

Underlying mechanisms in the maintenance of ISO 14001 environmental management system

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Abstract

In this paper we aim to investigate the underlying mechanisms of the maintenance of ISO 14001. Initially, we looked into the Hillary's [Hillary R. Evaluation of study reports on the barriers, opportunities and drivers for small and medium sized enterprises – the adoption of environmental management systems. Report for DTI Envirodoctorate 5th October, 1999. London: NEMA; 1999] evaluation study on barriers, opportunities and drivers for small and medium enterprises that adopted environmental management systems and we developed a comprehensive list of barriers identified in the literature. We have used this set of barriers to investigate the underlying mechanisms in the maintenance of ISO 14001 environmental management system through an in-depth longitudinal case study in manufacturing organisations. We have determined five underlying processes (transforming and value adding; administrating and improving; understanding and accepting; communicating and learning; availability of resources) and five key actors (external environment; environmental management team; ISO 14001 EMS; organisation; resources and skills), which interactions are captured in M-ISO model. Finally, based on our study we offer directions for future research.

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1. Introduction

Since its introduction in 1996, ISO 14001 environmental management standard attracted an ever growing number of organisations. In 2006, there were 129,199 certified organisations in 140 countries [27]. A number of academic studies investigated this global diffusion [14,15,39]. Similarly, numerous studies investigated ISO 14001 adoption patterns at the national and firm levels; for instance in the USA [1,28], Hong Kong [25], Germany [35], New Zealand [12] or Australia [52]. All of these studies aimed to describe geographies, diffusion patterns, adoption mechanisms and benefits/disbenefits that organisations encountered with ISO 14001.

The literature agrees that there are two fundamental stages in ISO 14001 implementation: installation and usage [36]. However, the usage stage is described to lesser extend than the installation stage. Some studies have addressed this stage [36,8] yet there is still lack of in-depth investigation of internal dynamics in maintaining ISO 14001 environmental management system. This fact is also highlighted in professional literature. For instance, Pedersen and Nielsen [37] highlight the fatigue and lack of motivation to maintain the system after the certification. Wade [50] asserts that organisations need to go beyond the compliance paradigm [50]. Hence, in this research, we aim to close this gap and investigate the underlying mechanisms in the maintenance of ISO 14001 environmental management system in organisations.

2. A closer look at ISO 14001

ISO 14001 can be seen as a useful tool to implement an organisation's environmental strategy by undertaking certification

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against the standard [24,32,31,52]. The motives to implement ISO 14001 differ. Mostly, these are related to “external factors” such as corporate image, marketing advantage, customer or network pressure/demand, relation with communities, and relation with authorities but also internal factors such as improving environmental performance and emergency preparedness [38,39].

Research shows that benefits from the ISO 14001 adoption can be numerous. For example, businesses gain external recognition and possibly market benefits [24,32,31,52,15], quality systems in combination with ISO 14001 are reported to improve [30]; the overall quality of management rises [40]; and areas that normally would not be under the direct scrutiny of managers are subject to improvement and development [23,21]. Communication channels, skills, knowledge and attitudes can also improve in organisations that adopted ISO 14001 [43]. Moreover, grounds for new interactions between staff and management can open up which can provide intangible benefits such as enhanced morale [21,23].

On the other hand, several studies questioned the benefits from ISO 14001 adoption for both, a company and society in large. Firstly, some authors criticise ISO 14001 standard for its weak focus on actual environmental performance of a plant or a company [29,38]. Rondinelli and Vastag [43] state that “the standard merely assumes that a company that certifies its EMS has a management system in place to deal effectively with its environmental impacts”. Critiques of meta-standard approaches [54,29] criticise the management by objective approach. As Rondinelli and Vastag [43] argue “voluntary approaches such as ISO 14001 often result in developing goals and objectives based on a consensus with a company, that may be sub-optimal and implementation often relies primarily on peer pressure and management incentives that may be ineffective”. Secondly, organisations that adopted ISO 14001 often questioned the added-value of the standard. Hillary [23] concludes that “it is apparent that organisations have been “sold” the benefits of EMSs such as cost savings, and when they fail to materialise these, the organisations feel cheated.” A major source of irritation for organisations is the cost of development and certification [21], partly attributed to the cost and quality of consultants advising them. It is apparent that some organisations have been misadvised and developed bureaucratic and ineffective systems [23]. Furthermore, many organisations found that more resources were required than initially expected, in terms of cost, time, and/or skills. According to Hillary [23] organisations encountered implementation “surprises” that had unexpected impacts on their resources. For instance, new knowledge and skills had to be acquired or external advice sought — especially in terms of tracking new legislation and aspects and impact evaluation [23,30]. Addition cost was necessary to train the staff. This resource and skills tension had in turn a negative impact on organisations — research reports ‘time pressures’ and ‘resistance to change’ as primary reasons [3,21].

3. Internal barriers to ISO 14001

Previous section of this paper highlighted some of the key areas around ISO 14001. In this section, we provide more

detailed insight specifically into the internal barriers to ISO 14001, which is the focus of our paper. We have summarized the findings from the literature in Table 1.

Table 1 is organised around ISO 14001 clauses and sub-clauses. For each clause and subclause, a set of barriers is listed. The rationale for this is twofold: (a) to capture the barriers that were already identified in the literature and (b) not to overlook any element of ISO 14001. Table 1 derives mainly from Hillary’s [23] research that provides a comprehensive overview of the barriers to ISO 14001, Eco-management and audit scheme (EMAS) and BS 7750. We found Hillary’s [23] research as the most relevant starting point for our research even though this research uses a mixture of studies conducted around different standards (not exclusively ISO 14001). These are similar in nature, though. Furthermore, the quality of some of Hillary’s [23] data varies, which is also recognised by Hillary [23]. Firstly, some of the data comes from organisations that had never been certified to environmental management system. Secondly, some of the secondary sources Hillary [23] used are based on research with low academic rigour (for instance consultancy reports). And finally most of the data are generated through surveys, which may reveal the most prevalent barriers but do not inform about the nature of the problem. Despite these limitations, Hillary’s [23] study represents the most comprehensive overview of the barriers in EMS’s implementation in SMEs.

4. Methodology

Our research follows a phenomenological philosophy and strives for an in-depth understanding of the investigated phenomenon (i.e. underlying mechanisms in the maintenance of ISO 14001 environmental management system). We used a multiple case study approach [18,41,51] and conducted an inductive theory building study [47]. By using this approach we were able not only to obtain the rich data, but also to integrate rich descriptive information and to uncover unanticipated clues [16]. The overview of the research methodology is given in Fig. 1.

4.1. Case selection

The research was conducted in two small-to-medium (SME) case study organisations (CSOs). Both CSOs share following similarities. Firstly, both CSOs are certified to ISO 14001; they were certified approximately at the same time (CSO A in 2002 and CSO B in 2001). Secondly, in both cases, it was owner’s decision to achieve the certification to ISO 14001. Furthermore, CSOs have their manufacturing sites located in the UK and operate in the same sector (steel manufacturing); they produce similar products and use similar technologies. Consequently, the environmental aspects, impacts and legislative demands were similar; hence ISO 14001 EMSs were installed and used under comparable circumstances. However, EMSs were implemented independently and there was not any knowledge transfer between these two organisations. The similarities

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