere, attention should also be drawn to the requirements of the electrical and nuclear industries, such as the CSA-Z99 standards promulgated by the *Canadian Standards Association* (CSA), or the equally important contribution of the aerospace industry and NASA, or of the automotive industry dominated by the large U.S. manufacturers, which produced other notable standards such as, for instance, Ford's Q101 standard.

All these management standards based on third-party certification aim to *outsource* the inspection and auditing of management systems, activities that were originally performed by the purchasing company or the company that contracts out a particular operation (in the latter case also referred to as *second party* certification), to an independent third company that is dedicated to the certification of and compliance with particular standards. At a later stage towards the end of the 1970s, some national standardization organisms began to promulgate MSSs in this field, such as for instance the BS5750 standard produced by the *British Standard Institution* (BSI), and which was promulgated in 1979.

It was against this background that, in the mid-1980s, a phenomenon that had initially been exclusively European began to make its presence strongly felt in a global context: this was the diffusion of the ISO 9000 standards as a basis for implementing and certifying a system of quality assurance within companies. According to Professor Dale (2003), it was the British organism BSI which formally proposed the creation of a technical committee (designated as ISO/TC 176) in order to develop an international standard for quality assurance. 20 countries formed part of this committee to develop such a standard, which was first published in 1987.

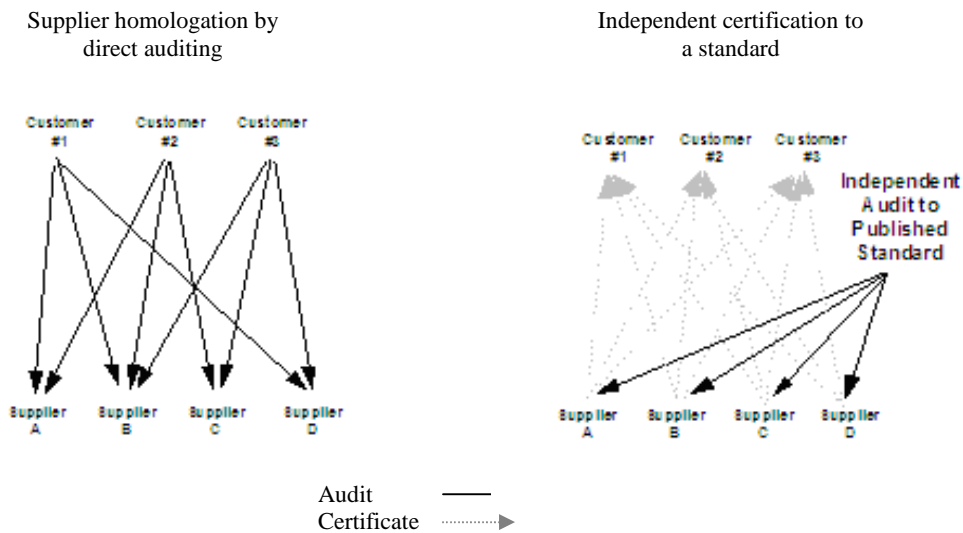
This initial version of the standard was based on various different national approaches, but mainly, according to Dale (2003), on the British BS5750 standard and on British companies' experience in using it.

In parallel to this process, other sectoral MSSs also developed significantly in relation to the large multinational companies in the automotive sector, such as, for instance, the QS9000 standard created by a consortium formed by the Chrysler Corporation, the Ford Motor Company and General Motors Corporation, which started to be developed in 1988 and was first promulgated in 1994. This standard harmonized the requirements of the three multinationals involved and was also aligned with ISO 9000, thanks to a sectoral standard which had recently been included in the ISO scheme with the promulgation of the ISO/TS 16949 standard.

These *third party* standards meant, and still mean today, significant savings for the large automotive companies, since they enable them, for example, to reduce enormously the number of audits that need to be carried out every year on their suppliers' and subcontractors' company procedures, and in addition to this the standards are themselves outsourced. According to a study carried out by the European Commission, each subcontractor or supplier of this type was formerly audited by his main customers about seven times a year on average, which meant an annual cost of over 30,000 U.S. dollars of the time (Silva, 1997). As Uzumeri (1997) points out, second party audits proved costly for both customers and suppliers. Large suppliers found themselves hosting dozens of audits a year, to different buyers' standards each time. (Uzumeri, 1997).

In this way, ISO 9000 standards, together with other third party standards, are a means of substantially reducing the number of audits (see Figure 1), which leads to savings in resources and in terms of the credibility of the suppliers' technical capacities (Uzumeri, 1997).

Figure 2. Economies of Third-Party Certification



Source: Adapted from Uzumeri, 1997.

It must be made quite clear that, if it is true that the first MSSs emerged in the field of quality management, other standards were later created in relation to various other aspects of company activity, such as environmental management and the prevention of occupational hazards, although, since the origins of such standards are associated with the field of quality management, there has been a certain tendency to group them together under the umbrella of quality assurance or simply *quality*, understood in the most general sense as a paradigm for improvement in all fields and aspects of business management.

We may well ask the questions: How do these standards emerge? How are they designed?, and, more specifically, How are ISO standards created? In the case of the principal world organization for standardization, we can in synthesis reply, following in the steps of Haufler (1999), that it is generally a particular business sector that identifies the need for a standard to be created. A national association that is convinced of the need to create a standard for its members transmits this proposal to the *ISO Technical Management Board*, which then decides whether to create a specific new technical committee to produce the standard in question, on condition that two thirds of the board members are in favour and at least five member associations that are prepared to participate directly. ISO then defines the scope of the new standard that is going to be negotiated, usually through a workgroup of experts. The representatives of the national standardization associations who participate in the committees and sub-committees most concerned then negotiate the specifications concerned in detail and create, by consensus, a draft standard. From this point on committees meet regularly all over the world so as to establish the standards in accordance with specific procedures for the workings of technical committees, the ISO central secretariat being responsible for coordinating these meetings and also for coordinating the results that they produce.

It should be borne in mind that some of the management standards that have been created by ISO, such as the ISO 14001 standard, for instance, require a more complex process of creation, since they refer to particular fields of standardization in which statutory public regulation also plays a role. It must be remembered that in principle all ISO standards are by nature voluntary, and are guided by market forces.

7. ISO 9000: the first global management standard

ISO 9001 is arguably the most influential single metastandard that there has been to date (Braun, 2005). The ISO 9000 family of standards was created, in its initial form, in 1987, and underwent substantial revisions in 1994 and 2000⁵. On a global level these standards spread in their initial phase throughout the countries of the E.U., becoming particularly prevalent in the U.K., which is perfectly logical in view of that country's previous experience with the BS 5750. It should also be borne in mind, moreover, that E.U. institutions, and specifically the European Commission, promoted intensively the adoption of this standard by European companies, as part of the process of harmonization that was established with a view to creating the single European market in 1992 (Tsiotras and Gotzamani, 1996; Crowe *et al.*, 1998), and that it was even included in the commercial directives of what was then the European Community (Anderson *et al.*, 1999; Mendel, 2002).

On the other hand, while the adoption of these standards was much less intensive in the U.S.A. and Japan – in fact they came in for considerable criticism, and were initially considered as clear non-tariff barriers in those countries – it is also true that there has since been a significant increase in their use there, due on the one hand to the fact that companies exporting to the E.U. have been obliged to obtain certification, but also because certain key institutional organisms in the two countries have adopted and promoted the implementation of these standards.⁶ With the EC's acceptance of ISO 9000 certification, other governments began adopting it. U.S. government agencies that have adopted ISO 9000 include the following: the U.S. Departments

⁵ "ISO 9000 standards" or "the ISO 9000 family of standards" are the expressions commonly used to refer to the totality of standards in the same series, although in the 2000 version the only standard which includes a model for implementing a certifiable management system (i.e., the only management system standard) is the ISO 9001 standard. In fact, in the 1987 and 1994 versions, in addition to the ISO 9001 standard, the ISO 9002 and ISO 9003 standards also included certifiable management system models, which is why the plural form used previously continues to be employed. Loosely speaking, reference is still made to "ISO 9000" or "certified in accordance with ISO 9000", whereas, properly speaking, the correct expression should be "ISO 9001 standard" or "certified in accordance with ISO 9001" (there is an ISO 9000 standard in the current series, but it is a standard applied to definitions and terminology).

⁶ For example, such important public organisms as the U.S. Department of Defense or the very influential FDA (*Food and Drug Administration*), together with other organisms of a private nature, such as the association of chemical manufacturers or the association of automotive industry manufacturers, all adopted the ISO 9000 standard (Crowe and Noble, 1998).

of Defense and Energy, the Food and Drug Administration and the Federal Aviation Administration (The Society of Management Accountants of Canada 1994) (Anderson *et al.*, 1999).

Once again it must be made clear that the ISO 9000 standards are not standards that refer to compliance with an objective or with a particular result, i.e., they are not performance standards that measure the quality of companies' products or services, but rather standards that establish the need to systematize and formalize a whole series of company processes into a series of procedures, and to document this implementation. ISO 9000 standardizes procedures, duties, and roles, rather than goals or outcomes (Braun, 2005).

In short, compliance with ISO 9000 – a fact which is certified by an organism accredited for this purpose – means having documentation to show the implementation of a quality management system which includes in standardized and documented procedures the basic processes used to produce the product or service which the customer acquires. These standards are a management tool based on the systematization and formalization of tasks in order to achieve product homogeneity and to conform to the specifications established by the customer (Anderson *et al.*, 1999). In other words, as one manager summarized to Cole (1999), “document what you do, do what you document, and verify that you are doing it.”

Such a clarification is, in our opinion, especially pertinent, since there have been major misunderstandings in this respect on numerous occasions in the past, and in a variety of different fields. For example, in countries such as Spain and Italy – leaders in the world league table for ISO 9001 and ISO 14001 certification – numerous companies have publicized their certificate as a registered company as though it were a product quality label, despite the fact that the ISO standard itself prohibits such a practice. (Heras, 2006).

It should also be stated that the implementation of this type of standard or norm is voluntary, although in certain sectors their application constitutes a *de facto* obligation. In this way (and as will be examined subsequently below), in those studies in which an analysis has been made of companies' motivations for obtaining certification, considerable emphasis has been accorded to the “prescriptive” role played by large companies in the construction, automotive, energy and telecommunications sectors. The latter saw in the ISO 9000 standards a way of ensuring a certain level of quality from their suppliers and subcontractors, in the sense of obtaining a certain systematization and formalization of the key processes utilized by such companies to comply with the requirements that the larger companies had established, but without increasing their operational costs.

8. ISO 14001: the global green standard

The ISO 14001⁷ standard was promulgated in 1994, benefiting from the success enjoyed by the ISO 9000 family of standards. ISO 14001 was based on the model of various national environmental management standards, and in particular on the British BS 7750 standard.

The standard was created in the institutional context of the 1990s, a period characterized by the strengthening of the trend towards seeking a green paradigm for production and consumption. Motivated by different stakeholders and the internal improvement of their general and environmental efficiency, an increasing number of companies began to introduce at this time an Environmental Management System (EMS). An EMS is a systematic process that corporations and other organizations use in order to implement environmental goals, policies and responsibilities, as well as to provide for regular auditing of these aspects (Cascio, 1996).

For Haufler (1999), some companies introduced an EMS so as to avoid the introduction of more far-reaching public environmental regulations, while others introduced them to respond to the criticisms made by environmental activists and yet others adopted them so as to enhance the

⁷ By analogy with the case of the ISO 9000 standards, it is also commonplace to talk of the “ISO 14000 standards” to refer to the totality of the standards in this series, although the only standard which includes a model for implementing a certifiable management system is the ISO 14001 standard. In this case, moreover, it should be borne in mind that there is no ISO 14000 standard, properly speaking.

efficiency and sustainability of their businesses. Some stakeholders, including those who were most critical and those responsible for public regulation, greeted the promulgation and implementation of these EMS standards with scepticism, principally due to the difficulty of knowing what is involved by the fact that a company has introduced an EMS, and how precisely its environmental performance improves as a result of its introduction (Heras *et al.*, 2009).

