

THE ROLE OF RESPONSIBLE BUYING PRACTICES IN SUPPLY RISK MANAGEMENT

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Introduction

Global organizations have recognized sustainability as an increasingly important strategic goal (Closs et al., 2011) as the general awareness about responsibility and sustainability has significantly grown. Hoejmose and Adrien-Kirby (2012) have stated that sustainability and responsibility in purchasing and supply management is a vital topic driven by globalization, fragmented supply chain and stakeholder pressure. Firms are required to show more and more transparency in their business and their supply chains. In today's conscious business world each organization can be viewed only as sustainable as its entire supply chain or network. The purchasing and supply management of a firm has one of the most critical roles when sustainability and responsibility need to be concretized. The supply management is responsible for the management of the firm's supply network and external resources. Thus, it has a key role in defining the origin of its raw materials and products. According to Schneider and Wallenburg (2012), the implementation of corporate responsibility relies strongly on the firm's supply function implementing sustainable supply.

Several risks are arising from the supply base and thus, the significance of risk management in purchasing and supply is constantly growing. Risks violating the image and brand of the company are increasingly arising from the supply base. These risks can include the supplier's use of toxicant materials and fabrics in end-products, the use of child labor, sub-standard working conditions in a low-cost country or other similar issues. Thus, the different principles and practices related to sustainability and responsibility of purchasing are highly critical and firms should have principles and codes of conduct on how to act in different situations. Literature review shows that risk management has rarely been connected to the studies of responsibility, and empirical evidence on the topic is still lacking. As the clear connection between risk management and responsibility can be shown, this paper focuses on the discussion of the role of responsible buying practices in supply risk management.

The role of responsible buying practices in supply risk management is examined by utilizing a quantitative survey data collected from Finnish firms in 2013. The questionnaire was addressed to large Finnish companies and the emphasis was on the fields that were engaged in project business. The included fields were manufacture of machinery and equipment, building of ships and boats, repair and installation of machinery and equipment, construction of buildings, and civil engineering. This study is a part of a large research project started in June 2012 in Finland. The project is launched and financed by TEKES - the Finnish Funding Agency for Technology and Innovation. The research project focuses on project business in global context. The objective is to examine the risk management in the purchasing decision-making in global project business and increase understanding about the critical supply network risks. From the managerial point of view the objective is to develop project managers' ability to evaluate proactively economic and financial effects of supply network risks. The aim of this paper is to provide new empirical evidence and insights concerning both the risk management and sustainability in purchasing and supply management by discussing the role of responsible buying practices in supply risk management.

Supply risk management

Risk management in supply chains is widely studied issue among the logistics and supply chain scholars. Complexity of supply networks, long geographical distances and uncertainty of political and economic circumstances around the world are serious concerns in companies. Several risk management strategies are proposed to mitigate these risks and decrease risk occurrences in a supply chain (Manuj and Mentzer, 2008). The risk management process is a combination of risk identification, risk analysis and risk evaluation. Lee and Whang (2005) approach supply risk

management from the security point of view and suggest that Six Sigma (generally known as a quality management tool) cycle is relevant approach to risk management in supply chains because it covers all the risk management phases from identification to the elimination of root causes of the risks.

Management of supply risks requires categorizing of the risks accordance the strategy of the company. Companies must identify the risk elements and the causality, what are the antecedents of the risks and what is the probability of the risk occurrence. For example, according to Zsidisin (2003) supply risks must be divided to the sources of the risks and to the outcomes following the risk incidents. According to Zsidisin (2003, p. 222), "Supply risk is defined as the probability of an incident associated with inbound supply from individual supplier failures or the supply market occurring, in which its outcomes result in the inability of the purchasing firm to meet customer demand or cause threats to customer life and safety". The outcome of a supply risk embodies directly through the product attributes – value for buyer, quality, price and performance (Chen and Chang, 2012), but also indirectly such as a loss of image, decrease of brand value and violations of property rights. Moreover, Cavinato (2004) presents that supply chains are constructed from physical, financial, informational, relational and innovational elements and supply risks must be identified in every of these elements.

Moreover, business and production can incur sustainability risks (Shrivastava, 1995). It is stated that serious ecological risks in business are arising because of the production of wealth. Irresponsible production and "ecologically unsustainable consumption of natural resources are the root sources of modern risks" (Shrivastava, 1995, p. 120). Hence, companies should strive for ecological business to gain profit, and thus, fulfill the economic responsibility to their shareholders. This responsibility of companies is strongly linked to supply risks (Christopher et al., 2011). Especially, sustainability and social problems of global sourcing and outsourcing can be sources of serious supply risks (Lonsdale, 1999; Manuj and Mentzer, 2008; Reuter et al., 2010). Therefore, companies need to act proactively and utilize purchasing practices that help minimize sustainability risks.

