



Finding the connection: environmental management systems and environmental performance

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ABSTRACT

With more than 130,000 organizations worldwide certified according to ISO requirements, business people, regulatory authorities and other stakeholders have reason to wonder whether the purpose of ISO 14001, which is to help improve environmental performance, is being fulfilled. There is a growing body of literature attempting to answer this question. The results, however, are inconclusive.

This meta-study analyzes a pool of 23 studies connecting environmental performance to environmental management systems. It shows that the reason that earlier studies arrived at mixed conclusions is twofold. Firstly, there is no agreement on what environmental performance is or how to measure it. Secondly, there is neither clarity nor agreement about how or why environmental management systems are expected to aid performance. It is therefore unclear whether the mechanisms that lead to improvement are expected to be the same for all companies or dependent on each implementation.

The authors conclude that it is more fruitful to research how environmental management systems affect performance, rather than whether they do so or not. The recommended starting point for such studies is environmental performance as each organization defines it. This in turn implies a case by case approach and a need for much more research in the field.

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1. Introduction and purpose

A significant and growing number of studies have attempted to examine the environmental outcomes of environmental management systems (EMS). Since their development and launch in the 1990s, with the Rio Summit as one motivator, the phenomenon of externally audited environmental management systems has caught on in industry and other organizations and continues to spread. Foremost among environmental management standards is ISO 14001. So far more than 130,000 organizations worldwide have certified their environmental management systems according to ISO requirements [1]. After more than a decade of existence standardized environmental management systems should certainly have a sufficient track record for meaningful evaluation. The stature and success of the standard indicate that such attention is warranted. One pressing line of inquiry is to what extent use of the standard has actually benefited the environment.

The usefulness of EMS as a tool to manage environmental issues in companies is a question of interest to many different parties. One of the most interested groups conceivably are the companies themselves, who invest large amount of resources into the

implementation and operation of EMS. As a natural follow up they seek to find out not only their own performance in connection to increased environmental work, but also the general value of the standardized EMS as recognized on the relevant markets. Companies that have invested in EMS want to see a return in whatever terms it was that led to the decision to implement their EMS.

Companies are also interested in environmental management done in other business establishments. One of the reasons is to benchmark with competitors on the market [2]. Another growing trend is to demand ISO 14001 certificate from suppliers. This practice serves as a first step to environmental supply chain management, and also creates new opportunities for businesses that have implemented the environmental management systems. The certification by itself shows that environmental practices are implemented and environmental performance of companies is at least on an acceptable level. There is, however, a large unrealized potential to use the EMS to monitor and manage the environmental performance of the suppliers [3]. Companies using EMS in their supply chain management therefore also require a better understanding of how the aspects of environmental performance important to them are affected.

Governments have an interest in efficient regulatory mechanisms and there is hope that environmental management systems could facilitate this [4]. The very existence of the EMAS regulation

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also clearly demonstrates that governments perceive a regulatory need or opportunity that can be addressed with environmental management systems [5]. Regulatory authorities on various levels are offering possible control relief for environmental front runners. It was claimed as one of the possible benefits for organizations and lately also has become known as a practice to offer regulatory relief for companies investing in the systems compliant to EMAS and ISO 14001 [6]. Now, after years of possible experience gathering regulatory bodies may be interested to find out if such practices are worthwhile, if EMS-oriented organizations are actually performing better than those without EMS.

One very good reason to wish to examine if EMS improves environmental performance is that the enhanced environmental performance is at least part of the reason for the standard. “The general purpose of this standard is to provide assistance to organizations that wish to implement or improve an environmental management system and thereby improve their environmental performance” [7]. This claim must, however, be seen in the light of what may be defined as performance and improvement.

The purpose of this study is to facilitate continued research on the results of EMS by analyzing and summarizing earlier work. This article, based on a meta-study of selected literature, discusses how the outcomes of EMS in terms of environmental performance are first of all perceived and defined. The methodological choices are also focused in order to answer the question of causal relationship between EMS and improved environmental performance. Further, the issue of context dependency of EMS is discussed. The authors hope to contribute to asking the right questions in coming research, but also to increase the clarity of investigations.