The creation of ISO standards from the ISO 14000 series represented a new feature, albeit one not without controversy, given that for the first time reference was being made to issues of a political and social nature – aspects about which for many the International Standardization Organization had neither legitimacy nor authority. Apart from the criticism regarding its controversial creation process, the ISO 14001 standard has been subject to very diverse criticism in terms of both its content and the procedure established for its certification (Haufler, 1999). Essentially, this criticism revolves around the fact that the standard is not geared towards demanding an improvement in environmental performance, in the sense that companies are not required to attain certain environmental results, or to ensure consistency in terms of their external auditing service (King *et al.*, 2005).

The creation of this standard coincided with the 1992 Rio Summit – a forum that asked ISO to create an EMS standard (Mendel, 2002). The intense activity of ecological and environmentalist groups prior to the Summit alerted a number of international business leaders to the need to develop better environmental policies. At this conference business representatives favoured the promotion of voluntary measures such as the implementation of EMS standards, as a way of attaining some of the environmental objectives agreed at the Summit. EMS standards were also compatible with the tendency shown by the governments of many countries to deregulating their economies and to developing market incentives (Haufler, 1999; Heras *et al.*, 2009). On the other hand it should be remembered that after the Rio Summit a variety of different stakeholders developed environmental standards (e.g., the BS 7750 was introduced in 1995, while also in 1995 the European Union developed the much-discussed EMAS regulations), and that by the mid-1990s there was a large number of environmental codes of conduct, ecological labels and national standards, in addition to contributions to the field from various NGOs. As a result of this situation, the U.S. administration feared that EMAS would be widely adopted and would become a technical barrier to free trade, in the same way that ISO 9000 had initially been. For these reasons the Clinton administration gave strong support to the idea that ISO should develop a standard in the field of environmental management (Haufler, 1999). On an international level some business groupings were opposed to such a standardization initiative on the part of ISO, although others considered that the adoption of a common EMS standard would lead to a relaxation of national government initiatives to regulate on environmental questions.

It must be made clear, once again, that this standard does not fix environmental goals or environmental targets to be achieved (requirements for the prevention and reduction of the impact of pollution, for instance), as a result of the possible attainment of which a certificate would be obtained. Rather, these standards establish requirements defining the operational systems to be complied with within companies in relation to activities which have an environmental impact. In short, it is a model which provides a systematic framework within which to incorporate environmental concerns into a company's day-to-day operations.

9. The diffusion of ISO 9001 and ISO 14001

By late 2007, over 950,000 ISO 9000 certificates had been authorized in a total of 175 countries all over the world, thus more than doubling the number of certificates compared with the figure for the end of the year 2000, a year during which a new version of the standards was launched, and by the end of which there were a total of 408,631 such certificates (ISO, 2008). Continent by continent, it can be seen that Europe, with 776,608 certificates issued, continues to lead in terms of total number of ISO 9000 certificates, since it absorbs nearly half the total number of certificates awarded throughout the world (more precisely, 45.35% of the total). This global leadership has diminished by more than six percentage points when compared with the year 2000. China is the country with the largest number of certificates in the world (having a total of

210,773 by the end of 2007), followed by Italy (with 115,359), Japan (73,176), Spain (65,112) and India (46,091).

Table XX. International adoption of the ISO 9000 standard in the main economic zones

	1997	2001	2006		
			Nº	IC PIB	IC Export.
USA.	18.581	37.026	44.270	0,20	0,41
Japan	6.487	27.385	53.771	1,38	0,84
European Union	135.984	253.488	344.705	1,48	2,47
China	5.698	7.413	143.823	1,82	1,76
World	223.299	510.616	776.608	1	1

Source: Own preparation on the basis of the various executive reports on the global statistics for ISO 9001 and ISO 14001 published by the International Organization for Standardization (ISO). Note: Up to the year 2000 the certificates analysed are ISO 9001, ISO 9002 and ISO 9003; from 2001 onwards the certificate analysed is ISO 9001:2000. IC-GDP: Intensity of certification calculated as the ratio between the percentage share of the number of certificates issued worldwide and the percentage share of total world GDP in 2007 measured in US dollars at current exchange rates of the time (World Bank). IC-Exports: Intensity of certification calculated as the ratio between the percentage share of the number of certificates issued worldwide and the percentage share of total world exports in 2006.

In recent years ISO 14001 certification has been experiencing major growth on the international stage. We only have to highlight the fact that, if by the end of the year 1999 14,106 certificates had been issued worldwide, by the end of 2007 the number of certificates issued had reached 154,572. In other words, in the space of eight years, the number of certificates issued worldwide had increased nearly eleven-fold. Attention should be drawn to the fact that around 40% of ISO 14001 certificates issued worldwide were issued within the EU. The USA's share, on the other hand, was limited to 3.5%, while China and Japan were undeniably the world leaders in terms of the absolute number of certificates issued, accounting for 20% and 18% of the total respectively. In recent years, special mention should be made of the growth in the number of certificates issued in the People's Republic of China, due – among other factors – to the influence of the pressure exerted by the Chinese Government to encourage the implementing and certifying of products in accordance with this international standard (Shin, 2005).

In the EU-27, special mention should also be made of the performance of some of the countries that have recently joined the Union, which have attracted considerable investment in industrial production and have been experiencing growth levels way above the average for EU-27 countries in terms of the number of ISO 14001 certificates issued (Heras *et al.*, 2008).

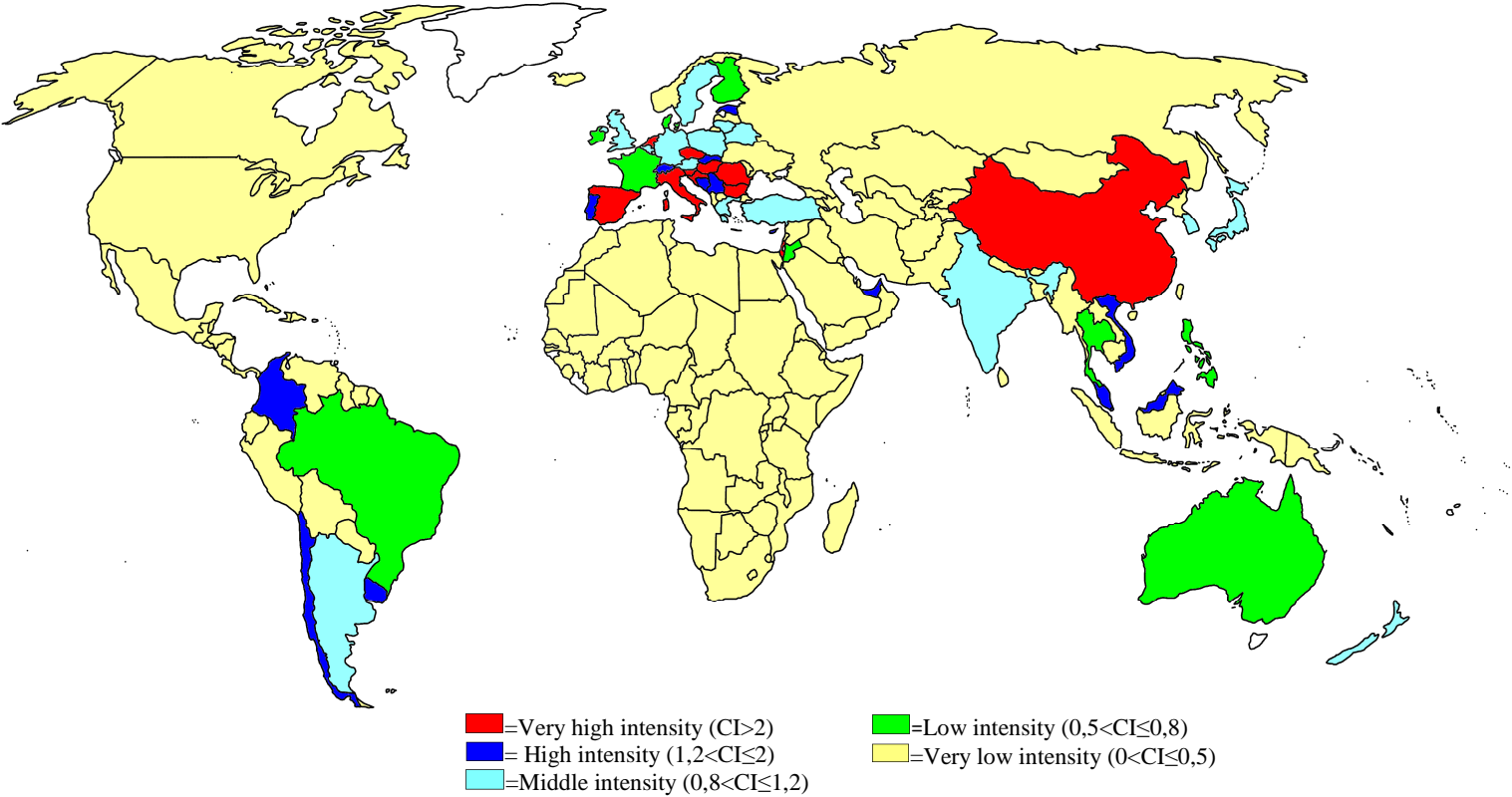
Table X. International adoption of the ISO 14001 standard in the main economic zones

	1999	2001	Nº	2007		
				% partic.	IC PIB	IC Export.
EE.UU.	636	1.645	5.061	4,55 %	0,16	0,33
Japón	3.015	8.123	23.466	21,11 %	4,22	2,57
UE-27	6.460	16.571	44.262	39,82 %	1,33	2,21
China	222	1.085	12.683	11,41 %	1,12	1,09
Total mundial	14.106	36.464	111.162	100 %	1	1

Source: Own preparation on the basis of the various executive reports on the global statistics for ISO 9001 and ISO 14001 published by the International Organization for Standardization (ISO). IC-GDP: Intensity of certification calculated as the ratio between the percentage share of the number of certificates issued worldwide and the percentage share of total world GDP in 2007 measured in US dollars at current exchange rates of the time (World Bank). IC-Exports: Intensity of certification calculated as the ratio between the percentage share of the number of certificates issued worldwide and the percentage share of total world exports in 2006.