Responsible buying

The terms responsibility, sustainability, and green are used interchangeably in many studies of focusing responsibility issues in supply chains. Based on Carroll's (1979) original work of corporate social responsibility (CSR) several authors and institutions have presented their interpretation of the responsibility of a firm. The predominant view is that the responsibility is consisted of three different elements, being social, ecological and financial responsibility (Montiel, 2008). Consequently, responsible buying includes purchasing practices that take account the social, ecological and financial impacts of the purchases in the country of origin or location where the goods or services are acquired and in a buyer's company, and further in the usage of final customer. Hence, in this study the focus is environmental issues related to whole supply network management including ethical awareness concerning to the origin of the goods and services and the surrounding environment where they are produced.

Previously, Walker and Brammer (2012) have studied the research stream of sustainable procurement in public sector. Giunipero et al. (2012) have examined the drivers and barriers of sustainability in purchasing and supply management. The main drivers of responsible buying are the company's commitment, supplier assessment, and supplier collaboration (Bowen et al., 2001; Large and Gimenez Thomsen, 2011). Furthermore, responsible buying (environmental purchasing more precisely) has been shown to have influence on firm performance (Carter et al., 2000). In addition, responsible buying has been connected to the studies of value nets, customer value and shared value (Porter and Kramer, 2011).

Responsible buying includes several practices and tasks. Purchasers need to follow company's CSR policy and promote transparency and traceability in the whole supply chain. Adopting international standards, ISO14000, SA8000, for example, is a way to demonstrate responsibility in purchasing decisions. Furthermore, company's responsibility must be extended over the supply network (Vachon and Klassen, 2006). Therefore, information regarding company's CSR requirements need to be delivered to suppliers and include to supplier selection, auditing and control actions.

Methodology and analysis

A survey was conducted to examine the risk management and responsible buying practices in Finnish companies. The sample was limited to companies situating in Finland having more than 50 employees and with a turnover at least 1 million euros. The emphasis was on the fields that were engaged in

project business. The included fields were manufacture of machinery and equipment, building of ships and boats, repair and installation of machinery and equipment, construction of buildings, and civil engineering. (NACE codes 28, 301, 33, 41 and 42). A total of 347 companies were identified in the selected industries drawn from the commercial Amadeus database. All 347 companies were contacted by phone in the first phase. The purpose of the phone call was to identify a suitable key informant and to give potential respondents some advance information about the survey, and to increase the response rate. From these companies 260 agreed to answer. Some companies offered multiple respondents, and therefore, a total 265 web links to the questionnaire were sent. Finally, 99 answers were received yielding a satisfactory response rate of 37% per cent (99/265).

Several descriptive and background factors were included in the questionnaire to be able to categorize the responses. The financial figures were generated from Amadeus database showing financial data based on last available financial statement and two preceding years of the respondent companies. Table 1 summarizes the descriptive statistics of the respondents.

Descriptive Statistics*	N	Min	Max	Mean	Std. Dev.
Turnover (th€)	99	-675	2 586 814	202 358	478 551
Employees	99	40	8180	561	1095
Net Income (th€)	99	-39 013	691 369	9 122	69 791
Profit margin %	98	-16	51	4	9
ROCE	82	-170	312	21	58

*last available year from Amadeus database, 12.4.2013

Table 1: Summary of the descriptive statistics of the respondents

The respondents paid attention very much or extremely much to delivery risk (74 %) and to the business relationship risks (50 %) and risks related to third party (44 %). Of the respondents 34 % rated the risks related CSR to be under concern very much or extremely much. Because over 70 per cent of the respondents are engaged in project business it is logical that delivery risk and risk of business relationships were the most critical. Interestingly, country risk was not at all or was very little under concern in these companies. Figure 1 shows how much attention Finnish project business companies pay on business risks.

