

SHORT SUPPLY CHAIN MANAGEMENT - CONCEPTUAL FRAMEWORK

Sebastian JARZĘBOWSKI, Izabela DALEWSKA

Kozminski University, Warsaw, Poland, EU,

sjarzebowski@kozminski.edu.pl, izabeladalewska@kozminski.edu.pl

Abstract

In the last two decades, the topic of sustainability has moved from the edges of supply chain management research to the mainstream and is now an area of substantial research activity. In particular topic of sustainability exposed the short supply chains (SSCs). The growing interest in SSCs reflects the consumer demand for quality and traceability. The information flow in supply chains plays a great role in its efficiency. The SSCs' have potential to increase companies value added (margin distribution), promote sustainable production systems, diversify production and contribute to local economic development. Within this paper the importance of SSC for sustainable economic development and information flow will be highlighted and the current situation in EU will be presented.

Keywords: Short supply chain, supply chain management, sustainable development, information flow

1. INTRODUCTION

Business and supply chains are transforming from the commodity system into a coordinated system (Jarzębowski and Antonowicz, 2018), and can be divided into four different streams (Bagchi, 2000): information about the demand from the buyer to the seller, which causes all other activity; movement of goods from sellers to buyers; transfer of ownership from a seller to a buyer; cash flows from a buyer to a seller. Although, according to K. Ficon (Ficon, 2001), the prevailing opinion in the literature is that the flow of capital and cash are not formally part of the sphere of interest, however, in the framework of the supply chain concept they are an integral part.

This leads to competition between various supply chains and networks, and not only to competition between individual companies (Lambert and Cooper, 2000; Christopher, 1998). However, these trends of change require research to adapt old or to develop new models of business and markets. Primarily due to the instability of products and the need to improve product flow tracking on the market, representatives of science recognized the importance of the supply chain management process (Hobbs and Young, 2000). In addition, consumers continuously increase their demand on product safety and its functionality, product diversity, packaging quality, and the quality of services and products (van der Vorst, 2000).

A proper flow of information and its synchronization are fundamental issues for most companies. Departments of manufacturing, commercial and service companies, which are involved in storage, transport, planning, purchasing and customer service, deal with a very large flow of information and data. The solution to increase efficiency of this synchronization might be SSCs, which are seen as a strong trend in supply chain management. Consequently, the goal of the paper is addressed to short supply chains and the authors attempt to characterize the form of the SSC. In the literature, once can notice a lack of research on the SSCs, thus the paper fits in with current scientific trends and also scratch SSC from the sustainability and information flow point of view. In the paper, the preliminary research is presented.

2. SHORT SUPPLY CHAINS - THEORY AND DIMENTIONS

2.1. Short supply chain - definition

Various definitions of SSC are presented in the literature. The "Short Supply Chain" is often used as an umbrella concept (Marsden et al., 2000), assuming context dependent economic, socio-cultural, policy,

organizational characteristics, and having different impacts on local economies. The definitions of short supply chain are formulated under different criteria as: number of intermediaries, physical distance, social relations, knowledge exchange, locality and governance involvement. According to the European rural development regulation (1305/2013) a short supply chain means a supply chain involving a limited number of economic operators, committed to co-operation, local economic development, and close geographical and social relations between producers, processors and consumers. This definition is used in the further analysis in the paper. The number of intermediaries is often used as a discriminating factor to define SSC. Parker (2005) for instance, characterizes SSCs by the very small number (or even the absence of) intermediaries between the producer and the consumer, as well as by the short geographical distance between the two.

On the base of the criteria outlined above, a great variety of SSCs can be identified and various classifications or typologies developed. Such classifications are useful for a more systematic exploration of SSCs and development and implementation of necessary support measures (Galli and Brunori, 2013). The EC IMPACT project (Marsden et al., 2000; Renting et al., 2003) proposed three main types of short supply chains on the basis of the number of intermediaries, physical distance and organizational arrangements: Face-to-face, proximate and spatially extended SSCs.

2.2. Sustainability and short supply chains

The issue of environmental protection and the economy of sustainable development is also now more important. Sustainable development is a resource and society dependent (World Commission on Environment and Development, 1987). In the literature dealing with the issues of sustainable development, more and more attention is paid to the relationship between supply chains and sustainable development of the economy (Walters; 2007). Sustainable supply chain management can be defined as the creation of coordinated supply chains through the voluntary integration of environmental, social and economic aspects into key inter-organizational business systems. (Luo i in., 2017). It is designed to effectively manage the flow of materials, information and capital related to supply, (and) production and distribution of products and services to meet the requirements of stakeholders and to improve the profitability, competitiveness and efficiency of enterprises in the short and long term. (Mangan et al., 2000) For example, Kashmanian, Keenan and Wells (2010) found that leading companies are systematically increasing their activities in the field of environmental protection (Kashmanian, Keenan and Wells, 2010). The outcome of literature review on sustainable supply chain shows that short supply chains is one of the ways to achieve environmentally friendly supply chain (**Table 1**). The other aspect, which is mentioned is information flow, which is one of SSCs dimension.

