

## **The role of sustainable supply management in innovations**

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### **Abstract**

In this paper it is examined what kind of a role purchasing and supply management have in firm's innovativeness. The aim is to find out how sustainability requirements in supply management may contribute on innovations to and from supplier network. Therefore, it is also asked how sustainability is delivered to and gained from supplier networks and how sustainable supply management practices may influence innovations in supplier networks. Based on the workshops in nine case companies in Finland it is found that the role of supply management in innovations is clearly recognized. Moreover, it is well understood that the sustainability is a driver of many innovations. Furthermore, the companies have noticed that the offering of suppliers increasingly include sustainable alternatives and innovations. However, the companies are building more on control of suppliers' sustainability than utilizing innovations in their purchasing. Companies aim to develop closer supplier relationships between network actors to increase sustainable innovations, to improve cost effectiveness and lead times, to deliver the knowledge of end-customer demands directly to the supplier, and to renew their sourcing and purchasing processes.

**Keywords:** *innovation, sustainability, supply management, supplier relationships, collaboration*

## INTRODUCTION

In firms it is essential to identify the potential of supply networks in innovations not only in terms of new products and technology but also in developing processes and co-operative business models. Furthermore, growing awareness of sustainability and corporate responsibility issues may enhance innovativeness in supplier networks (Nidumolu et al., 2009). This requires close interaction with the actors of the network and continuous development of supplier relationships. However, the existing research in the field is still rare and mainly in conceptual level. Therefore, this study presents preliminary empirical results from an on-going two-year research project in nine different companies from separate fields of industry.

The focus of this study is on examining the role of sustainability as a part of innovation development in supply management. It is argued that sustainability issues and innovation are integrally linked together (Eccles and Serafeim, 2013). Moreover, according to Schiele (2006) companies are increasingly utilizing external sources in innovation management, and thus, in supply management there must be knowledge of which suppliers are able to contribute to the innovativeness of the firm. Furthermore, previous research have strongly pointed out the importance of supplier base a source of value creation and innovations for customers (Möller and Törrönen, 2003). Despite the fact that many firms find sustainability as a challenge for their business in terms of costs and restricting regulation, it can be argued the sustainability requirements of the customers force companies to innovate, and in fact, this creates opportunities for new business models and increase effectiveness of procurement processes.

In this paper it is examined what kind of a role purchasing and supply management have in firm's innovativeness. The aim is to find out how sustainability requirements in supply management may contribute on innovations to and from supplier network. Therefore, it is also asked how sustainability is delivered to and gained from supplier networks and how sustainable supply management practices may influence innovations in supplier networks.

## INNOVATION IN PURCHASING

As Damanpour (1991) has stated: "an innovation can be a new product or service, a new production process technology, a new structure or administrative system, or a new plan or program pertaining to organizational members." Innovations can be both open or closed (Chesbrough, 2004). A recent categorization of open innovation is inbound and outbound open innovation; in inbound open innovations external knowledge is used internally and in outbound open innovation internal knowledge is exploited externally (Huizingh, 2011). In this article, we consider innovations to have different forms as Damanpour (1991) stated, and they are also inbound open innovations, since they some of them are created in collaboration with other organizations, here suppliers.

In the previous literature innovations linked to the supply management have been studied in terms of collaborative actions between buyer's and suppliers. Early supplier involvement (ESI) and supplier relationship management (SRM) are examples of these activities. ESI means that a buyer firm has a possibility to integrate its suppliers to the process of new product development in an early phase (Johnsen, 2009). However, more deeply suppliers are integrated to product

design the less the customer has visibility to the innovation process (Petersen et al., 2005). Therefore information sharing and knowledge transfer between suppliers and customers are required to foster new process and product innovations (Möller et al., 2005).

Companies can enhance knowledge transfer and collaboration with their suppliers by putting emphasis on SRM and key-supplier programs. For example Darnall et al. (2008) have presented examples of innovations achieved through collaboration and partnerships. Moreover, according to Rizzi et al. (2013) cross-organizational integration is a critical issue to be connected with innovations. Integration of supply management with other functions in a company promotes internal communication and proximity inside a firm (Handfield et al., 2009) and therefore, supply management is able to prevent sustainability risks arising from supply base as well as delivering new innovations from supply market. The importance of supply management's participation in early phases of innovations especially in terms of sustainability is pointed out also by Hallstedt et al. (2013). Furthermore, it is shown previously that purchasing manager's role is crucial in ecological innovations (Preuss, 2007). Supply chain managers and strategic buyers may request suppliers to innovate and can present innovation suggestions of suppliers internally in the company. They can also facilitate collaboration among supply chain members and innovations directly. For example, Pulles et al. (2014) have found that supplier's professionalism and specialization in the field and collaborative attitude together with relational characteristics in buyer-supplier relationships such as supplier development programs and status of preferred customer contribute to innovations of a buyer. Furthermore, innovations can be of different types and concern product development, advance supply chain processes or influence to organizational culture.

