Enablers and inhibitors for implementing sustainable supply chain management practices: lessons from SMEs in the food industry

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Abstract

The purpose of this study is to identify the factors that enable or inhibit small and medium-sized enterprises in the food industry, to adopt sustainable supply chain management practices. While the focus of most studies is on single companies, this study considers the supply chain as a whole and analyses each factor in terms of environmental, economic and social sustainability. The research is based on a set of case studies that represent companies at every stage of a Greek meat supply chain. 17 enablers and 23 inhibitors are identified and classified into three groups: firm level, supply chain level and external level.

Keywords: Sustainable supply chain management (SSCM), enablers and inhibitors, small and medium-sized enterprises (SMEs)

Introduction

SSCM practices can be either enabled or inhibited by various contingent factors. Different industries face a single enabler or inhibitor from different perspectives depending on their size, culture, location and number of supply chain members. Many studies have investigated SSCM in a variety of sectors such as manufacturing (Gualandris, et al. 2014; Seuring and Müller 2008), the automotive industry (Zhu and Sarkis, 2004), oil and gas (Matos and Hall 2007) and energy (Vance et al., 2012). The food industry is among the sectors that is experiencing significant sustainability challenges, due to globalization, technological advances, use of agricultural chemicals and improved transportation, which have considerably raised agricultural production in order to offer more food to the growing world population (McNeely and Scherr, 2003; Yakovleva, 2007). In addition, customers and firms are interested in the origin of products, food safety and quality and sustainable production (Ghadge et al., 2017).

While previous research on food SSCM has offered valuable results (see Bourlakis et al., 2014; Chkanikova and Mont, 2015; Golini et al., 2017), the literature is still limited regarding the investigation of SSCM enablers and inhibitors across a whole food

supply chain comprised by small and medium-sized enterprises (SMEs). Studies on SSCM should be industry specific and size specific focusing on the holistic perspective of supply chains and sustainability dimensions. Ansari and Kant (2017) emphasize that research of SSCM along a specific industry will offer fruitful insights regarding the applicability of SSCM sector wise. Seuring and Muller (2008) point out, that it is important to know which factors enable and inhibit the development of SSCM both from the internal and the external perspective of a supply chain. To address the above points, this study aims to investigate the factors that enable and inhibit food SMEs across an entire supply chain to implement SSCM practices.

The rest of the paper is organized as follows. The next section provides an overview of the literature on SSCM enablers and inhibitors. Section 3 describes the methodology. Section 4 presents the results. Section 5 discusses the results in conjunction with previous research. Section 6 provides the conclusion including limitations as well as future research opportunities.

Literature review

In this section, a literature review is conducted in order to identify the enablers and inhibitors for implementing sustainable supply chain management practices.

Enablers for sustainable supply chain management

Enablers are classified into three groups. The first group is related to firm level strengths (FLS), the second to supply chain level strengths (SCLS) and the third to external drivers (ED). FLS refer to firm's internal enablers, SCLS refer to supply chain's internal enablers and ED refer to external drivers that promote the implementation of SSCM practices. In total 45 enablers have been identified in the literature.

Firm level strengths

Firm level strengths are organizational factors that include the strategic linkages between firm's resources and aspirations regarding sustainability and support the development of SSCM (Wolf, 2011). Top management commitment, is considered the most common enabler in the literature (Faisal, 2010; Walker and Jones, 2012; Wittstruck and Teuteberg, 2012; Ansari and Kant, 2017). The adoption of standards, such as environmental management systems (EMS) (Walker and Jones, 2012), health and safety (Diabat et al., 2014), quality (Walker et al., 2008; Walker and Jones, 2012) etc, is the second most common enabler that fosters the development of SSCM practices. Another enabler is capabilities within purchasing and supply function (Walker and Jones, 2012). Financial enablers include cost savings associated with operational and material efficiencies (Chkanikova and Mont, 2015) and increased resource utilization (Giunipero et al., 2012). Finally, reputation enablers are related to brand name and reputation or the risk of negative publicity (Chkanikova and Mont, 2015).

Supply chain level strengths

Supply chain level strengths are closely linked to firm level strengths. The literature posits that firm level and supply chain level alignment is a factor that strongly affects their successful integration (Pagell, 2004). Information sharing has been identified as one of the most important enablers to implement SSCM practices (Faisal, 2010; Grimm et al., 2014; Wittstruck and Teuteberg, 2012). Carbon management across the supply chain (Gopalakrishnan et al., 2012; Giunipero et al., 2012), collaborative relationships (Faisal, 2010) and supplier trust (Grimm et al., 2014) are other factors that enable the

development of SSCM within supply chains. Recent research efforts have shown that the application of innovative technologies and solutions in supply chains, such as the Internet of Things (IoT), enables SSCM implementation and has the potential to reduce waste, costs, emissions and social impacts (Accorsi et al., 2017).