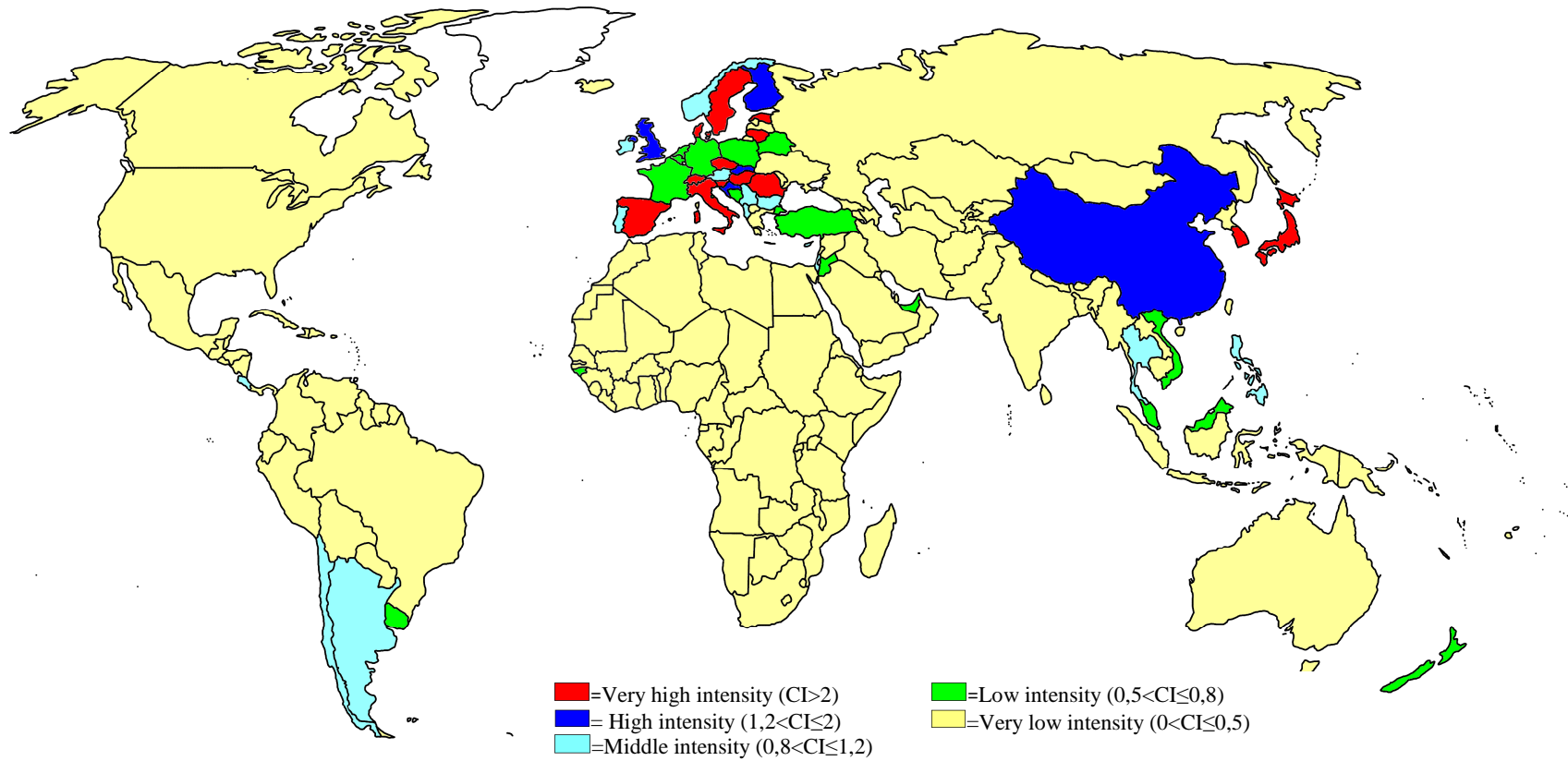
The growth in the numbers of certificates when broken down according to world region suggests a roughly similar pattern of geographical distribution for ISO 9000 and ISO 14000 (ISO 2001b). Looking at different regions of the world, Europe leads the way in adoption of both standards, with East Asia second and North America third. Many countries in Western and Southern Asia and especially in Africa – with the notable exception of South Africa – still lag behind in certification numbers. This pattern is clearly visible in Figures 1.3 and 1.4, where the number of ISO certificates awarded is related to countries' labour forces in order to allow for the effects of differences in size. (...) In the case of ISO 14001, national differences seem to be, at least partly, attributable to the regulative pressures exerted by the respective environmental policies of each country (Braun, 2005).

Figure 4. Global intensity of ISO 9000 certification



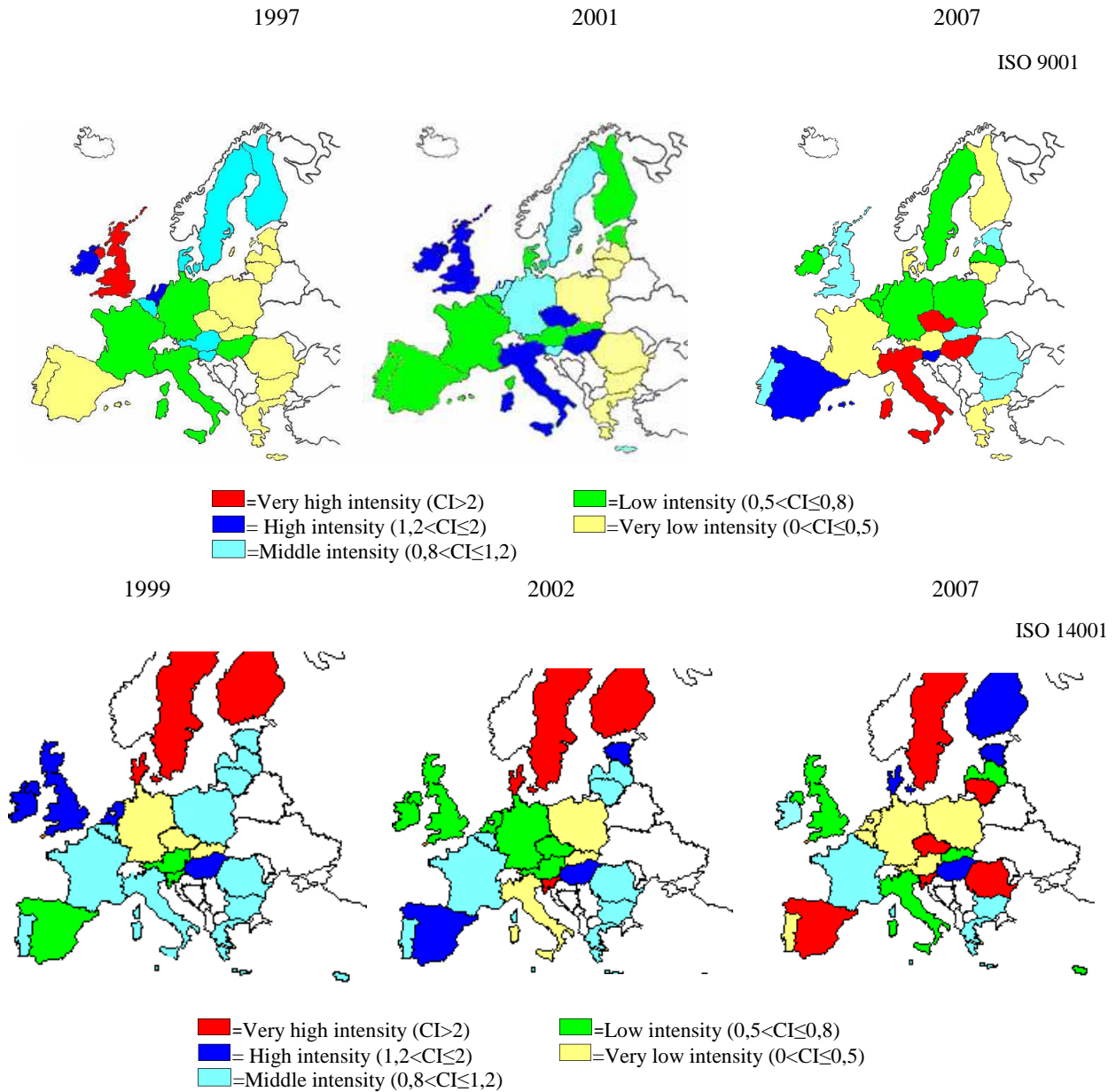
Source: Own preparation on the basis of ISO reports on worldwide certification levels and of World Bank data for GDP both globally and broken down by country. Note: Intensity of certification calculated as the ratio between the percentage share of the number of certificates issued worldwide and the percentage share of total world exports in 2004.

Figure 5. Global intensity of ISO 14001 certification



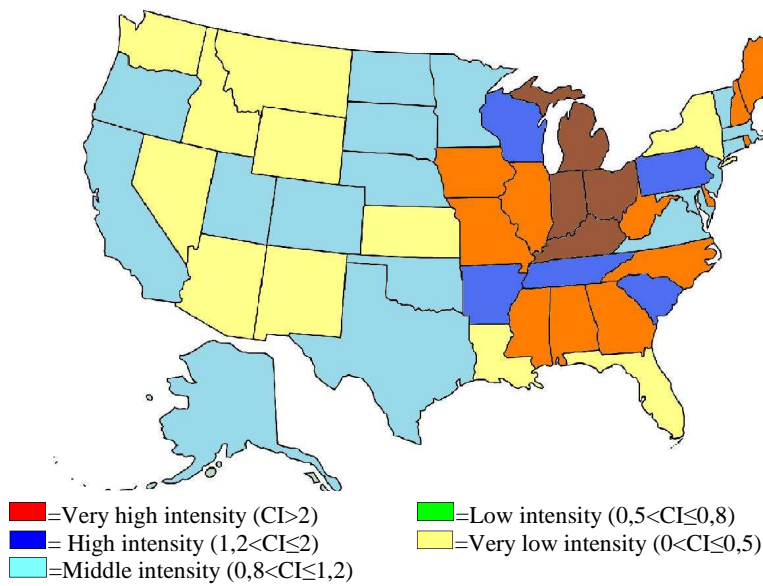
Source: Own preparation on the basis of ISO reports on worldwide certification levels and of World Bank data for GDP both globally and broken down by country. Note: Intensity of certification calculated as the ratio between the percentage share of the number of certificates issued worldwide and the percentage share of total world exports in 2004.

Figure 1. Evolution of the intensity of certification of ISO 9001 and ISO 14001 in the E.U.



Source: Own preparation on the basis of data obtained from ISO reports and from Eurostat. Note: For the year 1997 the certificates analysed are ISO 9001, ISO 9002 and ISO 9003, and for 2001 and 2007 the certificate analysed is ISO 9001:2000. Source: Own preparation on the basis of data obtained from ISO reports and from Eurostat. Note: Calculations made on the basis of GDP for 2004 measured in terms of PPP (purchasing power parity).

Figure 1. Intensity of certification of ISO 14001 in the U.S.A.

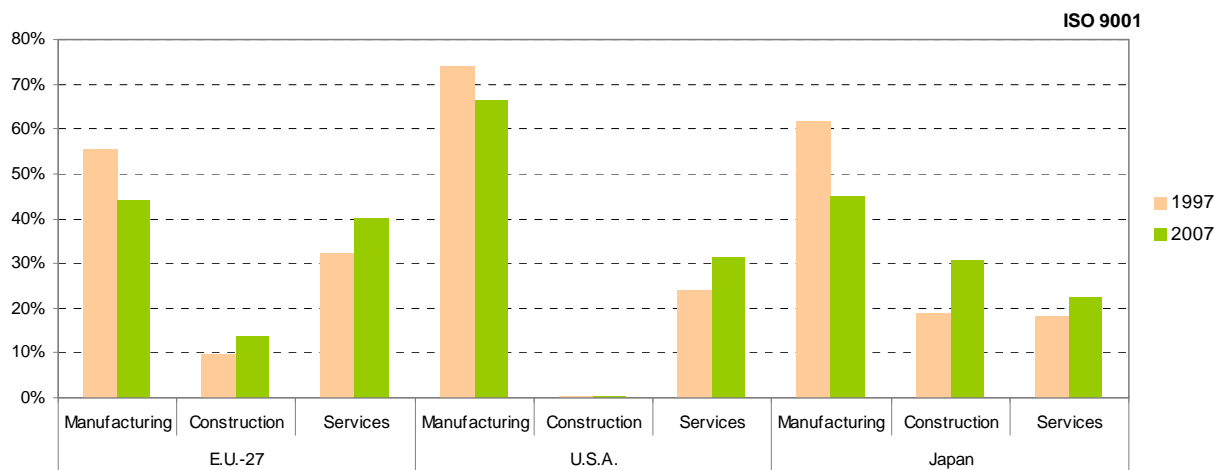


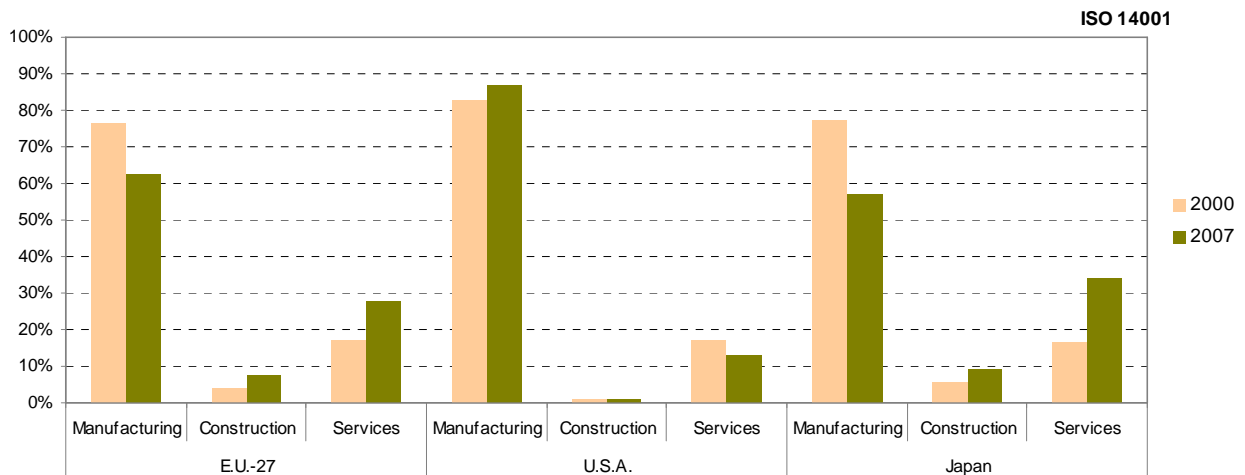
Fuente: elaboración propia a partir de los datos obtenidos del directorio de

Source: Own preparation on the basis of data obtained from the Quality Systems Update (QSU) and the Bureau of Economic Analysis, U.S. Department of Commerce. Note: certification data for year 2004.