According to Tate et al.,(2012) a company can improve its sustainability by utilizing sustainable practices in its supplier relationship management. Hence, the way how a firm collaborates with its supplier network is an indicator of company's sustainability. Moreover, supplier collaboration, is linked to innovativeness and competitiveness in many studies. Especially, it has been shown that intensive supplier collaboration promotes inter-firm learning and innovative ideas (Sofka and Grimpe, 2010). However, firm and industry specific differences may occur. Large companies may have more resources for innovation development albeit small companies may generate innovations more quickly (Oke and Kach, 2012). Moreover, it is suggested that older companies may be able to utilize knowledge more effectively and have more established routines and information delivery (Calantone et al. 2002). Moreover, in contrast to main buyer-supplier literature, Bönnte and Dienes (2013) argue that companies following a 'cooperation strategy' do not have greater environmental innovation performance.

## SUSTAINABILITY AND RESPONSIBLE BUYING

Many of the recent studies in the supply management field have concentrated on topics of corporate social responsibility (CSR), sustainability and ecological issues and how these are connected and applied to supply chain management and purchasing (Seuring and Müller, 2008; Tate et al., 2012). There is a vast variety of definitions of the concepts of corporate sustainability and responsibility and continuous discussion going on what are the differences between the concepts (Montiel, 2008). The incoherence between the concepts is evident; corporate social responsibility (CSR) has been argued to cover even five different dimensions; environmental,

social, economic, stakeholder and voluntariness (Dahlsrud, 2006) whereas according to Montiel (2008) the main body of the CSR and sustainability studies builds on social, economic and environmental elements. However, despite the differences in understanding of corporate responsibility and sustainability the research shows that concepts are converging because of their shared environmental and social concerns (Montiel, 2008). In this study the definition of Seuring and Müller (2008, p. 1700) of sustainable supply chain management is followed being “management of material, information and capital flows as well as cooperation among companies along the supply chain while taking goals from all three dimensions of sustainable development, i.e., economic, environmental and social, into account which are derived from customer and stakeholder requirements.”

The drivers of sustainable supply management can be divided to internal and external drivers. Favorable company policy, values of the owners, involvement of top management and employees, certification and quality requirements and financial benefits are internal drivers. Externally legislation and regulation, society and customer pressure, competition and supplier collaboration drives companies towards sustainability (Walker et al., 2008; Giunipero et al. 2012). The main barriers internally are investments to technology and processes advancing sustainability, lack of commitment and competences, misalignment of short term and long-term strategic goals. Externally regulation, industry specific barriers, oligopolistic competition and poor supplier commitment hinder adoption of sustainable practices in purchasing. (Walker et al., 2008; Giunipero et al. 2012) Moreover, it is found that the costs of sustainability programs slow down the adoption of sustainability evaluation and auditing of suppliers in small companies (Min and Galle, 2001) and large companies apply responsible supply management more often than smaller companies (Zhu et al., 2008).

Sustainability problems related to purchasing and supply management can be manifold. Questions of product liability and problems of traceability and transparency in the supply chain create threats to business that can turn to unmanageable risks for a company. Moreover, these risks cover not only environmental risks but also social and ethical issues. The problem is that in a complex supply network buyers are not able to control independent suppliers even though the powerful actors in supply networks have a considerable role in extending sustainability control over supply networks (Amaeshi et al., 2008).

## EMPIRICAL FINDINGS

Because of the novelty of the topic qualitative approach was chosen and focus group interviews were found to be appropriate method to collect empirical data. Nine Finnish companies were approached for the investigation of this study. Two of the companies represented food industry, two companies were engaged in service business, one company come from construction industry, one from machinery and metal engineering and three organizations represented public sector. Companies’ sustainability requirements and activities were identified and analyzed to investigate what collaborative innovation practices are applied their purchasing and supply management. Additionally nine focus groups were organized. Each focus group interviews involved multiple persons from the participating organizations. All the participants were actively involved in supply management and/or CSR in their organizations. Sessions were supported by a group decision support platform that automates and streamlines the group interview process. In the first

meeting, representatives of all companies participated and the general issues about CSR practices were discussed. Thereafter, a focus group sessions were organized for every specific company (nine focus groups in total), aiming to investigate what is the role of collaborative innovation in the sustainable business. Each group session lasted for approximately two hours. A total number of 56 persons participated in the focus group interviews. The participants were asked “How supply management can improve innovation ability in a company? What kind of practices and activities innovative purchasing require? How to develop suppliers and collaboration to create innovations?”. Furthermore, it was asked what kind of requirements sustainability sets up for supply management and what kind of practices are utilized when implementing sustainability in supply management.