External drivers

External drivers originate from a variety of stakeholders such as government, customers, media, non-governmental organizations (NGOs) etc. Wolf (2011, p.229) proposes that *"stakeholder integration capability is required for sustainable supply chain management integration"*. Firms and their supply chains should closely collaborate with multiple stakeholders, to fully understand their needs and expectations in order to integrate them into SSCM practices (Wolf, 2011). The most common external driving forces for SSCM are the existence of regulatory frameworks (Faisal, 2010; Giunipero et al., 2012; Chkanikova and Mont, 2015) and the awareness of and compliance to government policy and legislations (Gopalakrishnan et al., 2012; Diabat et al., 2014; Giunipero et al., 2012; Walker and Jones, 2012). Customer pressure (Chkanikova and Mont, 2015; Giunipero et al., 2012; Walker and Jones, 2012), customer satisfaction (Diabat et al., 2014) and supplier trust (Grimm et al., 2014) are some of the most important factors that drive companies to implement SSCM practices. Pressure from investors (Chkanikova and Mont, 2015; Walker and Jones, 2012) and interaction with NGOs and other stakeholders (Wolf, 2011) may also exert pressure on companies to implement SSCM.

Inhibitors for sustainable supply chain management

Apart from the enabling forces that motivate companies to implement SSCM practices there are several inhibitors that hinder the development of SSCM. Similar to enablers, inhibitors are classified into firm level weaknesses (FLW), supply chain level weaknesses (SCLW) and external barriers (EB). In total 41 inhibitors have been identified in the literature.

Firm level weaknesses

The most common factors related to firm level weaknesses are the lack of top management commitment and support (Ansari and Kant, 2017; Giunipero et al., 2012; Walker and Jones, 2012), the high investment costs and the lack of financial resources (Ageron et. al, 2012; Walker and Jones, 2012; Grimm et al. 2014; Chkanikova and Mont 2015; Giunipero et al. 2012). The lack of knowledge and expertise (Grimm et al., 2014; Chkanikova and Mont, 2015) as well as the return-on-investment estimation and investment reluctance are also important inhibitors within a firm (Ageron et. al., 2012; Grimm et al., 2014). Regarding corporate strategy and policy, SSCM practices may be constrained by the difficulty of changing current policies (Giunipero et al., 2012) or the use of traditional accounting methods, which do not incorporate sustainability reporting (Walker and Jones, 2012). Other inhibiting factors include the difficulty of setting clear sustainability goals (Wolf, 2011), the lack of power over suppliers (Chkanikova and Mont, 2015) and the limited communication between functions (Wolf, 2011).

Supply chain level weaknesses

Regarding the supply chain level, Ansari and Kant (2017) found that poor supplier commitment is the most common inhibiting factor. Indeed, the lack of trust and commitment between supply chain members is an important obstacle, especially when customers audit suppliers (Walker et al., 2008). The low competence level of suppliers

(Ageron et. al, 2012; Grimm et al., 2014), as well as the complex formulation of supply chains (Chkanikova and Mont, 2015) constrain the development of SSCM practices. Other inhibitors, include the limited availability of sustainability data and information (Wolf, 2011), the long geographical distance between supply-chain-partners and the cultural and language differences that may exist among suppliers (Grimm et al., 2014).

External barriers

In addition to the firm and supply chain level inhibiting factors that hinder the implementation of SSCM, companies face a variety of external barriers. Among the difficulties identified in the literature are the lack of governmental leadership in outlining the vision for sustainability (Chkanikova and Mont 2015; Ghadge et al. (2017), the lack of consumer awareness and interest about sustainability (Chkanikova and Mont, 2015) and differences regarding culture and language (Grimm et al., 2014). Other external barriers include the economic uncertainty, which puts the cost of SSCM adoption into a lower priority (Giunipero et al., 2012), the poor market structure and the lack of appropriate logistics infrastructure (Ghadge et al., 2017).

Methodology

Taking into account that the analysis of a supply chain as a whole is a complex and difficult task (Seuring and Muller, 2008) and in order to explore the enablers and inhibitors of sustainable supply chain management practices, a multiple case study was designed (Eisenhardt, 1989; Yin, 2003). Meredith (1998) and Voss et al. (2002), stress out that case studies may allow the full understanding of a complex phenomenon, through the observation of actual practices in real world settings, without any kind of control or manipulation, considering both temporal and contextual dimensions. Choosing a case study approach for investigating 'how' or 'why' companies implement SSCM, is particularly useful (Yin, 2003). This study investigates the supply chain as a whole in order to capture the enablers and inhibitors of SSCM implementation in different supply chain stages. The research has been purposefully carried out in a Greek local meat supply chain for two reasons. First, this particular supply chain is a complete chain starting from the breeder to the end customer. Second, it is a local food supply chain (LFSC), and as Smith (2008) stresses out, LFSCs are considered to be relatively sustainable because they 1) support mixed and organic farming, 2) reduce emissions and possible long-distance transport and high 'food miles' externalities, 3) support the creation of rural enterprises and regenerate rural communities and 4) break up agribusiness monopolies and create spiritual links between man and nature.