If, moreover, the sectoral evolution of the three great global blocs is analysed in terms of three broad basic divisions by sector – representing industry, construction and services – we can clearly see in the case of the two global standards concerned the widespread growth in certification experienced in the service sectors, while at the same time there is an equally widespread reduction in certifications in the industrial field, although the reduction in the U.S.A., where certification is very largely concentrated in the industrial sectors, is smaller in the case of ISO 9001 and non-existent in the case of ISO 14001. Ç

Figure 6. Evolution of the sectoral distribution of ISO 9001 and ISO 14001 certificates in Japan, the U.S.A. and EU-27





Source: Own preparation on the basis of ISO full reports of global statistics for ISO 9001 and ISO 14001 (ISO, 1998-2008).

On another level, it is also interesting to analyse the evolution of interest in ISO 9001 and ISO 14001 on the part of the academic world, and to compare this with the diffusion of the implementation and certification of the two metastandards concerned. One of the tools most widely used in the academic world to try to measure changes of phase or cycle in the diffusion of the various different tools or methods used in company management consists of analysing the evolution of references to them or mentions of them in the various written media organs, both general and specialized, whether they be of an academic or of a professional nature (see, for example, David and Strang, 2007).

10. A research agenda on metastandards

As was already pointed out by Uzumeri (1997) more than a decade ago now, metastandards could lead to fundamental changes in management practice, since they represent a new management technology that may have a profound impact on the short-term evolution of management practice. This author also declared that scholars, practitioners, and policy-makers should begin the serious task of mapping and analysing their broader implications (Uzumeri, 1997).

It seems clear that the American scholar's wish has only partly come true. Although academic literature on the subject of metastandards has grown in recent years, it is surprising that its volume has not increased even more, especially in view of the observation made by Corbett and Yeung (2008) to the effect that "once one considers that literally millions of organizations worldwide are directly impacted by such meta-standards, it is surprising that not more scholarly research exists on most of these standards." In our opinion, however, the principal shortfall lies in the badly-structured and insufficiently incremental manner in which academic research into the phenomenon has developed.

A synthesis is given below of the principal lines of research opened on which research is currently being produced through the medium of specialized academic literature, in an attempt to carry out a mapping exercise that may be of interest to researchers working in this research field.

- The process by which standards are created, the implications for global governance and the problem of the developing countries.

One of the questions which should in our opinion be studied further is the process by which standards are created, along the lines of the very complete work undertaken by Haufler (1999) in relation to the ISO 14001 standard.

As Nadvi and Wältring (2002) point out, global metastandards formulated by private and public/private initiatives like ISO imply new forms of global governance in the world economy. The adoption of such standards points to a relative erosion of national standards, and this suggests new institutional arrangements and the formation of complex networks of public and private stakeholders, with all the potential conflicts that may arise as a consequence of the competing interests of private businesses and civil society stakeholders (Nadvi and Wältring, 2002). These authors conclude that mediating such conflicts requires new forms of global governance, an aspect which could constitute an extremely interesting subject for study and which has been little exploited to date in relation to metastandards.

The problem of developing countries' limited capacity to exert an influence on the process of creation of metastandards is also a subject of great interest on which outstanding work has already been carried out (e.g., Clapp, 1998; Nadvi and Wältring, 2002; Summers, 2003; Nadvi, 2008). Management metastandards, like many other standards, set entry barriers for new entrants in a value chain, and throw new challenges to existing developing country suppliers (Giovannucci and Ponte, 2005). In this sense, Summers (2003) has underlined in his work the role played by ISO and other similar international organisms in international rulemaking, the alternative source of authority for global governance that they represent, and the need to integrate developing country negotiators into their structures. "Can these international standard setting bodies adequately address the needs of all countries when often working in the absence of developing countries?", this author asks (Summers, 2003).

Clapp (1998) points out that developing countries lack financial and political power to effectively influence the determination of the contents of the standards. In a similar vein, Nadvi (2008) maintains that most developing nations continue to be 'standard takers' rather than 'standard setters'. He states that many developing countries, with weak standards infrastructure and poorly resourced national standards agencies, are de facto excluded from discussions associated with formulating standards that may be critical to them.

In short, in following this line, researchers could concentrate their efforts on two approaches: on the one hand, it would be interesting to put forward specific descriptive empirical evidence of the process of generation of a specific metastandard (e.g., the ISO 26000 standard, which has undergone a long, complex definition process) as seen from an insider perspective, so as to better illustrate the problem of the developing countries' inability to influence the process; and on the other hand, from a more regulatory perspective, researchers could propose mechanisms to overcome or diminish this type of imbalance.

- *The analysis of the process of diffusion of metastandards.*

Literature referring to the diffusion of these metastandards is relatively scarce. In a first study (2003) Corbett analysed the forces that explain the diffusion of ISO 9001, basing his study on the Bass diffusion model, and showing how this metastandard was implemented through the supply chain. His model explained that ISO 9000 certification basically began in Europe and spread from there to other countries because the European companies put pressure on their suppliers to seek certification. This study also showed that companies exporting goods or services to a certain region simultaneously import management practices both into their own companies and into the entire sector with which they are in contact (Corbett, 2003). Saraiva and Duarte (2003) and Franceschini *et al.* (2004) also subsequently examined the diffusion of metastandards, coming to similar conclusions. Poksinska *et al.* (2003) demonstrate that the implementation of ISO 9001 clearly facilitated the subsequent implementation of ISO 14001, an observation that Marimón *et al.* (2006) corroborated, since the worldwide expansion of both the ISO 14000 and ISO 9000 standards followed very similar patterns of diffusion.

These studies are interesting not only because of their capacity to describe and predict the actual process of diffusion of these international standards, but also because they offer certain

empirical evidence as to whether or not there is an analogy between the process of diffusion of these standards and the diffusion of innovations in general. There could be a link between these studies and others of a theoretical and empirical nature which have already become established features in the field of business management and administration and deal in particular with the influence of fashionable practices in business management (Abrahamson, 1991 and 1996). Likewise, various authors (e.g. Hashem and Tann, 2007) have established an analogy between the process of diffusion of metastandards and the process of adoption of innovations, referring for this purpose to established authors in the field such as Rogers (1995); although some interesting results have already been obtained, there is still ample margin for conducting further studies of interest.

Another important event (but one that did not easily lend itself to prior analysis) is the global financial and economic crisis and its impact on the decertification process that has recently started to be analysed in the relevant literature (Casadesús *et al.*, 2008; Marimón *et al.*, 2009), and that concerns, above all, the ISO itself (ISO, 2006).

On the other hand, other studies related to the field of diffusion have tried to analyse which factors explain geographical differences in the diffusion of metastandards. “Why are some countries or regions more receptive to management global standards than others?” This question posed by Boiral (2001) is perhaps *the* key question for this line of research, and one to which academic studies have not yet been able to find a clear answer.

In the case of the ISO 9000 standard, for instance, these studies stress that there exists a positive correlation between the number of certificates and macro-economic variables such as the volume of direct overseas investment, the tendency to export to the EU and the country’s public expenditure (Guler, *et al.*, 2002; Neumayer and Perkins, 2005; Terlaak and King, 2001).

With regard to ISO 14001 certificates, Corbett and Kirsch (2001) established that the number of a country’s certificates is very positively related to its number of ISO 9001 certificates and, to a lesser degree, to its level of environmentalization (measured by the number of environmental treaties signed) and the country’s level of exports. In a response to Corbett and Kirsch’s 2001 study, Vastag (2004) found support for the significance of links between ISO 9000 certification levels and the number of environmental treaties ratified, but not for a tie-in with export-propensity. Grolleau *et al.* (2008) show that, while the prior diffusion of ISO 9000 plays a significant role in the diffusion of the ISO 14001 standard, other factors such as the country’s educational level and the participation of a country or an economic sector in the standard-setting process are also a major driving force behind its future adoption of the standard.

Authors such as Delmas (2002) and Potoski and Prakash (2004) have stated that the political and regulatory context of each country and, in particular, the strength of its public administration’s prescriptive role play a vital part in extending these metastandards. Neumayer and Perkins (2004) conclude that the number of certificates *per capita* in a given country is related to diverse factors such as its levels of direct foreign investment and of exports to Europe and Japan. Christmann and Taylor (2001) conclude that foreign ownership and the capacity to export goods to more developed countries influence the probability of ISO 14001 certification in the case of Chinese companies.

Recent research by Albuquerque *et al.* (2007) has uncovered the role of social factors, rather than considerations of economics or efficiency, in driving certification decisions, focusing on the activities of multinational companies and cross-national isomorphism resulting from trade relationships. They conclude that the diffusion of ISO9000 is driven primarily by geography and bilateral trade relations, whereas that of ISO14000 is driven primarily by geography and cultural similarity.

Braun (2005) refers to another interesting factor which may explain differences in the success rate for the adoption of mestandards: cognitive mechanisms. He argues that cognitive pressures operate more diffusely through shared cultural frameworks and cognitive orders that are taken for granted (e.g. degrees of predisposition to accepting formal organizational solutions). Braun (2005) argues that some organizations, sectors and even countries may exhibit

deeply rooted preferences for formal managerial solutions such as ISO metastandards. Adopting a similar line, Boiral (2001) maintains that cultural differences in management practices or the institutional context may mean that certain countries are more or less ready for these metastandards (Boiral, 2001).

In short, although many interesting results have been obtained, clear answers are still waiting to be found to such elementary questions as to what we can attribute the fact that some countries which are not present at the highest level in international indices of competitiveness (e.g., Italy, Spain and Israel) nevertheless have indices of certification in relation to their economic level that place them at the top of the global league table, whereas other countries that appear at the top of the competitiveness indices referred to even within the E.U. (e.g., Germany and Finland) have much lower indices of certification.

As stressed by Vastag (2004), the political and economic climate, national goals and campaigns to achieve these goals seem to be among the factors that influence certification decisions. In our opinion, in order to make progress with this line of research, importance should be given both to approaches based on complex analytical models and to approaches with a more pragmatic vision that may be able to throw light on this phenomenon, such as, for example, those approaches which gather specific evidence linked to the various different public and private programmes to promote metastandards that have been established in an international context.