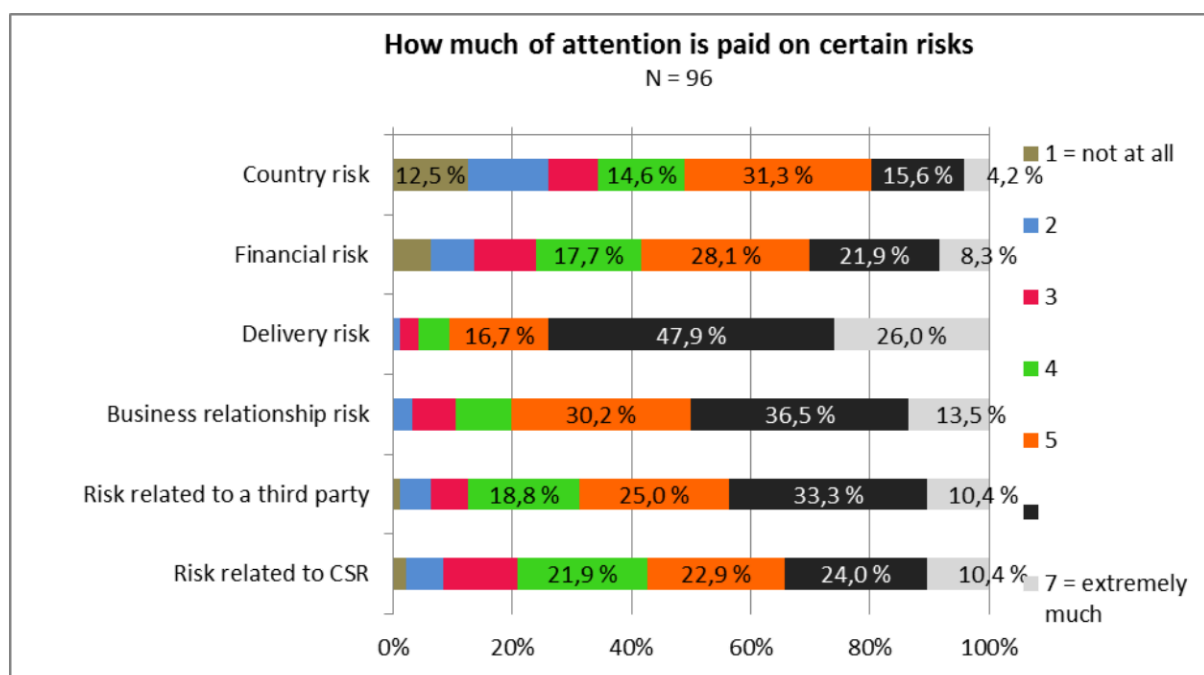


Figure 1: Risks in respondent companies

Because of the small sample size ($N=99$) the original five industries were summed up to three main groups being 1) Machinery and mechanical engineering ($n= 50$), 2) Marine and MRO ($n=11$), and 3) Construction and civil engineering ($n=38$). Based on the ANOVA test it was found that there was no significant differences between the groups in terms on size, age and financial stance. However, it was found that there were significant differences between some of the industry groups of how much they pay attention to business risks. The Marine and MRO industries pay more attention to country risks than construction and civil engineering (mean difference 1.574, $p<0.01$). This is logical as in the construction and civil engineering the work sites usually are located geographically close or in the same country whereas maintenance and repair projects and ship building can be globally dispersed. Furthermore, it was found that construction and civil engineering pay attention more on risks related to third-party related risks than machinery and mechanical engineering (mean difference 0.668, $p<0.005$). Moreover, risks related to CSR were more under concern in construction and civil engineering than in machinery and mechanical engineering (mean difference 1.016, $p<0.01$). Hence, it can be concluded that risks vary accordance the industry and nature of the business. Table 2 shows the means of the risks across the industry groups.

Business risks	1 (N=50)	2 (N = 10)	3 (N =38)	All Groups	ANOVA F	Sig.
Country risk	4.2	5.1	3.53	4.03	3.93	0.023
Financial risk	4.5	5.2	4.42	4.54	0.963	0.386
Delivery risk	5.78	6.2	5.87	5.86	0.685	0.507
Business relationship risk	5.14	5.4	5.47	5.3	0.857	0.428
Risk related to third-party	4.7	5.5	5.37	5.04	3.477	0.035
Risk related to CSR	4.3	4.5	5.32	4.71	3.477	0.004

Table 2: Means and standard deviations of risks across the industry groups

As Table 3 indicates, in the respondent companies the means of following responsible buying practices were quite high. The biggest variation was in following international CSR standards (Standard Deviation 1.93). However, the practices across the industry groups did not vary significantly. Table 3 shows the means and standard deviations of practices among all the respondents.