This article starts with a brief presentation of some recurring theoretical issues that guide the following sections with findings and analysis. As the last part the authors conclude the study and give recommendations for future research.

2. Problem definition

2.1. Perceptions of environmental performance

As can be seen from the opening remarks, there are many parties interested in environmental management systems and therefore there are also conceivably differing expectations as to what a positive outcome of environmental management efforts would entail.

According to the ISO 14001 standard, the result of EMS is environmental performance, and it is broadly defined as “measurable results of an organization’s management of its environmental aspects” [8]. However, specified interpretations may vary depending on the perception of the EMS and its role in the organization. It is plausible to assume that facilities implementing the system may see their environmental performance quite differently from what the general public does. Moreover, the differences in the characteristics of environmental management systems certainly affect the way the environmental performance is defined.

Further, external standards, such as ISO 14001, generally require that facilities establish environmental targets but they do not specify the substantive nature of these targets [8,9], thus the ambition level may vary substantially. Thus, the view of what EMS should improve varies between companies, and does not necessarily reflect the views of other stakeholders.

For example, a business survey carried out amongst Swiss firms identified 14 benefits of implementing an EMS which were considered to be important by at least half of the respondents. The benefits ranged from ‘strengthening innovation’ and ‘customer loyalty’ to ‘prevention of new environmental legislation’, with ‘enhancement of corporate public image’ ranking highest. Only three of these had a direct relationship with actual environmental

impact (‘risk minimization’, ‘certainty of legal compliance’ and ‘support of ecological transformation of the line of business’), and these were not ranked as the most significant [10]. This illustrates very well both the diversity of EMS as well as perceptions of what the results of the system can be.

Moreover, research on outcomes of EMS such as environmental performance meets practical hurdles such as data collection. For example, there are only few publicly available national databases on emissions, such as in Great Britain, USA and Netherlands, and the data quality and its usability differs. Despite international efforts such as GRI, there is no widely accepted reporting standard for data [11]. The reporting standard relates directly to allocation questions. They pertain to the way the different environmental indicators used for calculations of environmental performance are constructed, and are very much dependent on the individual decisions of companies. Thus when the environmental outcomes of EMS are discussed it is thus important to understand what limitation were brought by the selection of the research method and the quality of data used.

Similarly, the researcher seeking to evaluate EMS must do so by some method. It is necessary to define not just performance, but what is meant by improvement. The choice of method of appraising performance is never entirely objective [12].

2.2. Connecting performance and EMS

The connection between EMS and environmental performance may be examined in a great variety of ways. One of the ways reported in literature is in terms of the expectations and benefits the companies themselves are experiencing. Because of the variety of perceptions of environmental performance, this type of study is easier to conceive as a specific for each organization studied.

Another way might be to seek correlation between the existence of an EMS and enhanced environmental performance as defined by an external party for all companies. In a research constructed in this way, the investigation will seek to answer whether the EMS resulted in improved environmental performance, e.g. defined as reduction of waste generation. Such an approach, even if often used, bears the uncertainty of whether the correlation can show causality, meaning that the improved environmental performance, here minimized waste generation, may not necessarily be the effect of the EMS [9]. Moreover, companies with a better environmental track record may well be more apt to implement and certify an EMS, as a way to capitalize on their environmental achievements and advertise “green” image, as was suggested by other authors [13]. Even when the particular company shows improved performance after putting an EMS in place, this does not confirm that the improvement was caused entirely by the EMS. It is quite plausible that the improvement was achieved with the co-existence of other supporting factors. In fact, the correlation between EMS and improved environmental performance does not show that the improvement would not have been the same without the EMS [14].

Thus correlation alone cannot show causality, but it can certainly strengthen or weaken such an argument. Particularly, if correlation studies are coupled with theory about how environmental management systems are expected to improve performance, a stronger argument can be made if there is correlation between performance, systems and the functioning of the particular mechanism that is expected to have effect. If we are to show that EMS improves environmental performance (or not), it would therefore be helpful to examine the mechanisms that are expected to affect the improvement.

It is thus necessary to focus not only on the question if there is a strong correlation between implementation of the EMS and improved environmental performance, but more importantly on the question how the environmental performance is defined at

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