- *The analysis of the motivation to adopt metastandards.*

Research on the adoption of metastandards has used a variety of theoretical perspectives to identify the main driving forces or motivations. This line of research is also very closely linked to that of the previous section, i.e., with the study of the pattern of diffusion of metastandards. While the majority of existing studies on this subject are of an empirical character with little development of a theoretical framework, there are nonetheless a certain number of noteworthy studies undertaken in the context of a clear and consistent conceptual and theoretical framework, on the basis of which various working hypotheses may be assessed and compared.

In short, it can be said that there are two main theoretical approaches to this issue. From one perspective, it is suggested that metastandards are adopted due to pressures of an external nature. Although there are many theories that define and classify the external factors that make companies behave in a similar way in reaction to external pressure, the theoretical model established by the institutional and the neoinstitutional theory (Meyer and Rowan, 1977; Scott and Meyer, 1981; Powell and DiMaggio, 1991; Scott 1995) is perhaps the most prominent one. This is the theoretical perspective most frequently employed in studies in which an attempt has been made to investigate the motivational aspect of the implementation and certification of metastandards (e.g., Christmann and Taylor, 2001; Delmas, 2002; Corbett and Kirsch, 2001; Guler *et al.*, 2002; Heras *et al.*, 2009).

This theory suggests that external pressures shape organizational action. One of the most central ideas of this theory is that human and organizational behaviour is not simply modelled as rational and utility-maximizing, but rather as bound by rules, conventions and common values as well as oriented towards legitimacy in an environment of uncertainty (Braun, 2005). In the institutionalist's world individuals and organizations take at least some things for granted without questioning them or constantly looking for alternatives in their search for efficiency. The new institutionalism in organizational analysis argues that adoption and implementation of organizational ideas and practices takes place in an institutionalized social and cultural context, which is distinct from the corresponding technical context (DiMaggio and Powell 1991, Scott 1995). Conformity to institutional norms creates structural similarities or isomorphism across organizations. As a result, management practices, for example, can become more and more alike or even "standardized" (Braun, 2005).

In their seminal work Powell and DiMaggio (1991) maintain that there are three types of external pressure that lead organizations towards isomorphism or homogeneity: coercive, mimetic and regulatory pressure⁸:

- Coercive pressure consists of external formal and informal pressure exerted by powerful external institutions that can influence companies' behaviour, such as the local public administration, customers and suppliers or, on another level, the social or cultural expectations of any given place. As far as metastandards are concerned, fundamental coercive pressure has been exercised by government authorities and multinational corporations (Guler *et al.*, 2002; Neumayer and Perkins, 2005; Braun, 2005).

- Mimetic pressure refers to a change in companies' patterns of behaviour undertaken so as to model themselves on other organizations which they take as points of reference. It stems from a lack of understating of management technologies such as metastandards, ambiguous goals and environmental uncertainty and results in organizations modelling themselves on and imitating other organizations (Castka and Balzarova, 2008). This practice, also called appropriation isomorphism and organizational mimetic behaviour, is more noticeable in institutional sectors where uncertainty regarding the effectiveness of organizational models is high. In these situations some models usually emerge as more effective than others (Vasconcelos and Vasconcelos, 2003).

- Regulatory or normative pressure is related to professionalism and to factors of a psycho-emotional nature, which are the fruits of the influence of networks such as industrial associations or of educational training processes. For several authors normative isomorphism also occurs when an accreditation organism has the right to evaluate and inspect other organizations, granting the use of a seal or label that certifies that the authorized organization follows the processes prescribed by the authorizer, and certificates such as ISO 9000 and ISO 14001 fall into this category (Guler *et al.*, 2000, Mendel 2000, Vasconcelos and Vasconcelos, 2003). On the other hand, the regulatory pressure of ISO management standards is reflected in their perception as a "best practice" method of demonstrating careful and responsible management (Braun, 2005). Prominent carriers of these norms include regulatory agents, professional communities, and multinational companies (Mendel 2000; Braun, 2005). Government agents exert an influence not only through coercive mechanisms, but also by grants and subsidies, incentive programmes promoting "best practices", educational activities and prescription. In many developed countries such as Japan or Britain, government authorities have mounted national campaigns for ISO 9000 and ISO 14000 registrations (Braun, 2005). Professional and scientific communities have catalysed their diffusion by their acceptance and circulation of metastandards. Likewise, the growth of metastandards has fostered additional professional services and occupations directly related to implementation and certification activities, and as a result, as Braun (2005) underlines, the diffusion of management standards becomes increasingly self-supporting. Multinational companies also have the power to transfer management practices across national borders, since their organization cuts across national borders (Guler *et al.*, 2000).

The different considerations that may exist between this theoretical and analytical perspective and metastandards becomes even clearer (if possible) if it is borne in mind that for some followers of this theoretical line, another isomorphic process that organizations adopt is normalization (Vasconcelos and Vasconcelos, 2003). According to this interpretation of the new institutional theory, there is a general trend towards standardization because organizations seek support and legitimacy in their institutional fields by adopting structural models that are generally perceived to be the best available. In that way, entities like ISO are key players in

⁸ Other followers of this line of theory maintain that these processes can be divided into coercive, normative, and cognitive mechanisms leading to organizational isomorphism (Guler *et al.*, 2000; Mendel 2000; Scott 1995; Werle 1999).

defining the isomorphic properties of many institutional fields (Vasconcelos and Vasconcelos, 2003).

This analytical perspective of the motivation for the adoption of metastandards based on the neoinstitutional theory is criticized by academics who argue that organizations are dynamic and active and are able to respond in different ways according to their resources and capacities. These authors consider that the above approach falls down in that it considers organizations to be passive participants that respond to external pressures and expectations, and does not allow for heterogeneous organizational behaviour under isomorphic pressures (Yin and Schmeidler, 2008).

The alternative theory consequently focuses on explaining the sources of motivation that lead companies to implement metastandards from an internal perspective. These contributions take as their basis, among others, the resource-based view of the company (Wernerfelt, 1984). This theory focuses on the internal organization of companies and suggests that business strategy and decisions such as whether or not to adopt a metastandard depend on a company's specific organizational resources. These may include factors such as the company's internal skills, which may constitute a source of sustainable competitive advantage. Some scholars, for instance, focus on highlighting the importance of the company's human resources, by considering, for example, management attitudes as factors that motivate companies to establish environmental courses of action, whereas others focus on other intangible aspects such as organizational resources. In the field of ISO 14001 environmental certification, for instance, a major point of reference has been the work of Hart (1995), who suggests that proactive environmental management is in itself a potential internal strategic resource that may give companies a sustainable competitive advantage, especially in the case of companies that have certain noteworthy intangible ones.

Christmann and Taylor (2003) suggested that a company's existing skills may be important in determining its ability and willingness to implement metastandards. These authors concluded that companies that are characterized by a capacity for innovation, an ability to absorb new information thanks to an educated workforce, and a widespread involvement of employees in the implementation of an environmental management system are in a much better position to adopt strategies of environmental self-regulation such as the ISO 14001. Likewise, King and Lenox (2001) also found that a company's pool of skills affects the likelihood of its adoption of ISO 14001 in the United States. Some of the company features that they included in their study, such as commitment to research and development and ISO 9000 certification, were indicators of a company's pool of skills and both of these were found to contribute to ISO 14001 adoption.

Equally noteworthy for this line of research are those contributions which combine the two major theoretical approaches which have been presented above, i.e., those which are based on theoretical perspectives which combine, for example, the institutional theory with other approaches such as, for instance, the theory built around the resource-based view of companies (Darnall and Edwards, 2006; Christmann and Taylor, 2003; Braun, 2005; Castka and Balzarova, 2008; Beck and Erfurt, 2005; Yin and Schmeidler, 2008; Nair and Prajogo, 2009). In our opinion, the contribution along these lines made by Yin and Schmeidler (2008) deserves to be especially highlighted. These authors, basing themselves on the arguments of both the institutional theory and of the resource-based view, maintain that facilities may implement standardized management tools such as metastandards very differently even under isomorphic pressures, since companies interpret and implement externally induced management tools based on their own internal norms, resources and needs, which results in great heterogeneity in their implementation (Yin and Schmeidler, 2008).

Other more pragmatic contributions have tried to establish a classification of the motivating forces that lead companies to implement and certify metastandards. Focusing on the ISO 14001, Bansal and Roth (2000) draw a distinction between three types of motive that lead companies to implement the ISO 14001 standard: ethical, competitive and relational. Ethical motives are a response to feelings related to environmental responsibility, competitive motives arise from the search for competitive advantages, and relational motives emerge from the desire on the part of

companies to become legitimized and to improve the relationship between the different interest groups in the company (stakeholders). González-Benito, J. and González-Benito, O. (2005), distinguished between operational motivations, derived from the belief that it is possible to reduce costs and increase productivity, and commercial motivations, associated with the belief that it is possible to increase sales and improve market position.

Along similar lines, Neumayer and Perkins (2005) highlight the fact that, broadly speaking, there are two sources of motivation that lead companies to implement this type of standard and to become certified in accordance with them: on the one hand, internal motivations related to efficiency (efficiency motives) – i.e., a desire to improve performance, productivity and profitability – and, on the other hand, external or institutional motives related to the social pressure exerted by different stakeholders for such management practices to be adopted by the company concerned. Nair and Prajogo (2009), from the theoretical perspective of the resource-based view and the institutional theory, show that the adoption of ISO 9000 standards is affected by a functionalist impetus (internal motives that are aimed at enhancing the functional and process-based competence of organizations) and institutionalist driving forces (deriving from macro-institutional foundations).

In the empirical literature available there is no clear consensus among specialists as to identifying the main driving forces behind metastandards (on this issue, Heras, 2006; Martínez-Costa *et al.*, 2008; Heras *et al.*, 2009; Sampaio *et al.*, 2009 are to be recommended for the extensive review that is included of the literature on this subject). It would seem that most studies stress the fact that it is sources of motivation of an external nature that lead companies to implement and certificate both ISO 9001 and ISO 14001. Attention is drawn to the influence of customer pressure and demands or that of other interest groups, as well as questions related to the external image of the company or the influence of pressure exerted by branches of the public administration. Among the sources of external pressure, all studies highlight the influence of coercive pressure on the part of customers in those sectors in which the degree of customer bargaining power is high (e.g., the pressure of major purchasers on the car industry). On the other hand, other studies stress the influence of factors of an internal nature, such as an internal improvement in the organization, an improvement in the environmental behaviour of companies, or employee motivation. These factors, however, would, as has been stated previously, appear to be in the minority.

- *The analysis of the benefits obtained through the adoption of metastandards.*

The results and benefits associated with the implementation and certification of metastandards have also been analysed very extensively in academic literature, albeit not so much from a theoretical perspective, since the most important contributions in this respect are of an empirical nature.

From a theoretical perspective, some authors apply approaches based on the *Theory of natural company resources* to point out that the implementation and certification of metastandards may contribute towards the generation of valuable resources and abilities and thus, in turn, help create and maintain competitive advantage. As Cañón and Garcés (2006) point out for the case of ISO 14001, the main resources and abilities that have been associated in the relevant literature with the implementation process of these metastandards are the learning and acquisition of skills on the part of the company's human resources; an improvement in the company's reputation; the perfecting of its information systems; and a greater incentive to innovate. It has been proven that the quality and environmental policies underlying the implementation of these standards are intensive in terms of use of human resources and, according to the literature available on the subject, depend on tacit skills that can only be acquired via the involvement of workers and teamwork.

Generally speaking, empirical studies have corroborated the positive effects of applying these standards on business competitiveness and efficiency, although approaches and critical studies also exist that stress the negative aspects and weaknesses deriving from the implementation of these international standards (Heras *et al.*, 2008).