In this study three SMEs were chosen for data collection. The sample cases represent an entire meat supply chain starting from the industrial processing (including breeding and slaughtering) (IP), followed by the butcher shop (BS) and finally the restaurant (R) (figure 1). All SMEs that agreed to participate were approached through consultation with two experts in Greek food supply chains, to include real world cases that might be particularly informative on sustainable supply chain management issues. The experts had also existing links with the SMEs that allowed easier access. The names of the companies were not disclosed in order to protect confidentiality and encourage the openness of responses.

Figure 1: Schematic representation of the Greek meat supply chain

Multiple sources of data were collected, including semi-structured interviews with the IP quality assurance assistant manager and the owners of BS and R, company records and direct on-site observations "encouraging convergent lines of inquiry", in order to achieve data source triangulation and ensure construct validity (Saunders et al., 2009:68; Yin, 2003:36). The interview protocol (Eisenhardt, 1989) was developed on the basis of the reviewed literature and closely following previous research on SSCM (Ghadge et al, 2017; Walker and Jones, 2012). Bryman and Bell (2007), highlight that using existing questions enables the comparability of results. Furthermore, Yin (2003), points out that using interview protocols, assures the reliability of data. The interview is structured in the following sections: 1) the overview of the research, 2) SSCM figures and 3) the interview questions. The informants were asked to evaluate the environmental, social and economic perspectives of the 45 enablers and 41inhibitors from 1 (less important) to 10 (most important). The internal validity of the cases was assured by doing pattern matching with other studies identified in previous research (Yin, 2003). Regarding the external validity, the case study was designed and conducted based on the gathering of as many data as possible in order to attain deeper knowledge of the complex background of SSCM and identify the more analytical and general theoretical implications (Yin, 2003).

Findings

The overall findings reflect stability among the supply chain members' approaches on the economic, environmental and social aspects of SSCM enablers and inhibitors. The economic facet of the factors that enable or inhibit SSCM implementation has been evaluated as the most important dimension from every supply chain member, followed by the social aspects and finally the environmental ones. The results of this study are presented in the following two tables. The first table relates to the key enablers for SSCM implementation, while the second presents the most important inhibitors to SSCM implementation.

Enablers for SSCM implementation

The results suggest that there are several enablers that encourage companies to adopt SSCM practices. However, only a few enablers have been identified for their sustainability importance from at least two members of the supply chain. In the firm level, the most important enablers are the adoption of quality management systems, health, safety and operations standards, and the evaluation of the sourcing of raw materials in order to ensure sustainability. An important enabler posed by the restaurant and has not been previously identified in SSCM literature is forecasting accuracy, which reduces or prevents waste production. In the supply chain level, each member has identified a different SSCM enabler. The industrial processor believes that industrial sustainability norms and improvement of product characteristics are the most important factors that trigger SSCM. Supplier trust and the development of KPIs are important enablers for the BS and R respectively. In the external level, customer demand, expectations and requirements is evaluated from all the members of the supply chain as the most important enabler for the implementation of SSCM. Funding from external sources or other external support as well as community economic welfare are also important for the development of SSCM.

Table 1: Enablers for SSCM implementation

	Identified key enablers	Industrial processor (including breeding and slaughtering)	Butcher Shop	Restaurant
	Firm Level Strengths (FLS)			
1	Adoption of quality management systems	x		x
2	Adoption of health, safety and operations standards	x	x	
3	Firm competitiveness	x		
4	Cost savings associated with operational and material efficiencies / increased resource utilization	x		
5	Competitive differentiator	x		
6	Review the sourcing of raw materials to ensure sustainability	x	x	
7	Forecasting accuracy (reduction of waste)			x
	Supply Chain Level Strengths (SCLS)			
8	Industrial norms (voluntary industry agreements and certification schemes)	x		
9	Improvement of product characteristics	x		
10	Supplier trust		x	
11	Key performance indicators infused in the supply chain			x
	External Drivers (ED)			
12	External support (funding)	x		x
13	Regulatory framework/ Existing national and international regulations			x
14	Short geographical distance between supply-chain-partners			x
15	Customer demand, expectations and requirements	x	x	x
16	Customer satisfaction			x
17	Community economic welfare	x	x	