Over 200 different method, tools and policies for collaborative purchasing practices were identified during the sessions. They were further grouped in the categories according to the principles of the affinity grouping process. Data analysis was undertaken in two stages. Firstly data was transferred from decision support platform to Microsoft Excel for further analysis. Secondly, themes were identified from the collected data. We conducted the second phase of data analysis manually, by categorizing similar ideas into categories of themes. Each category entails 2-28 ideas. Based on this analysis, we were able to identify 18 categories for sustainability and 16 categories for innovations. The categories were named in the following way (Table 1):

Table 1. Sustainability and innovation categories

| Category | Sustainability                                     | Innovation                                  |
|----------|--|---|
| 1        | Building up openness and trust with suppliers      | Collaboration between company and customers |
| 2        | Engaging suppliers                                 | Market knowledge                            |
| 3        | Supplier categorization                            | Internal collaboration                      |
| 4        | Controlling risks and quality                      | Financial issues                            |
| 5        | Developing and supporting sustainability knowledge | Renewing company processes                  |
| 6        | Developing supply processes                        | Engaging staff into company processes       |
| 7        | Supplier collaboration                             | Openness inside company                     |
| 8        | Determining specifics of supply                    | Emphasize knowledge                         |
| 9        | Planning supply execution                          | Global issues                               |
| 10       | Supplier demands and information                   | Strategic supply management                 |
| 11       | Supplier auditing                                  | Supplier auditing                           |
| 12       | Systems  | Measurements at supplier premises           |
| 13       | Contract policy                                    | Collaborate ideating                        |
| 14       | Documentation of contracts                         | Contract policy with suppliers              |
| 15       | Supplier follow-ups and measuring                  | Controlling supplier's process quality      |
| 16       | Execution of measuring                             | External collaboration                      |
| 17       | Internal collaboration                             |   |
| 18       | External collaboration                             |   |

Our analysis identified numerous categories for both sustainability and innovations in supply management. In sustainability we were able to identify themes relating to for example, trust and openness with supplier, engaging suppliers into company policies and educating suppliers in sustainability issues. Additionally themes relating to auditing suppliers, internal and external collaboration, controlling quality and risks and developing supply processes in collaboration with suppliers were identified.

In innovation, we were able to identify themes for example of, how innovations or innovativeness are boosted in collaborative actions between company and customers, understanding the market where company is operating, collaborating not only with customers and suppliers but also internally. In addition, themes relating to strategic issues in supply management, collaborative idea creation with suppliers and controlling supplier's processes and products to ensure company's own innovation processes with good raw material.

Based on the data analysis, we argue that purchasing and supply management plays an important role in firm's innovativeness. Especially collaborative actions with both suppliers and customers, such as idea workshops between suppliers, purchasing company and their customers, can produce ideas that can be produced into innovative products or new processes. Understanding the market where company operates and transferring that knowledge inside the company and to its suppliers, is crucial for boosting up company's innovativeness. Controlling supplier's quality of processes and products is essential for making sure the purchased goods are of the highest quality which is the backbone of producing quality, innovative products for customers. Purchasing raw materials globally can be challenging and risky, however done properly, it can offer costs savings that can be directed to company's innovation processes.

Our data analysis revealed sustainability issues are very important to our case companies. The case companies represent different industrial fields, however the needs relating to sustainability are the same: transparency of supply chain, knowing where raw materials are coming from and knowing suppliers social issues are in order. Case companies demand sustainable actions from their suppliers and therefore, they bring and leverage sustainability to their supplier network. Data analysis also revealed that companies can learn from their suppliers about sustainability and therefore companies can gain sustainable values from their supplier network. In both, sustainability and innovation themes, collaboration with customers, suppliers, and internally in company were identified.

Based on these notions we argue that intense collaboration both internally and externally and operating in a responsible way, sustainable supply management may influence innovations in supplier networks. Companies develop their own processes and in collaboration with suppliers their joint processes based on sustainability which can lead to for example environmental innovations regarding transportation processes.

## CONCLUSIONS

It is found that the role of sustainable supply management in innovations is clearly recognized. Moreover, it is well understood that sustainability is a driver of many innovations. Furthermore, the companies have noticed that the offering of suppliers increasingly include sustainable

alternatives and innovations. However, the control of transparency of supply chain is utmost important for the buyers and therefore tight requirements of ISO etc. certificates, auditing and regulations are included to supplier selection and assessment. Hence, the companies are building more on control of suppliers' sustainability than utilizing innovations in their purchasing. However, companies aim to develop closer supplier relationships between network actors to increase sustainable innovations, to improve cost effectiveness and lead times, to deliver the knowledge of end-customer demands directly to the supplier, and to renew their sourcing and purchasing processes.

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