In the case of ISO 9001, most scholarly work so far on the benefits of its adoption has been based on surveys (e.g. Wenmoth and Dobbin, 1994; Carlsson and Carlsson, 1996; Tsiotras and Gotzamani, 1996; Meegan and Taylor, 1997; Buttle, 1997; Jones *et al.*, 1997). Many studies (Elmuti, 1996; Van der Wiele and Brown, 1997; McAdam and McKeown, 1999; Huarng, *et al.*, 1999; Lipovatz, *et al.*, 1999; Yahya and Goh, 2001; Arauz and Suzuki, 2004; Casadesus and Karapetrovic, 2005; Briscoe, *et al.*, 2005) have demonstrated the benefits of implementing ISO 9000. In short, the following are the most frequently cited benefits of the adoption of ISO 9000: improvement of operational performance; improvement of quality awareness; improvement in customer relations; improvements in the products and services offered; greater customer satisfaction; improved relationships within the organization; and improved image for competitors and stakeholders.

In the case of ISO 14001 there are diverse studies that highlight the improvement in a company's competitive advantage as a result of an improvement in the internal efficiency of the company (Kollman and Prakash, 2002; Corbett and Russo, 2001; Montabon *et al.*, 2000; Florida and Davidson, 2001), a reduction in the consumption of resources (Bansal and Bogner, 2002; Melnyk, *et al.*, 2002), or an improvement in the performance of certified companies (Rondinelli and Vestag, 2000; Chin and Pun, 1999; Russo and Harrison, 2001; King and Lenox, 2001; Tan, 2005; Link and Naveh, 2006) in the case of those companies that implement and become certified in accordance with ISO 9001 or/and ISO 14001, as examined in studies carried out by academics in countries as diverse as Hong Kong, Malaysia, Israel and the USA. Attention is also drawn in such studies to an improvement in awareness-raising on the part of the management and employees of companies that results in an improvement in internal efficiency (Rondinelli and Vestag, 2000).

- *The analysis of the improvement in performance.*

Although some practitioner perspectives tend to identify metastandards such as ISO 9001 and ISO 14001 with performance standards (e.g. Whitelaw, 1998; Woodside *et al.*, 2004), the standard does not establish absolute requirements for the quality performance of products and services, in the case of ISO 9001, or for their environmental performance, in the case of ISO 14001 (other than a commitment to comply with all applicable regulations). It is because of this that these metastandards are defined as *procedure standards* rather than *performance standards*.

As a result, there is a growing body of recent studies that have tried to test the link between the adoption of ISO 9001 or ISO 14001 *procedure standards* and the performance of the companies concerned. This is an issue that could perhaps be defined as one of the major questions which the academic literature concerned has tried to answer. With the aim of trying to reply to this question, some studies have used objective or factual measures (i.e., accounting data), while others have used perceptual measures obtained by surveys (i.e., based on questionnaires).

The investigations that follow the latter pattern are the most frequent (for a review of this type of study Benner and Veloso, 2008; Martínez-Costa *et al.*, 2008 and Sampaio *et al.*, 2009 are interesting in the case of ISO 9001, and Heras *et al.*, 2009 in the case of ISO 14001). Overall the results are mixed, but in a majority of studies a significant positive relationship is found between the adoption of metastandards and a company's performance. Nevertheless, those studies based on perceptual or self-reporting measurements introduce a bias problem that Yin and Schmeidler (2008), Wayhan *et al.* (2002; 2007), Corbett *et al.* (2005) and Heras *et al.* (2002) have pointed out in this research field: performance variables based on managers' ratings or on data supplied by the companies themselves, can be biased since the person providing the information has a personal interest in overvaluing it. Thus, these authors suggest that it is better to ensure the use of objective data on companies by using data or indicators from existing records (e.g., commercial databases containing economic and financial information, or publicly available databases with information on environmental performance).

In the case of ISO 9001, most of the studies employing objective or factual measurements concentrate on analysing the impact of adoption on financial performance variables such as sales revenue and profitability ratios (Häversjö, 2000; Dick *et al.*, 2008; Wayhan *et al.*, 2007;

Corbett *et al.*, 2005). For the ISO 14001, the environmental data analysed are diverse, with the majority of studies using environmental performance (e.g. Potoski and Prakash, 2005; Kang, 2005; Dahlstrom *et al.*, 2003; Matthews, 2001; Russo, 2002; Melnyk *et al.*, 2003; King *et al.*, 2005; Yin, 2003; Jiang and Bansal, 2003; Andrews *et al.*, 2003), and the remaining studies using environmental management variables (i.e. practices, initiatives, technologies) and financial performance variables (Heras *et al.*, 2009). In the case of factual variables, it would also seem that there is a predominance of studies showing a positive relationship between the adoption of metastandards and the performance of companies.

On the other hand, as stressed by some authors (i.e. Häversjö, 2000; Heras *et al.*, 2002; Wayhan *et al.*, 2002; Dick *et al.*, 2008), it is very important to take into account the potential confusion in the attribution of causation in research designs that assume forward causation. Dick *et al.* (2008) suggested that cross sectional studies on the impact of metastandards on performance could well be based on a suspect assumption of causality. Thus, these authors stressed that research designs within the field should be able to explicitly measure both causal directions (Dick *et al.*, 2008). By way of example, reference could be made in this respect to the study conducted into ISO 14001 by Toffel (2006), who explicitly set out in his research to find whether there is a positive *ex ante* selection effect on companies that decide to become certified (namely a *positive selection-effect*) or whether there is an *ex post* improvement effect due to the treatment that certification entails (*treatment-effect*) which results in a greater environmental impact.

Methodologically, there are great limits to this kind of study, as has been underlined by the authors of the studies themselves. The importance of introducing appropriate control variables is important, since endogeneity in this kind of study is a very important issue. For this reason, some of these studies could be criticized for the empirical methods employed, since they seem to be too basic. Nevertheless, even contributions that are based on subtler models (e.g., logit regression) that have been frequently referred to in the relevant literature (e.g., King and Lenox, 2000; Corbett *et al.*, 2005; Toffel, 2006), assume that all processes of implementation and certification of metastandards are homogeneous, an assumption which, as is shown below, is being called into question by a new line of research.

- *The analysis of differences in adoption levels for metastandards.*

The majority of studies into the adoption of metastandards assume homogeneous adoption of this management technology. They concentrate on the question of whether or not a company has third-party certification as the sole criterion to demonstrate that implementation has been completed.

More and more studies, however, now emphasize the heterogeneity of their adoption, i.e., the differences between models of adoption or internalization in terms of depth or substance, both in the case of ISO 9001 (Vasconcelos and Vasconcelos, 2003; Arauz and Suzuki, 2004, Naveh and Marcus 2004; Biazzo, 2005; Briscoe *et al.*, 2005; Boiral and Roy, 2007; Nair and Prajogo, 2009), and for ISO 14001 (Boiral, 2001; Christmann and Taylor, 2006; Jang and Ling, 2008; Yin and Schmeidler, 2008; Heras *et al.*, 2009). In this approach, considerable weight is given to the premise that now forms part of the conventional wisdom on this subject, i.e., that, as stressed by Cole (1999), many companies see certification as an end in itself. At a theoretical level this perspective suggests in one way or another a limitation placed on the concept of organizational isomorphism.

At this point we must once again refer to the neo-institutional theory (Meyer and Rowan, 1977; DiMaggio and Powell, 1983; Selznick, 1996; Zbaracki, 1998; Kostova and Roth, 2002). As has been said, these authors consider that external pressures lead organizations to adopt similar practices and structures, and the driving forces behind the desire to conform to these models are more related to a process of institutional mimesis than to a genuine concern for efficiency. For Meyer and Rowan (1977) these adoptions also reflect a “cult of reason” related to the use of managerial methods considered as legitimate and the frequent decoupling between these

methods and the real practices or needs of organizations result in “myths” and “ceremonies” intended to meet external environment requirements superficially (Meyer and Rowan, 1977).

In summary, the ritualistic implementation of metastandards mirrors the phenomenon of the ‘institutionalized organizations’ studied by the above-mentioned authors, whereby formal structures are separated from real daily activities in order to protect internal criteria for effectiveness and efficiency. At an operational level, this results in a discrepancy between the written document and the daily practices within companies, and with regard to the maintenance of the management system, organisations prepare for third-party audits at the last minute and once the audit process ends, they fall back into old practices (Askey and Dale 1994).

Christmann and Taylor (2006) suggested that companies with low quality standard implementation do not use the practices prescribed by the certified standards in their daily operations; these authors refer to this as symbolic implementation. In contrast, they state that companies with high quality implementation consistently use the practices defined in the certified standards, which we refer to as substantive implementation (Christmann and Taylor, 2006). Christmann and Taylor (2006) propose that companies approach the implementation of certifiable standards strategically by choosing a quality of standard implementation that matches their perceptions of costs and benefits. Assuming substantive implementation is more costly for companies than symbolic implementation, companies have incentives to choose a low quality of implementation unless they anticipate benefits beyond the symbolic value of standard certification itself.

Taking a similar approach, Boiral (2001) analysed the integration level of the ISO 14001 standard in the daily practices of companies, and established in his study the following classification of levels of integration (Boiral, 2001): ritual integration, with strong external and weak internal motivations; mobilizing integration, with strong external and internal motivations; proactive integration, with weak external and internal motivations; and reactive integration, with weak internal and external motivations. For ISO 9001 the same author established four groups of different rationales for adhering to ISO 9000, based on the relative importance of the external and internal motivations for adopting the standard (Boiral, 2003; Boiral and Roy, 2007). The groups identified are the following: quality enthusiasts, when the standard corresponds to strict internal as well as external requirements and companies appear to be the most convinced of the relevance of this system; ritual integrators, companies considering that the adoption of the standard is justified primarily by commercial pressures and that its usefulness as a management tool is very debatable; ISO integrators, companies which believe that the internal improvements that the standard can bring about are more important than its commercial aspects; and, finally, dissidents, who are characterized by relatively weak internal and external motivations, and appear to be the most inclined to contest the legitimacy of the metastandard. Heras *et al.* (2009) applied the same methodology in the case of companies in the Basque country (Spain) that had adopted ISO 14001.

Nair and Prajogo (2009) found in the case of companies in Australia and New Zealand that internalization of ISO 9000 standards is more strongly driven by an internal or functionalist impetus than by external or institutionalist motives. Splitting the sample between high and low performing companies reveals that internalization of ISO 9000 standards is associated with both functionalist and institutionalist motives in low-performing companies, whereas only functionalist factors influence the internalization of ISO 9000 standards in high-performing companies.

Following a similar approach, Jang and Ling (2008) analysed in the case of companies in Taiwan how motivation influences the depth of implementation of ISO 9001 and how the depth of the implementation of the metastandard in turn influences the performance of the companies concerned. They concluded that internal motivation was found to be positively correlated with the depth of implementation, and that depth of implementation was positively correlated with operational performance.

In the case of Italy, the world leader in the adoption of metastandards, Biazzo (2005) makes reference to a minimalist implementation of ISO 9001 standards, which he states is more widespread in the case of SMEs, since these companies tend to implement formal quality systems only when there is significant external pressure to do so. He also employs, from an institutionalist perspective, the expressions ‘ceremonial conformity’ and ‘ritualistic implementation’ of ISO 9000, to refer to the adoption of external norms which aim to confer social legitimation, and which can very likely lead to a separation between the real functioning of the company’s processes and the documented procedures of the quality system. Biazzo (2005) points out that it would be extremely risky to underestimate the issue of the artificial separation of formal and informal organization for ISO 9001 registration purposes, if we wish certification to contribute to the diffusion of process management techniques and to the cultural and competitive growth of organizations.

Yin and Schmeidler (2008) observed, in a study carried out in the United States into a case involving the ISO 14001 standard, that facilities that have assimilated the standard into their day-to-day operations to a larger extent are more likely to report a greater improvement in environmental performance after certification and more likely to report that ISO 14001 certification contributed to the improvement to a greater extent, compared with those which had a lower level of integration.

