Extending the Environmental Focus to Supply Chains. ISO 14001 as an Inter-Organizational Tool?

Nawrocka, Dagmara

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Dagmara
NAWROCKA

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Executive summary

This environmental supply chain management research has been inspired by two avenues of thought. First, environmental management systems, such as those compliant with the international standard ISO 14001 are becoming more widespread. ISO 14001 implementation is a process that requires substantial resources. It is time consuming, costly, and companies must engage their employees and create an internal 'human resources engine' for it to be successful. As part of the ISO 14001 standard, companies are required to consider the environmental issues related to their suppliers, however, these issues are not overly emphasized in the standard. Consequently, environmental supply chain considerations are not adequately incorporated into companies' environmental management (EMS) thinking.

The second route of thinking takes a holistic perspective of production. In the wake of preventive thinking, attention has turned towards a life cycle perspective of products. Rooted in the notion of life cycle management, companies are now extending environmental considerations beyond their internal production to include the environmental performance of their suppliers and supply chains.

Thus the question arose as to whether these two avenues could be merged: could the structure of an EMS, as outlined in the ISO 14001, be used as an inter-organizational tool for establishing, communicating, and monitoring the environmental requirements in the supply chain. Therefore, the broad question addressed by this research is: *How can ISO 14001 be used as an inter-organizational tool in managing the environmental issues in supply chains?*

Methods

This research is comprised of five studies included as peer-reviewed papers, and is based on a combination of research methods and a range of respondents. Several qualitative methods were used during these studies. The prevailing method was interview, incorporating both telephone and face-to-face interviews. In addition, document analysis, focus groups and survey were employed. A variety of respondents took part in the research. Information was obtained from environmental and purchasing managers, environmental experts, auditors, and members of industry associations

Key findings

Environmental management systems, such as those implemented according to ISO 14001, can be used effectively in the context of supply chain management environmental issues. Despite being possible within the ISO 14001 standard, this type of use is not widely recognized. The purpose of the standard is to facilitate companies' management of their direct and indirect environmental aspects. Management of the direct environmental effects is usually achieved by the implementing companies, and the resulting benefits are often reported in the research literature. Addressing the indirect environmental aspects has proven to be more challenging.

The concept of a company addressing their significant environmental aspects by influencing their suppliers' EMS, and then using an audit report as a compliance proof

was not recognized from practice. The research discovered interesting opinions regarding this concept from the stakeholder respondents. When presented with this possible application of ISO 14001, environmental managers were sceptical for various reasons. First, they expressed doubt as to whether suppliers would embrace the challenge of these additional environmental requirements. Second, they noted that the idea requires a high level of trust between the customer company and the suppliers; and finally, the environmental managers lacked confidence in the credibility of the audit report as a proof of compliance. Similar reactions were received from a second group of respondents: environmental experts. The experts believed that, in practice, companies only achieved the minimal requirements of ISO 14001, thus more pressure would be required to inspire companies to raise their level of performance. They were also sceptical to the credibility of the audit as a proof of compliance. Finally, the experts acknowledged the important role the ISO 14001 auditors can play in broadening companies' environmental influence so that their scope includes indirect environmental aspects.

During the research, simple practices of environmental supply chain management were found. The most frequently mentioned practice was to recommend that suppliers adopt ISO 14001. Companies also gave preference to certified suppliers in the selection process. Other requirements received by the suppliers from their customer companies related to legal compliance, and the restricted use of certain substances deemed hazardous or banned. Customer verification of these controls was not very advanced and normally involved the monitoring of documents. More interactive audits and on-site controls were occasionally used with strategic suppliers.

Companies viewed a range of external drivers and barriers that influence their engagement in environmental supply chain management. The important drivers were the perceived or stated customer's requirements, and the avoidance of negative public attention. Smaller companies believed legal compliance to be the most important driver. A perceived external barrier impeding supply chain engagement is the manner of contracting suppliers, in particular the use of contract manufacturing. Internal barriers also exist including the choice to use a large pool of suppliers, and the suppliers' unwillingness to cooperate

Furthermore companies indicated that several facilitators contribute when addressing environmental issues in supply chains. These are cultural harmonization between the customer company and suppliers, close relationships with the suppliers, and the presence of the customer companies' capabilities such as skilled purchasing managers and good cross-functional communication. Many of these important internal capabilities are developed during the implementation of ISO 14001. The capability of highest importance is the building of employee skills and knowledge, especially those of the purchasing managers. Purchasing managers are critical because they are the link between the company and the suppliers. They are the ones who can initiate environmental projects with the suppliers, and can motivate the suppliers to participate in environmental projects. It is important for purchasing managers to understand the company's environmental management approach, to have clear decision-making routines, and to have open communication with the environmental and R&D functions. Without such supports, it will be difficult for the purchasing managers to make decisions based on particular environmental requirements, and their relationship with suppliers will be strained.

Concluding remarks

The key findings of this research pertain to the fact that companies are not using the practice of influencing the supplier's EMS to address their significant environmental aspects. This research brought several additional findings and highlighted the possible problems and potentials for ISO 14001 to become an inter-organizational tool used in supply chains. First of all, the customers' requirements for suppliers have to meet were found to be similar to these of a typical EMS. Overcoming the suppliers' unwillingness to accept customers' requirements in their EMS is connected to the level of suppliers' motivation to engage in environmental work. Close cooperation between customers and suppliers contributes to building of trust between the partners. Trust also facilitates the use of the certification audit as a monitoring tool, and it also helps to overcome the cultural distance between cooperating companies. The quality of the certification audit is also seen as vital for ISO 14001 to become an inter-organizational tool.

In order to move environmental management towards supply chains, companies need to address the potential lack of certification credibility, and simulate the use of improved certification practices. In addition, customer companies can engage the internal facilitators identified in this research. These are developed during the implementation of ISO 14001; however, the extent to which they are available depends on how embedded environmental management is in the overall management system. As such, skills and knowledge building, especially of the purchasing managers have vital importance and can be utilized in building relationships, engaging suppliers and motivating them for the environmental work. Routines and communication structures developed during implementing the ISO 14001 serve as an important support for purchasing managers as they facilitate decision making related to environmental issues. Cross-functional communication with both environmental and R&D functions are also crucial, and without them decisions on particular environmental requirements and required relationship with suppliers will be difficult.

This research contributes to the current academic discourse by discussing the possibilities for further development of supply chain management within the context of ISO 14001. To address the interests of practitioners, this research has summarized the current use of the ISO 14001 systems with regard to supply chains, and highlighted the problems and opportunities perceived by managers and other important stakeholders. For stakeholders interested in the future development of ISO 14001 this research has highlighted the opportunities and weaknesses connected to the interpretation of the standard, its scope, and the verification mechanisms. It has also revealed areas for new research including the perception of ISO 14001 credibility, and the internal cross-functional integration connected to the implementation of EMS.