Responsible buying practices (N=95-97)	Mean	Std. Dev.
The principles of responsible buying are followed	5.92	1.22
The supply chain is transparent up to the end-customer	5.00	1.43
The management of the product life cycle is important to us	5.00	1.52
The traceability of the product is important to us	5.53	1.31
International standards are followed in supply management (ISO14000, ISO26000, SA8000 etc.)	4.93	1.93
We pay attention to ethics and environmental values within our supply management	4.59	1.77
When auditing and selecting suppliers we make sure that the supplier follows ethical guidelines and environmental values	4.80	1.70
We aim to find the principal causes and respond quickly in case there are CSR problems in our supply network	4.99	1.65

Table 3: Responsible buying practices in Finnish project business companies

To examine if responsible buying practices are incorporated to risk management of a firm a correlation analysis was performed. The means of responsible practices statements were summated to one variable (mean 5.10, Cronbach's Alpha 0.889). Table 4 shows the means and standard deviations of the variables and Table 5 indicates the results of the correlation analysis. As Table 5 shows, it was found that responsible buying practices correlate positively with all the business risks. The highest correlation was by definition between risks related to CSR and responsible buying practices. Delivery risk and risk related to third-party had also high correlations with the responsible buying practices. The lowest correlation between responsible buying and risks was surprisingly country risk. Furthermore, it was found that country risk do not correlate with CSR risk and third-party risk.

Variables	Mean	Std. Dev.
Responsible buying practices	5.10	1.204
Country risk	4.03	1.744
Financial risk	4.54	1.606
Delivery risk	5.86	1.035
Business relationship risk	5.30	1.212
Risk related to third party	5.04	1.346
Risk related to CSR	4.71	1.471

Table 4: The means and standard deviations of the variables

Variables	1	2	3	4	5	6	7
Responsible buying practices	1						
Country risk	0,270**	1					
Financial risk	0,408**	0,623**	1				
Delivery risk	0,545**	0,339**	0,394**	1			
Business relationship risk	0,405**	0,230*	0,282**	0,478**	1		
Risk related to third party	0,556**	0,193	0,280**	0,537**	0,448**	1	
Risk related to CSR	0,652**	0,196	0,315**	0,514**	0,516**	0,620**	1

*p<0.05; **p<0.01

Table 5: Correlations analysis

Conclusions

Due to the constantly growing importance of sustainability and responsibility, the transparency in business and in supplier networks is highly required. Each firm can be viewed only as sustainable as its entire supply network and thus, the practices and principles related to the purchasing and supply are becoming more and more important. Different risks are arising from the supply base and therefore, the significance of risk management in purchasing and supply is constantly growing which moreover, highlights the importance of defined principles and practices related to sustainability and responsibility of purchasing. It can be stated that companies need to act proactively and utilize purchasing practices that help minimize sustainability risks. Thus, the aim of this paper was to discuss the role of responsible buying practices in supply risk management by utilizing a survey data collected from Finnish companies.

The results of the study show significant differences between the industry groups of how much the attention is paid on the business risks. According to the survey results, the marine and MRO industries in Finland pay more attention to country risks than construction and civil engineering. This is logical as in the construction and civil engineering the work sites usually are located geographically close or in the same country whereas maintenance and repair projects and ship building can be globally dispersed. Furthermore, the results show that construction and civil engineering pay attention more on risks related to third-party related risks than machinery and mechanical engineering. Moreover, risks related to corporate social responsibility were more under concern in construction and civil engineering than in machinery and mechanical engineering. Hence, it can be concluded that risks vary accordance the industry and nature of the business.

The results of the study also show that responsible buying practices correlate positively with all the business risks. The highest correlation was by definition between risks related to CSR and responsible buying practices. Delivery risk and risk related to third-party had also high correlations with the

responsible buying practices. The lowest correlation between responsible buying and risks was surprisingly country risk. Furthermore, it was found that country risk do not correlate with CSR risk and third-party risk.

It can be concluded that active responsible buying practices correlate positively with supply risk management. However, differences in terms of risk type were found. The results of this study will help firm managers to understand the connection between responsible buying and risk management. It is important to recognize that the supply management function is responsible for the management of the firm's supply network and external resources, and thus, it has a key role in defining the origin of its raw materials and products. Good business relationships and thorough knowledge of supply market help supply managers to deliver company's CSR policy over the supply chain. Consequently, risks can be mitigated and the probability of the risk occurrence may decrease. Hence, there is a need to find innovative and proactive suppliers who are able to deliver green and sustainable solutions with a high orientation towards responsible business. The results also highlight the significance of determined buying practices and the compliance of those.

In the future it would be interesting in to examine what is the role of responsible buying in companies' risk management strategies and how it is incorporated into these strategies. Furthermore, because this study was limited only to Finnish companies and project business it is highly recommended to expand examination of the connections of responsible buying and business risk management to other countries and industries.

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