Other qualitative empirical research shows quite clearly that the simple adoption of a management standard does not automatically change and standardize organizational practices (Storz, 2003; Vasconcelos and Vasconcelos 2000; Heras, 2009). Vasconcelos and Vasconcelos (2003) present two case studies in the French computer industry showing that there are two ways to implement ISO9000 standards: an in-depth procedure (concerned with organizational effectiveness and with external legitimacy) and an instrumental one, only concerned with external legitimacy (e.g. looking for a certain degree of prestige and market differentiation). As Vasconcelos and Vasconcelos (2003) point out, another problem with metastandards is the proliferation of consultants specialized in writing procedures, helping organizations to organize a façade to get the certification without really modifying the organizational practices they adopt.

In relation to this line of research, as is also the case for most of the lines of research included in this review section, further empirical studies are necessary to analyse the real perceptions of the various stakeholders (consumers, managers, suppliers, intermediary clients, workers, etc) with regard to the process of adoption of metastandards. In his qualitative study based on 50 interviews with people (managers, quality specialist and line workers) from ISO 9000 certified organizations, Boiral (2003) detected diverse opinions and behavior on the support for the standard, the ISO system maintenance and the audit process.

On the other hand, as both Christmann and Taylor (2006) and Nair and Prajogo (2009) point out, due to the increasing importance of context dependence, future research should explore the sources of variation in the quality of implementation of metastandards in cross-country studies with different cultures and political environments.

- The analysis of the integration of standards.

The success of the diffusion of management standards in various different fields of company management has led organizations to consider their implementation in a single integrated management system. At the same time, the first studies analysing these aspects have begun to be published in the academic world.

The current academic literature dealing with the integration of management systems is mainly based on theoretical studies in which the principal aspects taken into account in relation to the process are a description of what an integrated management system consists of, of the methodology of integration employed, of the levels of integration to be found in a company and of the advantages and disadvantages involved (Bernardo *et al.*, 2009). While certain general models of integration have been proposed (Karapetrovic and Willborn, 1998; Karapetrovic, 2003; Beckmerhagen *et al.*, 2003), it is difficult to describe a single model for integrating management systems, since it can reasonably be anticipated that integrated systems will be

extremely specific, and therefore will be practically individualized and tailor-made for each company that decides to adopt such a process.

There is currently a great deal of academic controversy about the integration of management systems (Beechner and Koch, 1997; Karapetrovic and Willborn, 1998, among others). In this case it is mainly environmental management and quality systems which are concerned, since their integration is often confused with the mere fusion of both systems' documentation procedures. As stressed by Karapetrovic and Willborn (1998), similarities between metastandards in terms of the design, the language, the structure and the methodology of certification facilitates this integration, but such integration must be carried out not only to cut costs, but also to improve efficiency (Karapetrovic and Willborn, 1998).

Although integration has been studied in some detail from a theoretical point of view, there has been very little empirical research (Fresner and Engelhardt, 2004; Zutshi and Sohal, 2005; Karapetrovic *et al.*, 2006; Zeng *et al.*, 2006 and Salomone, 2008; Bernardo *et al.*, 2009). For future research, as Bernardo *et al.* (2008) have recently pointed out, it would be interesting to discover what difficulties companies face during the integration process and, in particular, whether the implementation model followed conditions the process; neither of these two characteristics has been compared with the necessary empirical evidence.

- *The analysis of the processes of consultancy and auditing for metastandards.*

The explosive growth of certifiable management standards is mirrored by the evolution of both specialized consultancy and the third-party auditing and registration industry. Many studies of the field have confirmed the importance of external consultancy services in the process of adoption of metastandards (e.g. Vloeberghs and Bellens, 1996; Marimón *et al.*, 2002), but there have not been many studies which have analysed the distinguishing features of the consultancy subsector that has grown up thanks to the success of metastandards.

Marimón *et al.* (2002) carried out a survey in which they analysed the distinguishing features of the consultancy service offered in Spain for ISO 9001, and they observed that there was a gap between clients' expectations and their perception of the quality of the service, and that the quality of service offered by consultancy companies and the professional staff that they employ varies according to the size of the company.

Another question which has not been analysed concerns the involvement of external consultants in the continuation of ritualistic or symbolic processes of implementation and certification of metastandards. In fact, as has been pointed out by Vasconcelos and Vasconcelos (2003), one potential problem with management standards is the proliferation of consultants specializing in "helping organizations to organize a façade to get the certification without really modifying the organizational practices they adopt" (Vasconcelos and Vasconcelos, 2003).

With regard to the function of the audit, the majority of the contributions in academic literature are of a theoretical character. Boiral (2003) analyzes the auditing process of ISO 9000, since implementing MSSs is often associated with preparing for the certification audit (the rite of passage or passing the "exam"), something that has largely ignored in studies of ISO 9000 and ISO 14000 (Boiral, 2003).

Although it is stressed that the role of the auditor is critical for the adoption of metastandards (Sakofsky, 1993) and requires careful interpretation and training, Hutchins (1993) claims that quality auditors are frequently unfamiliar with the client's industry, quality system, and process or products/ services, and that this results in a poor quality audit. This view is shared by other authors such as Chan, *et al.* (1993) and Williamson *et al.* (1996).

From an empirical point of view, in a survey of 274 ISO 9000 auditors in the UK, Williamson *et al.* (1996) found evidence of the implementation of corrective actions as providing the strongest indicator of an effective quality system. No other noteworthy studies have been identified so far, so that it could prove interesting to continue with this line of research.

Moreover, in the case of ISO 14001 Switzer and Ehrenfeld (1999) conclude that the pattern of third-party audit that is fostered by this standard in reality leads to a form of outsourcing of environmental regulation, and constitutes a way to spend less money on inspection procedures and on identifying companies with a better environmental performance. No international studies have been identified which could corroborate this conclusion with empirical evidence, so that this could be a very interesting question to analyse.

With a view to the future it would also be interesting to analyse whether, as a result of the rapid expansion in the diffusion of metastandards, the standard of quality auditing has improved, with better-trained and better-qualified auditors being able to provide a more helpful auditing style, as some authors maintain (e.g., Terziovski and Power, 2007), or whether it is rather the case that a rapid decline in quality has taken place. As pointed out by Brumm (1997), the existence of many entities capable of performing the required audits and issuing the relevant certificates was pointed out as a weakness that favoured instrumental implementation practices, contributing to the erosion of the prestige and credibility of management standards.

For all these reasons, it would be interesting to analyse the consistency of external auditing services, limited as they are by the fact that they are contracted and paid by the company that wishes to become certified. This issue has already been analysed in other areas of business due to the accounting scandals that occurred in the USA a few years ago and, more recently, with the problems facing credit-rating institutions in the financial crisis that arose in 2008. Indeed, as has been demonstrated by recent scandals in the accountancy sector and the financial market, third-party certification of management standards – an activity that does share certain similarities with that of account auditing and credit-rating – is no guarantee of honesty (King *et al.*, 2005).

This question may be related to a possible erosion of the prestige and credibility of management standards, a danger which has been pointed out ever since the phenomenon began (Askey and Dale 1994). In fact, at the beginning of the great wave of standardization that arose in Europe in the early 1990s in preparation for the creation of the single market, Jacques McMillan, an executive of the European Commission on Normalization, was already making the following comment⁹: “[The European Commission] is not interested in supporting the existence of an artificial quality and certification market that only serves the purpose of its providers”. In that case, after all the years that have passed by since then, it would be a good idea to carry out a general critical analysis of the entire process and of the services provided by the various different interest groups.

11. Conclusions

The purpose of this paper has been to trace the conceptual evolution of metastandards in management theory and in practice. The concept of management standard or metastandard, by definition clearly complex and multi-faceted, has been analysed from the perspective of disciplines as disparate as operations management, strategic management, international economics, economic geography or organizational sociology. The level of analysis has ranged from a pragmatic approach to the more theoretical level, but without much inter-relation between the various different lines of research being conducted.

As far as academic research is concerned, we can still say today, as Häversjö (2000) had already noted, that the study of metastandards based on a system of third-party certification such as ISO 9001 and ISO 14001, has been a veritable Klondike for researchers from all types of fields, since they are among the few management tools or technologies the users of which are listed in public records. The author referred to also added that, even so, systematic empirical research in this field was only just beginning (Häversjö, 2000). As we have attempted to show in this study, numerous contributions have been conducted in the almost ten years that have gone by since the above comment was published, but there are still today many questions waiting to be resolved. .

⁹ Comment made by Mr. McMillan and reported in Avery (1994).

As Braun (2005) points out, management metastandards regulate management practices in a broad range of companies around the globe. The study of the complex role of the adoption of these metastandards by researchers of very different backgrounds and different cultural and political environments could provide valuable contributions to a better understanding of their real role, both for academic and practitioner purposes.

12. References

Albuquerque, P., Bronnenberg, B.J. and Corbett, C.J. (2007). A spatiotemporal analysis of the global diffusion of ISO9000 and ISO14000 Certification. *Management Science*, 53(3), 451-468.

Amdreson, 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*, 8, 28-43.

Antonelli, C. (1999). *Localized Technological Change and the evolution of standards as economic institutions*. Oxford: Oxford University Press.

approach". *International Journal of Quality & Reliability Management*, Vol. 24, No. 2, pp. 141-13.

Arauz, R. and Suzuki, H. (2004). ISO 9000 performance in Japanese industries. *Total Quality Management & Business Excellence*, 15, 3-33.

Askey, J.M. and Dale, B.G. (1994). From ISO series registration to total quality management: an examination. *Quality Management Journal*, 1, 67-76.

Avery, S. (1994). What's wrong with ISO 9000? *Purchasing*, 116(3), 49-53, 1994.

Balzarova, M.A. and Castka, P. (2008) Underlying mechanisms in the maintenance of ISO 14001 environmental management system. *Journal of Cleaner Production*, 16(18), 1949-1957.

Bansal, P. and Hunter, T. (2003). Strategic explanations for the early adoption of ISO 14001. *Journal of Business Ethics*, 46(3), 289-299.

Bansal, P. (2002). The corporate challenges of sustainable development. *The Academy Management Executive*, 16(2), 122-131.

Benner, M.J., and Veloso, F.M. (2008), "ISO 9000 practices and financial performance: a technology coherence perspective". *Journal of Operations Management* 26, pp. 611-629.

Beck, N., and Walgenbach, P. (2005), "Technical Efficiency of Adaptation to Institutional Expectations? – The Adoption of ISO 9000 Standards in the German Mechanical Engineering Industry", *Organization Studies* 26: 841-866.

Bernardo, M.; Casadesus, M.; Karapetrovic, S. and Heras, I. (2009), "How integrated are environmental, quality and other standardized management systems? An empirical study ", *Journal of Cleaner Production*, Vol. 17, Issue 8, pp. 742 – 750.

Biazzo, S. (2005). The New ISO 9001 and the Problem of Ceremonial Conformity: How Have Audit Methods Evolved? *Total Quality Management & Business Excellence*, 16(3), 381-400.

Blind, K. (2004). *The Economics of Standards: theory, evidence, policy*. Massachusetts: Edward Elgar Publishing.

Boiral, O. (2001). ISO 14001 Certification in Multinational Firms: The Paradoxes of Integration. *Global Focus*, 13(1), 79-94.

Boiral, O. (2003). ISO 9000, outside the iron cage. *Organization Science*, 14(6), 720-37.

