

INVESTIGATING THE ADOPTION OF ENVIRONMENTAL MANAGEMENT SYSTEMS IN THE FINNISH LOGISTICS SECTOR

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Introduction

This paper reports on a study of adoption of environmental management systems (EMS) by firms in the Finnish logistics sector. Environmental business practices have been integrated in firms' operations and strategies for some time now, and have been scrutinized both by researchers and practitioners across the world (Hart, 1995; Paulraj & Jong, 2011). Environmental concerns have also been targeted at firms' supply chains and logistics service providers (LSPs) and have been investigated for over two decades (Chiarini, 2013; Lun et al., 2015). Firms have also been encouraged to adopt an EMS to allow them to establish, manage, administer and monitor environmental activities, and which involves systematic and integrated processes and procedures (Sarkis, 2003; Prajogo et al., 2012). EMS is a framework. The two most commonly known EMS are the International Organization for Standardization (ISO) 14001 standard and the European Eco-Management and Audit Scheme (EMAS) scheme (Testa et al., 2013; Heras-Saizarbitoria et al., 2014). However, the logistics and supply chain sector's understanding of these standards is limited and EMS adoption has been inconsistent across the logistics sector in general (Shaw, 2013). This lack of understanding and adoption of EMS includes Finland and thus this paper's purpose was to investigate this phenomenon in the Finnish logistics sector to understand why some companies choose or not to adopt and implement an EMS and also determine critical factors behind adoption.

Literature Review

EMS Motivations and Benefits or Drivers

Several studies on EMS motivations and benefits informed this study. Randonelli and Vastag (2000) conducted a case study on ISO14001 certification motivations in California that found improvements in management practices, employee attitudes and firms' waste reduction and recycling efforts. Poksinska et al. (2003) found that the major factor motivating Swedish firms to adopt ISO14001 is the enhancement of corporate image driven by a marketing advantage, customer pressure and demand, and relations with communities and authorities. Prajogo et al. (2012) investigated Australian firms regarding ISO14001 and identified that due to the standard's worldwide acceptance a motivation for firms was to build an environmental reputation on its symbolic value. Lastly, in a New Zealand study Cassells et al. (2008) found that the most significant motivation (and benefit) behind EMS adoption was to improve the firm's environmental performance and internal business processes.

Morrow and Rondinelli (2002) investigated domestic gas and energy companies in Germany and found that the most important benefits from EMS adoption were better organisation and documentation of environmental activities, increased legal certainty, improved image, greater employee motivation, better co-operation with authorities, and favourable insurance rates but not direct cost-savings. Psomas et al.'s (2011) quantitative study conducted among 53 ISO 14001-certified companies in Greece found significant benefits included improvements in a firm's position in the market, a transition from conventional to sustainable practices, relationships with society due to better environmental performance, and waste processing.

Work by Wiengarten et al. (2013) found five themes for drivers in their literature review of EMS implementation in firms. Firstly, stakeholder-driven reasons including the ever-increasing environmental pressure on supply chains from customers, governments and non-governmental

organisation (NGOs) to become more responsible. Secondly, ethical motivations can play a role in sustainable management practices and EMS adoption is seen as a proactive approach for putting values into practice. Thirdly, operational and financial performance was found to increase after implementing EMS even though it has been associated with increased costs prior to adoption. Fourthly, government regulations are increasingly putting pressure on companies and their supply chains to act more sustainable and minimise pollution. Lastly, marketing and legitimating drivers, where EMS certificates like ISO 14001 and EMAS signals a firm's environmental awareness and commitment, which then improves the company's image in the eyes of governmental institutions, customers and other stakeholders of the company.

Shaw (2013) found that organisations see, inter alia, reduced costs, improved operational efficiency and complying with government legislation as the most significant drivers or enablers for implementing EMS. Her study also indicated that cost and government legislation provided the most significant motivation as both were also found the most significant barriers for adoption. Lastly, Heras-Saizarbitoria et al. (2014) studied EMAS adoption and found that countries with higher adoption rates, such as Germany, Spain and Italy, have been able to use the scheme as a substitute for environmental reporting and monitoring required by governments, which proves that an EMS can function as a self-regulatory mechanism for both governmental bodies and industries.

