

# ISO 14001 diffusion after the success of the ISO 9001 model

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## Abstract

The interest shown by organizations and other entities linked by the implementation of environmental management systems (EMS), especially the family of ISO 14000 standards and the EMAS regulation in Europe, has grown spectacularly all over the world in recent years, even though a certain saturation has been detected in some countries. That leads us to ask, is EMS implementation already saturated? This article will analyze the case of the successful ISO 14000 standard, based on previous experience with the most widely used standardised management systems in the entire world: quality management systems (QMS). Will EMS follow in the footsteps of QMS?

The analysis carried out, using a logistic curve that fits quite well to explain the nature of this growth, distinguishes three general patterns to explain the diffusion of these norms, namely, expansionistic, mature and retrocessive.

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## 1. Introduction

During the past few years there has been a significant growth in the standards issued by agencies specialized in standardization in the economic field. This growth has largely been due to the marked process of economic globalization and integration that western economies have experienced over the last two decades [1].

Standardization could be generically defined as that activity aimed at putting order into repetitive applications that arise in the field of industry, technology, science and the economy [2]. In its beginnings, at the start of the 20th century, standardization arose to limit the anti-economic diversity of components, parts and supplies so as to favour their interchangeability, facilitating serial production and the repair and maintenance of products and services. In a global economy without

standardization and the fruits of it – regulations, standards and technical specifications – exchanges would be exceeding difficult. Consequently, standardization fosters international trade thanks to the elimination of obstacles due to different national practices. Notwithstanding, these standards often form non-tariff barriers to international business relations as they are not truly global. As several authors have pointed out [3,4], while there are fewer and fewer tariff barriers, non-tariff barriers – technical standards and regulations which affect the requirements of products, services and, indirectly, production processes – take on greater importance.

At present there is a great number of national and international standards attempting to order and systematize – among other things – the implementation of business management systems in terms of very different functions and operating activities, such as quality improvement (ISO 9000, TS 16949, QS 9000, EAQF, VDA, etc.), occupational hazard prevention (OHSAS 18001), corporate social responsibility (SA 8000, AA 1000 and the ISO 26000 draft standards), R&D activities (the Spanish UNE 166000 EX experimental standard), human resources management (Investors in People), and of course the case that interests us: environmental impact (the ISO 14000

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family of standards and EMAS). All of these standards included in the set of Management System Standards (MSS) are dealt with. However, it must be made clear that these MSS are not based on standards which refer to the attainment of a specific objective or result – that is to say, they are not result or performance standards, but rather standards which establish the need to systematize and formalize a whole series of business procedures related to the different fields of business management in a series of procedures [5].

From a global perspective, the success of disseminating all these management standards seems to be closely linked to the dynamics of the globalization process of western economies and the main players in them – multinationals: if standardization originally came about in order to limit the anti-economic diversity of components, parts and supplies in an economic environment in which outsourcing and relocation of business activity prove to be strategic elements, it must nowadays promote a certain homogeneity in business management systems in order to favour such processes. Specialists in this field point out that in the absence of a regulating power of a global and public nature, the task of designing, implementing and enforcing standards, in areas in which such measures have traditionally been thought of as part of the regulation of public powers, is increasingly taken on by different regional or global institutions of a non-governmental nature [6–8].

All these standards employ very similar methodologies for their creation, structuring, implementation and third-party verification processes. Two series of standards issued by the International Organization for Standardization (ISO) stand out among them, due to their successful dissemination: the ISO 9000 series, related to the implementation of quality systems, and the ISO 14000 series, related to the implementation of environmental management systems, and at the same time the analytical objective of this article.

The ISO 9000 phenomenon has aroused great interest and has been extensively studied in academia. While the literature is not as extensive as that analyzing ISO 14000 implementation, research on the ISO 9000 can be found [9–12]. Although the results of these studies are very diverse, it could generally be stated that external factors, especially the coercive pressure of customers, are very important motivators in the implementation of the standards referred to. Regarding the methods used in these studies, they are generally based on opinions obtained from surveys circulated among company environmental and quality managers, and thus reflect an inherent bias.

Recently, research focusing on the endogenous process of ISO 9000 dissemination has been carried out internationally, and the work of Saraiva and Duarte [13] and Franceschini et al. [14] stand out. Now, in the academic literature known to us, only Professors Corbett and Kirsch [15], in an extension of the research carried out by Vastag [16] and Marimon et al. [17], have analyzed the joint dissemination of ISO 14000 and ISO 9000. These studies are interesting not only due to their descriptive and predictive capacity regarding the dissemination process of these international standards per se, as highlighted by the authors, but also because they offer certain empirical evidence with regard to whether an analogy can be

drawn between the dissemination process of these standards and the dissemination of innovations in general.

There is a crucial difference between the studies we have read and the present one. Those studies were done at a time when the number of certificates was growing year by year, with both standards in clear expansion, a situation in many countries that is very different from the present one. In fact, and as the ISO itself includes in its latest annual report analyzing the international dissemination of both standards, recent years have seen a certain drop in the number of certificates in several of the countries which had historically been leaders in this area (see Ref. [18]). That is why we wonder if this phenomenon, primarily found in QMS, will also occur in EMS.

The purpose of this article, with its clearly exploratory and pilot content, is to analyze in detail the evolution of the ISO 14000 certificates on an international level, in order to predict their future diffusion. To that end, and since it is the only standard to be studied until now and will quite possibly become a clear reference in the field of standardization, the diffusion process of the successful ISO 9000 will be used. It is logical to think that the “steps” followed by this management standard will be fairly similar to those that will be taken by the ISO 14000 standard in the coming years. In this way it may be possible to determine whether homogenous guidelines exist in the phases of the dissemination process of both certificates – including the decline phase which could be defined by the concept of decertification. In addition, it will analyze whether it is possible to assess the scope of these decline phases, which prove to be of interest to the different agents involved in the implementation of the aforementioned standards. Proposals that have emerged from the exploratory and projective work carried out and that could be tested in future work are also specified in the final part of this article.

## 2. Current situation of the leading EMS standards

The ISO 14000 family of standards establishes a reference model for the implementation of company environmental management systems, defined as those parts of global management systems that describe the organizational structure, planning activities, responsibilities, practices, procedures, processes and resources for preparing, applying, reviewing and maintaining company environmental policies. It contains standards that include guidelines and suggestions for matters such as environmental management, environmental auditing, environmental labelling or life cycle assessment. Nonetheless, the only normative standard within this series is the ISO 14001, which provides a list of specifications and requirements that an EMS should meet. It is the only one against which the company can be assessed and certified [19].

The ISO 14001 standard is divided into five major sections: (a) environmental policy, which involves making a statement of environmental intentions and principles; (b) planning, which requires the company to specify the processes it uses to identify the environmental problems that must be tackled and to define specific objectives and targets; (c) implementation and operation, which involves both defining

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