Inhibitors for SSCM implementation

The analysis of inhibitors shows that there is a bigger number of obstacles for companies that want to adopt SSCM practices. Lack of top management commitment and support as well as the difficulties in changing existing policies, are mentioned as strong firm level weaknesses. In the supply chain level, IP and R have identified different important factors. For example, the limited availability of sustainability data and information restrains the IP to develop SSCM, while R is hindered by the lack of commitment and trust among the supply chain members. Likewise, in the external level, different barriers have been identified from the IP and R. The economic uncertainty is identified as a key external barrier for R, while the lack of regulations and standards

regarding sustainability and the desire of consumers for lower prices, which creates difficulties on the implementation of SSCM is mentioned by the IP.

Table 2: Inhibitors for SSCM implementation

	Identified key inhibitors	**Industrial processor (including breeding and slaughtering)**	**Butcher Shop**	**Restaurant**
	Firm Level Weaknesses (FLW)			
1	Lack of top management commitment and support	x	x	
2	Lack of corporate structures and processes	x		
3	Limited communication between functions	x		
4	Lack of scientific framework to identify the most profound sustainability impacts	x		
5	Difficulty of changing current policy	x		x
6	High investment costs and lack of financial resources	x		
7	Difficulties in return-on- investment estimation and investment reluctance	x		
8	Higher prices of sustainable products			x
9	Lack of power over suppliers	x		
10	Lack of additional human resources			x
11	Lack of training		x	
12	Vague setting or absence of sustainability goals			x
	Supply Chain Level Weaknesses (SCLW)			
13	Limited availability of data and information on sustainability	x		
14	Poor supplier commitment / lack of commitment and trust among the supply chain partners			x
15	Lack of suppliers' resources			x
16	Cultural and language differences	x		
	External Barriers (EB)			
17	Difficulty of balancing stakeholders' short-term profit goals with longer term sustainability goals.			x
18	Economic uncertainty			x
19	Lack of sustainability standards and appropriate regulations	x		
20	Lack of governmental initiative to harmonize labeling requirements	x		
21	Competitive pressures	x		
22	Consumer desire for lower prices	x		
23	Lack of appropriate logistics infrastructure	x		

Discussion

This study showed that a variety of enabling and inhibiting factors for SSCM implementation exists. Most of the key enabling and inhibiting factors have been

identified in the firm level, followed by the external and finally the supply chain level. Regarding the enablers, the most important one that has been confirmed by all the members of the supply chain is customer demand, expectations and requirements. Previous studies have also found that customer demand and requirements drive the development and implementation of SSCM practices (Chkanikova and Mont, 2015; Giunipero et al., 2012; Walker and Jones, 2012). In addition, and in line with other studies (Golini et al., 2017), the adoption of health, safety and operations standards also encourages the development of SSCM. Interestingly, influence of NGOs and interaction with other stakeholders have not been mentioned as important factors by none of the supply chain members, while evidence from prior literature describes it as a critical for SSCM implementation (Wolf, 2011; Chkanikova and Mont, 2015).

Moving on the inhibitors discussion, the results suggest that lack of top management commitment and support hinder the development of SSCM, which has also been confirmed by Walker and Jones (2012). The lack of governmental initiative to harmonize labeling requirements has been highlighted as an external barrier. This is consistent with Chkanikova and Mont (2015) who found that this barrier constraints the implementation of SSCM practices. Finally, as prior evidence (Giunipero et al., 2012) shows, economic uncertainty, is considered as an external barrier that puts the adoption of SSCM practices in lower priority.

Conclusion

This research investigates the factors that enable and inhibit food SMEs across an entire supply chain to implement SSCM practices. The results provide management implications to meat SMEs and assist them in the development of SSCM practices by identifying the enablers and inhibitors of SSCM implementation in each of the supply chain stages. The research also indicates how the continuous financial crisis in Greece over the last decade (2009-2018) has led companies to postpone or cancel any sustainability action. The owner of the restaurant confirmed this crisis effect in the following statement: *"3 years ago, I wanted to develop a recycling project within the restaurant, but it never happened due to the continuous financial crisis that stops any not obligatory high cost action"*. Given the current findings, it is observed that firms are mostly affected by factors on the firm level and on the external level such as mandatory actions required by law or by customers. These results are in line with the study of Golini et al. (2017:1201), who found that Italian firms in the meat supply chain do not have a *"strong incentive to achieve sustainability beyond the requirements of an acceptable social reputation or economic benefits"*. A limitation of this study is that the results cannot be used to generalize the overall population of meat SMEs. Thus, future studies need to conduct survey research to large samples in order to achieve generalization of results.

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