EMS Barriers

Implementation of an EMS is a complicated process with barriers appearing at different stages of adoption that drain capital and human resources to that extent that it can be unreasonable for example for SMEs. Rațiu and Mortan (2014) presented external and internal barriers in a study about EMAS adoption by small and medium-size enterprises (SMEs) and found barriers could also be the opposite of perceived benefits for example lack of recognition and positive rewards by public institutions, lack of customer interest and awareness, unclear benefits or insufficient drivers for EMS adoption, and difficulty in involving and motivating employees. Shaw (2013) found that the complexity of the supply chain and data available to provide measurements were also significant barriers. Other examples of barriers include poor infrastructure, time, control of the supply chain, a lack of data, the economic climate, a lack of experience, and the fact that no one is asking. Psomas et al. (2010) found the most significant barriers were divided into two groups, ISO 14001 requirements of periodic audits, knowledge and experience in environmental management issues and required resources, and determining the key issues of environmental performance such as determining objectives and measurable aims, identifying environmental issues and determining employees' tasks and responsibilities. Similarly, Cassells et al. (2008) found documentation preparation and maintenance, scope of legislative requirements and management involvement were the biggest barriers in EMS implementation.

EMS Adoption in Europe and Finland

EMS and its motives, benefits and drivers, and barriers have been studied in a number of different countries and industries with different research approaches (Heras-Saizarbitoria et al., 2011). Statistical data for the top-20 ISO14001 most-certified countries in Europe is presented in Table 1. Countries have been sorted according to number of certificates per capita in order to give a perspective on that according to population. While Spain, Italy and the UK have the largest amount of ISO14001 certificates, Turkey, Poland and Belgium have the most certificates per capita. Finland is the 13th biggest per capita adopter of ISO 14001 but an important question is why does Finland lag behind many less-developed countries given Finland's high environmentally conscious status? This uneven diffusion of EMS adoption also holds for EMAS as well. European Commission data (EC, 2015) reveals a far smaller adoption of the EMAS standard across all countries including Finland, which only has three registered EMAS firms, two of which belong to the same corporation and more importantly for the purpose of this study none of which are related to logistics. The EMAS statistics shows a clear

inconsistency of adoption by EU countries, which is consistent with Rațiu and Mortan's (2014) study on EMAS implementation by SMEs.

Country	Total ISO14001 certifications 2013	Population 2013 (millions)	ISO 14001 certifications per million population
Turkey	15232	74,9	4919
Poland	15975	38,5	2411
Belgium	8694	11,2	1286
France	55058	65,9	1198
Germany	71325	80,7	1131
Netherlands	19251	16,8	873
Austria	9738	8,5	871
Hungary	17143	9,9	577
United Kingdom	123532	64,1	519
Denmark	12585	5,6	446
Romania	47825	20,0	418
Italy	147248	60,2	409
Finland	14226	5,4	382
Switzerland	25976	8,1	311
Spain	154574	46,6	302
Czech Republic	37628	10,5	279
Sweden	48987	9,6	196

Table 1: Top-20 ISO14001 Countries in Europe year 2013 (Source: ISO, 2013; World Bank, 2015)

In summary, while the majority of general EMS literature discusses some motivations, benefits or drivers and barriers, we found that it does not directly address how to increase adoption or provide suggestions for doing so. However, we consider issues for adoption may be derived from such motivations benefits as well as barriers, i.e. the motivation to adopt EMS and adoption rates should increase by mitigating barriers and embracing the benefits. We also found that the study of EMS in the logistics literature is sparse. Nawrocka et al. (2009) presented an article on ISO 14001 in environmental supply chain practices but the sample of the study consisted of two multinational companies in the manufacturing industry. Chiarini (2013) and Wiengarten et al. (2013) focussed on supply chain activities but logistics companies were not investigated. The most significant study on the theme of EMS in logistics was conducted by Shaw (2013). However, Shaw's study focused on performance measurement and not EMS standards like ISO14001 or EMAS specifically.

Accordingly, we conducted an exploratory empirical study in Finland with the following three research objectives: (RO1) what kind of EMS or environmental reporting tools are Finnish LSPs using, (RO2) What are the motives, benefits or drivers, and barriers for Finnish LSPs in adopting and implementing an EMS, and (RO3) what should be done in Finland in order to increase adoption of EMS?

Methodology

The objective for this empirical study was to make sense of EMS in the Finnish logistics sector, a phenomenon that is not well understood, and hence an exploratory and qualitative approach was used. Firms were found using public Finnish listings and a sample population of 30 firms within the capital region of Helsinki were contacted to solicit participation. Nine firms agreed to do so and semi-

structured interviews were conducted regarding the objectives noted above. The firms represented a wide range of company sizes and core logistic activities as shown in Table 2, and comprised three micro, two small, three medium and one large state-owned firm according to the European Commission's definition of SMEs based both on company turnover and staff sizes (EC, 2014).