- Boiral, O. (2006). La certification ISO 14001 : une perspective néoinstitutionnelle . *Management International*, 10(3), 67-79.
- Boulter, L. and Bendell, T. (2002). How can ISO 9000:2000 help companies achieve excellence? What the companies think. *Measuring Business Excellence*, 6(2), 37-41.
- Braun, B. (2005). Building global institutions: the diffusion of management standards in the world economy – an institutional perspective, in Alvstam, C.G., Schamp, E.W. (Eds), *Linking Industries across the World*, Ashgate, London, pp.3-27.
- Briscoe, J.A., Fawcett, S.E., and Todd, R.H. (2005). The implementation and impact of ISO 9000 among small manufacturing enterprises. *Journal of Small Business Management*, 43, 309–330.
- Brown, A. and Van der Wiele, T. (1996). A typology of approaches to ISO certification and TQM. *Australian Journal of Management*, 21(1), 57–72.
- Brown, A. and Van der Wiele, T. (1995) Industry experience with ISO 9000. *Asia Pacific Management* , 4(2), 8-18.
- Brown, A., Van der Wiele, T. and Loughton, K. (1998). Smaller enterprises' experiences with ISO 9000, *International Journal of Quality and Reliability Management*, 15(3), 273–285.
- Brunsson, N. and Jacobsson, B. (2000), “The Contemporary Expansion of Standardization”, pp. 1-17, in Brunsson, N . and B. Jacobsson (eds), *A World ofStandards*. Oxford University Press. Oxford.
- Chan F.Y., Willborn W., Xiao H. and Li H. (1993). Research report: an expert system for quality management auditing. *Asia Pacific Journal of Quality Management*. 2(1), 65 - 72.
- Christmann, P. and Taylor, G. (2001). Globalization of the environment: Determinants of firm self-regulation in China. *Journal of International Business Studies*, 32, 439 - 458.
- Christmann, P. and Taylor, G. (2003). Environmental self-regulation in the global economy: the role of firm capabilities, in *Multinationals, Environment and Global Competition*, 9, 119-145.
- Cole, R.E. (1999). *Managing quality fads: how American business learned to play the quality game*. Oxford: Oxford university press.
- Corbett, C.J. and Kirsch, D.A. (2001). International diffusion of ISO 14000 certification. *Production and Operations Management*, 10(3), 327-342.
- Corbett, C.J. and Yeung, A.C.L. (2008): “Special issue on meta-standards in operations management: Cross-disciplinary perspectives”, *International Journal of Production Economics*, Volume 113, Issue 1, pp. 1-2.
- Darnall, N. and Edwards Jr, D. (2006). Predicting the cost of environmental management system adoption: the role of capabilities, resources and ownership structure. *Strategic Management Journal*, 27(2), 301-320.
- Delmas, M. (2001). Stakeholders and competitive advantage: the case of ISO 14001. *Production and Operations Management*, 10(3), 343-358.
- Delmas, M. (2002). The diffusion of environmental management standards in Europe and in the United States: an institutional perspective. *Policy Sciences*, 35(1), 91-119.
- DiMaggio, P. J. and Powell, W.W. (1991). *The iron cage revisited: institutional isomorphism and collective rationality in organizational fields*. Chicago: University of Chicago Press.
- Dreyfus, L.P., Ahire, S.L. and Ebrahimpour, M. (2004) The impact of just-in-time implementation and ISO 9000 certification on total quality management. *Engineering Management, Engineering Management IEEE Transactions on*, 51(2), 125-141.

- Furusten, S. (2000), "The Knowledge Base of Standards", pp. 71-84, in N . Brunsson and B. Jacobsson (eds), *A World of Standards*. Oxford University Press. Oxford.
- Giovannucci, D. and Ponte, S. (2005). Standards as a new form of social contract? *Food Policy*, 30, 284-301.
- González-Benito, J. and González-Benito, O. (2005). An analysis of the relationship between environmental motivations and ISO 14001 certification. *British Journal of Management*, 16, 133-148.
- Grolleau, G.; Lamri, J. and Mzoughi, N. (2008). Déterminants de la diffusion internationale de la norme ISO 14001", *Economie & prévision*, 185, 123-138.
- Guler, I. Guillen, M.F and MacPherson, J.M. (2002). Global competition, institutions, and the diffusion of organizational practices: The international spread of ISO 9000 quality certificates. *Administrative Science Quarterly*, 47, 207 - 232.
- Hart, S.L. (1995). A natural-resource-based view of the firm. *Academy of Management Review*, 20, 986 - 1014.
- Hashem, G. & Tann. J. (2007). The Adoption of ISO 9000 Standards within the Egyptian Context: A Diffusion of Innovation Approach. *Total Quality Management*, 18(6), 631–652.
- Hawkins, R. (1995). Introduction: addressing the problematique of standards and standardisation, *Standards, Innovation and Competitiveness*, ed. Edward Elgar. UK.
- Hawkins, R., Mansell, R., and Skea, J. (1995). *Standards, Innovation and Competitiveness: The politics and economics of standards in natural and technical environments*, ed. Edward Elgar, UK.
- Henson, S. And Loader, R. (2001). Barriers to agricultural exports from developing countries: the role of sanitary and phytosanitary requirements. *World Development*, 29(1), 85–102.
- Heras, I.; Arana, G.; Molina, J.F. (2009): "Motivations and benefits for implementing the green global standard", International conference Quality and Service Sciences, 12th QMOD and Toulon-Verona Conference, 27 – 29 August 2009, University of Verona, Italy.
- Hutchins, G. (1993). *ISO 9000: a comprehensive guide to registration, audit guidelines and successful certification*. Vermont: Oliver Wight Publications Inc.
- ISO. The ISO survey of ISO 9000 and ISO 14000 certifications. Geneva: ISO. <http://www.iso.ch/iso/en/iso9000-14000/pdf/survey2005.pdf>.
- Jiang, R.J. and Bansal, P. (2003). Seeing the need for ISO 14001. *Journal of Management Studies*, 40(4), 1047-1067.
- Judge Jr, W.Q. and Zeithaml, C.P. (1992). Institutional and strategic choice perspectives on board involvement in the strategic decision process. *Academy of Management Journal*, 35 (4), 766–794.
- Kanji, G.K. (1998). An innovative approach to make ISO 9000 standards more effective. *Total Quality Management & Business Excellence*, 9(1), 67-78.
- Karapetrovic , S. and Willborn, W. (1998). Connecting internal management systems in service organizations. *Managing Service Quality*, 8(4), 256-271.
- Lin, C.I., Huang, A.T and Tai, S.H . The study of the relationship between ISO 9000 Implementation, Operational Performance and Business Performance. (de esta referencia solo encontro este documento de word q no da informacion ni en que journal esta publicado ni su año de publicacion)
- Lundvall, B.A. (1995). *User-producer relationships, National Systems of Innovation and internationalisation*. London, New York: Pinter.

- Marimon, F.; Casadesús, M. and Heras, I. (2002), "Do quality consultants offer a quality service?", *Total Quality Management*, Vol. 13, n° 6, p 797-811
- Martínez-Costa, M., Martínez-Lorente, A.R. and Choi, T.Y. (2008), Simultaneous consideration of TQM and ISO 9000 on performance and motivation: An empirical study of Spanish companies. *International Journal of Production Economics*, 113, 23–39.
- Meegan, S.T. and Taylor, W.A. (1997). Factors influencing a successful transition from ISO 9000 to TQM. *International Journal of Quality & Reliability Management*, 14(2), 100-117.
- Mendel, P. J. (2000). International standardization and global governance: the spread of quality and environmental management standards. Paper presented to the research forum "Organizations, Policym and the Natural Environment: Institutional and Strategic Perspectives", April 28-30, 2000, Evanston, IL.
- Meyer, J. W. and Rowan, B. (1977). Institutionalized organizations: formal structure as myth and ceremony. *American Journal of Sociology*, 83(2), 340–363.
- Nadvi, K. (2008). Global standards, global governance and the organization of global value chains. *Journal of Economic Geography* 8(3), 323–343.
- Nair, A. and Prajogo, D. (2009). Internalisation of ISO 9000 standards: the antecedent role of functionalist and institutionalist drivers and performance implications. *International Journal of Production Research*, 47(16), 4545–4568.
- Nwankwo, S. (2000). Quality assurance in small business organizations: myths and realities. *International Journal of Quality and Reliability Management*, 17(1), 82–99.
- Potoski M, and Prakash A. (2004). Regulatory convergence in nongovernmental regimes: cross-national adoption of ISO 14001 certification. *Journal of Politics*. 66(3), 885-905.
- Potoski, M. and Prakash, A. (2005). Green clubs voluntary governance: ISO 14001 and firms' regulatory compliance. *American Journal of Political Science*, 49(2), 235-248.
- Quazi, H.A., Hong, C.W. and Meng, C.T. (2002). Impact of ISO 9000 certification on quality management practices: a comparative study. *Total Quality Management*. 13(1), 53-67.
- Raines, S.S. (2003). Perceptions of Legitimacy and Efficacy in International Environmental Management Standards: The Impact of the Participation Gap. *Global Environmental Politics*, 3(3), 47-73.
- Rogers, E. M. (1995). *Diffusion of Innovations*. New York: The Free Press.
- Rondinelli, D. and Vastag, G. (2000). Panacea, common sense or just a label? The value of ISO 14001 environmental management systems. *European Management Journal*, 18(5), 499-510.
- Sakofsky, S. (1993). Twelve ways to make a quality audit work for you. *Journal of Quality and Participation*, 16(6), 30-32.
- Sampaio, P.; Saraiva, P. and Rodrigues, A.G. (2009), ISO 9001 certification research: questions, answers and approaches. *International Journal of Quality & Reliability Management*, Vol. 26, n. 01, pp. 38-58.
- Scott, W. R. (1995). *Institutions and organizations. Theories and research*. London: Sage
- Silva, A. (1997): "The Added Value and Credibility of Certification of Quality Systems in the European Union", *Compilation of Quality Series Documents, The European Quality Promotion Policy*, European Commission, DG III – Industry, Bruselas.
- Sroufe, R. And Curkovic, S. (2009). An examination of ISO 9000: 2000 and supply chain quality assurance. *Journal of Operations Management*, 26(4), 503-520.

- Storz, C. (2003). Implementation of standards: what about the possibility of a convergence of production systems by international rules? In: Pascha, Werner (ed): *Systematic chance in the Japanese and German economies: Convergence and differentiation as a dual challenge*. London, New York: Routledge Curzon (forthcoming).
- Sturkenboom, J., Van der Wiele, T. and Brown, A. (2001). An action-oriented approach to quality management self-assessment in small and medium-sized enterprises. *Total Quality Management*, 12(2), 231–246.
- Teece, D. (1986). Profiting from innovation: Implications for integrity, collaboration, licensing, and public policy. *Research Policy*, 15, 295 - 305.
- Terziovski, M. and Power, D. (2007): “Increasing ISO 9000 certification benefits: a continuous improvement
- Terziovski, M., Power, D. and Sohal, A. (2002). The longitudinal effects of the ISO 9000 certification process on business performance. *European Journal of Operational Research*, 143(3), 580-595.
- Tirole, J. (1988). *The Theory of Industrial Organization*, Massachusetts: MIT Press, Cambridge.
- Uzumeri, M. (1997): “ISO 9000 and Other Metastandards: Principles for Management Practice?”, *Academy of Management Executive*, vol. 11, n°1, págs. 21-36.
- Van der Wiele, A., Dale, B.G. and Williams, A.R.T. (1997). ISO 9000 series registration to total quality management: the transformation journey. *International Journal of Quality Science*, 2(4), 236-252.
- Vasconcelos, I.F.G. and Vasconcelos, F.C. (2003). ISO9000, Consultants and Paradoxes: a Sociological Analysis of Quality Assurance and Human Resource Techniques. *RAC, Revista de administración contemporánea*, 7(1), 173-194.
- Vastag, G. (2004). Revisiting ISO 14001 Diffusion : A New “Look” at the Drivers of Certification. *Production and Operations Management*, 13(3), 260-267.
- Wernerfelt, B. (1984). A resource-based view of the firm. *Strategic Management Journal*, 5, 171-180.
- Wilkinson, G. and Dale, B.G. (1999) Integrated management systems: an examination of the concept and theory. *The TQM Magazine*, 11(2), 95-104.
- Williamson A., Rogerson J.H. and Vella A. D. (1996). Quality system auditors’ attitudes and methods: a survey. *International Journal of Quality Reliability and Management*. 13(8), 39 - 52.
- Yin, H. and Schmeidler, P.J. (2008). Why Do Standardized ISO 14001 Environmental Management Systems Lead to Heterogeneous Environmental Outcomes? *Business Strategy and the Environment*, Forthcoming.