Firm	Turnover (Euros)	Employees	Core Activity	Size	EMS
A	1M	6	Road transports	Micro	None
B	1-2M	5-9	Road transport	Micro	None
C	1.1M	20-49	Currier and road transports	Small	Small
D	3.3M	10-19	Full Service LSP	Small	ISO14001
E	26M	417	Moving and Logistics services	Medium	Near future
F	44.4M	146	Forwarding and LSP	Medium	ISO14001
G	18.3M	10-19	Taxi and road transports	Small	ISO14001
H	1437,8M	10 000	Railroad and LSP	Large state-owned	ISO14001
I	20M	150	Refrigerated road transports	Medium	Annual e-reports

Table 2: Profile of Interviewees

Findings and Discussion

EMS Adoption (RO1)

Four out of nine firms (D, F, G and H) have adopted ISO14001 as an EMS and one firm (E) was planning to achieve ISO 14001 certification in the near future. One firm (I) claimed to have an adequate non-certified EMS because of the fact that in-house routines and overall awareness of environmental issues is at a high level due to their ISO9001 Quality Management System (QMS) and the environmental reporting system that has been bought from a separate company. The three micro-sized companies A, B and C were not using any kind of EMS or other environmental reporting tool although companies B and C responded that some of their customers require some environmental follow-up on rare occasions. The findings support the literature that ISO14001 is the most common framework for an EMS (Nawrocka et al., 2009; Paulraj et al., 2011; Shaw, 2013; Testa et al., 2013) but that SMEs are less likely to adopt (Rațiu and Mortan, 2014).

Motives, benefits or drivers and barriers for EMS adoption (RO2)

All respondents were able to identify motives and benefits or drivers to adopt EMS. All except the two non-certified micro firms were able to identify real or potential benefits of EMS adoption; the latter concentrated mainly on non-existent motives or drivers such as tax benefits and other state-incentives. All firms identified barriers for EMS adoption but firms C, G, H and I reported that the barriers were not substantial. Firms A and B reported that the barriers were too large to adopt EMS while firms D, E and F reported there were some barriers but that they were able to overcome them.

Firms A, B and C that did not adopt any form of EMS were also weak on identifying potential benefits to the company if it adopted an EMS. Firm A identified benefits such as standardized working routines, standardized reporting and clear guidelines for different practical tasks such as managing warehouses, waste and chemicals while the respondent from firm B stated that *“some customers in our case would probably value this [EMS] but they should also advertise it further that how they transport their products”* and also thought an EMS could help the firm by reducing costs due to fuel efficiencies. Firm C failed to identify any benefits it could draw from adopting an EMS. The medium-sized firm I also did not identify any possible direct benefits but is already working according to strict

environmental practices and has a quality management system and its own environmental reporting system.

The firms that are ISO14001-certified and firm E provided more examples of direct benefits, including benefits to overall routines e.g. reporting, systematic guidelines on how daily environmental tasks should be executed i.e. a *“systematic way of handling different cases mitigates fumbling, which leads to a controlled, adequate and efficient way of doing things”* (firm H). Firm D stated that EMS adoption was also directly related to receiving less customer reclamations. Firms D, E and H noted that EMS can be directly related to cost-savings due to increased cost-efficiency and waste handling. Four firms indicated that the EMS has or will provide greater transparency of different operations both internally among the staff and externally among customers and partners while three recognised a marketing value of EMS where the ISO14001 certificate has been used to draw customer attention that enhances firm image which in turn increases customer acceptance and provides a competitive edge for the firm. Another aspect that emerged from several firms is that they have been able to better track and measure their environmental performance, e.g. firm F said that *“the audit [ISO14001 certification] pushed us to realize the true potential of EMS and that green performance measuring and measurement of other activities is, in fact, possible.”*

All of the perceived and actual benefits of EMS support the literature (e.g. Chiarini, 2013; Wiengarten et al., 2013; Shaw, 2013). Additionally, the ISO14001 certified firms were able to link having environmental practices to a competitive advantage over competitors in efficiency, brand image and customer satisfaction.

In general, firms were able to identify far less barriers than any other aspect of the questions in regard to implementation of an EMS. The design of the question about barriers attempted to identify what was hindering the non-EMS users from adopting and what barriers EMS users experienced prior to adopting. The overall theme of the micro-sized non-EMS user firms was that there were neither barriers nor reasons to implement EMS. All three firms failed to recognise the added value an EMS would bring them in terms of costs, customers or the ways things were already done at the firm. In fact, these firms all mentioned the added costs and extra workload that would apply as adopting an EMS would require additional staff, which the firms could not afford. Additionally, a lack of drivers or motives (incentives) from the state was identified as a barrier. All three micro-sized firms admitted that they do not have that much general knowledge about EMS. Further, firm I, who has an EMS modus operandi but is not certified, simply stated that the only barrier stopping them from acquiring an ISO14001 certificate in addition to ISO9001 is the fact that customers do not demand it. The findings regarding barriers also supported the literature review (Shaw, 2013; Rațiu and Mortan, 2014).

How to increase EMS adoption in Finland? (RO3)

All firms without EMS expressed two unanimous motivations for adopting an EMS, which were value recognition from customers and any kind of legislative or tax-incentives from the state. Interestingly, firm H, which is a large state-owned firm noted that *“a new state-incentive for large companies (not for SMEs) lets them by-pass an annual energy-review of the company if they are ISO14001-certified.”* However, in terms of answering this research objective relative to the literature we are unable to provide a clear answer. As previously noted, the literature was only able to provide information based on experiences from other countries and firms about motives, benefits and drivers, or barriers, which do not translate directly to what should be done to increase EMS adoption generally or specifically in Finland. This might be an indication that legislative and institutional forces are not promoting the issues surrounding EMS well enough since all but one of the non-users of EMS in this study indicated a lack of overall knowledge in EMS.

However, these insights combined with the findings of this study provide food for thought and a few suggestions can be proposed. The issue of cost and resources has emerged in both the literature and the findings of this study, which is something that especially the micro firms were struggling with as they are operated by just a few persons with very limited resources. We therefore propose that institutions that are conducting EMS certifications would come up with simplified versions of their EMS standard certificates that smaller firms would have an easier time to adopt and comply, e.g. ISO14001-light or equivalent. The literature and the findings of this study also indicated that governmental benefits like tax-breaks would probably have some effect on EMS adoption of Finnish LSPs but this is not something that the firms can affect themselves. Finally, the firms have to recognise the value an EMS can bring the firm itself. As firm H said *“one can wonder why a good and efficiency-proven EMS framework like ISO14001 exists but is not utilised.”*

The business of LSPs is an interlaced network of customers and contractors where price and cost-efficiency is paramount and where there may be too little room for EMS to play a significant role. It is therefore not the natural environment that dictates the terms for doing business or as firm F said *“money comes first, the environment just benefits from cost-efficient decisions.”* Therefore, EMS may be considered simply a tool for better implementing the environment into the equation of cost-efficient businesses. A clear driver or motivation by some of the firms would be that customers would demand EMS certification from their contracting LSPs to provide an edge in competitive-bidding scenarios. However, this would require a unanimous mind-set in terms of EMS being a competitive advantage in the highly cost-competitive industry of logistics.

Conclusions

The purpose of this paper was to investigate the adoption of EMS in the Finnish logistics sector in order to understand why some companies choose to implement such systems and why some do not, and determine critical factors behind such adoption. The study has achieved its aims for the most part and provides several contributions to literature and theory. It shows the relevance of EMS in the Finnish logistics sector by demonstrating that Finnish firms implement international standards for EMS and environmental reporting such as ISO14001 to a certain extent. It also supports previous studies as to what the perceived and real benefits or drivers and barriers are according to LSP firm owners and managerial staff. Finally, the findings indicate there is a clear difference between firm size and their perceptions of an EMS and everything that it represents, as well as providing insight into what would motivate Finnish LSPs to increase EMS adoption.

Regarding managerial implications, micro-sized LSPs have a limited knowledge regarding EMS and failed to identify its added value. Therefore, these companies need to be encouraged to learn more about EMS framework standards e.g. ISO14001. It was noted that Finland does not motivate SMEs in adopting EMS in any way, which would be a natural proposition for how to change things. The state should for example provide information about EMS benefits to firms and provide tax-incentives or prioritize firms to adopt EMS.

The main limitations of this study were its time-constrained nature and a small study sample size of only nine firms. Accordingly, given these limitations and the exploratory nature of this study several suggestions for future research are proposed. While we believe this study gave a good exploratory and qualitative view regarding EMS in the Finnish logistics sector, we suggest future research should broaden the study through a large-scale quantitative study. Another suggestion could be to conduct a more intensive qualitative study, for example a observation study of a single firm’s EMS adoption process from the very beginning, which would give a much more in-depth and step-by-step view of the ISO14001 certification process to identify any issues not found in this or other studies. Research could also investigate views of the Finnish government, and perhaps other governments as well, on providing incentives for not only LSPs but other sectors to adopt EMS in order to benefit the natural environment. Finally, on a more general basis, future research should look at ways for SMEs to adopt

an EMS of some kind, perhaps a less structured and onerous system, or EMS-light, so they are able to participate in this important process.

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