Table 1 Areas potentially affecting the sustainable supply chain [Own work based on Luo et al., 2017]

Areas	Sustainability areas	Literature
Law regulations	Social	Zhu and Sarkis (2004), Guang Shi et al. (2012), Böttcher and Müller (2015)
Waste elimination	Environmental, Economic	Sundarakani et al. (2010), Dües et al. (2013)
Material flow	Economic	Diabat and Simchi-Levi (2009), Yang et al. (2011), Böttcher and Müller (2015)
Reverse logistics	Economic	Sundarakani et al. (2010), Govindan et al. (2015), Böttcher and Müller (2015)
Customer focus	Economic, Social	Gopalakrishnan et al. (2012), Zhao et al. (2012), Hannon et al. (2013)
Supplier cooperation	Economic, Social	Walker et al. (2008), Guang Shi et al. (2012), Wilhelm et al. (2016)
Information flow	Economic, Social	Melville (2010), Colicchia et al. (2011), Shaw et al. (2012), Guang Shi et al. (2012)
ICTs	Environmental, Economic, Social	Halldórsson and Kovács (2010), Elliot (2011), Bengtsson and Ågerfalk (2011)
Competitive advantage	Economic	Nidumolu et al. (2009), Flint and Golcic (2009), Wu et al. (2015), Böttcher and Müller (2015)
Short chains	Environmental, Economic, Social	(Lambert i Cooper, 1998) (Lambert, 2008), (Jarzębowski, 2019)

One should notice that an increasing number of consumers are looking for alternative sources of production near their place of residence (Cicia et al., 2010, Nie and Zepeda, 2015). This dissemination of new forms of distribution organization in recent years, called short supply chains, can be linked to the increasingly important role played by credibility-based goods in shaping consumer preferences. Indeed, the growing popularity of short supply chains should be attributed to the distribution model, which allows consumers to support local economy (Uribe et al., 2012). The SSCs can also be seen as a means to restructure supply chains in order to support sustainable production methods.

2.3. Information flow in supply chain

In a recent study (Christopher, 2010) it was stated that the solutions available in the information systems meet challenges of the problems of preserving transparency of the supply chain. Modern companies, regardless of their size and industry, use various types of information systems. The progressive computerization integrates and streamlines business processes in enterprises, mainly due to the increasing role and importance of information needed to make appropriate decisions in managing. As a result, without a proper application of information systems, it is difficult to obtain or maintain a competitive advantage on today's demanding market, not mentioning supporting e-commerce business model used in SSCs.

As mentioned in the introduction to this paper supply chains are kind of network, in which data management needs to be well-organized, which means that it has to be clearly identified, efficiently taken from outside environment and effectively processed within the system (Materkowska; 2003). The main functions of information flows are to support the creation of coherent supply chains in order to enable effective management of resources and support efficient process control of transport, storage and preparation. The widest range of data use is at the level of executive staff, who work directly with transactional documents (e.g. inventory documents, sales documents, time and attendance, etc.) (Witkowski, 2010). Databases, which in the processing are converted into information, are presented in a synthetic form.

Closer cooperation with suppliers in SSCs requires companies to undertake activities aimed at levelling the barriers of free movement in the information distribution. Access to the information should be simple, cheap, fast and reliable. It should also be characterized by (Wojtkowski, Nowickil 2002): possibility of acquiring information at any desired location along the flow of the short supply chain; availability of information for all cooperating partners; accuracy of the information; satisfactory rate of flow of information and its actuality; ability to process information to support decision-making procedural; possibility of automating the processes associated with the production, obtaining and processing information and making decisions.

2.4. Short supply chains in Europe

Short supply chain practices are becoming increasingly common across Europe as well as around the world. Currently in Europe there are many examples and types of short supply chains. Usually these are small enterprises with limited local impact. However, these small initiatives indicate that these enterprises are able to provide solutions to improve the profitability and stability of producers. Therefore, there is a great need to identify, synthesize, exchange and present good practices in the short supply chains management with focus on small enterprises. These arguments were the basis for identifying examples of such chains in Europe. For this purpose, good practices regarding short chains in 15 European Union countries were analyzed within SKIN project (SKIN, Horizon 2020). As part of the study, over 100 examples of initiatives were described and classified in specific sectors (**Figure 1**).

The majority of good practices for short chains have been identified in Austria, Ireland, the United Kingdom and Hungary. In the analyzed examples, there is a tendency to include more than one sector within a single enterprise.

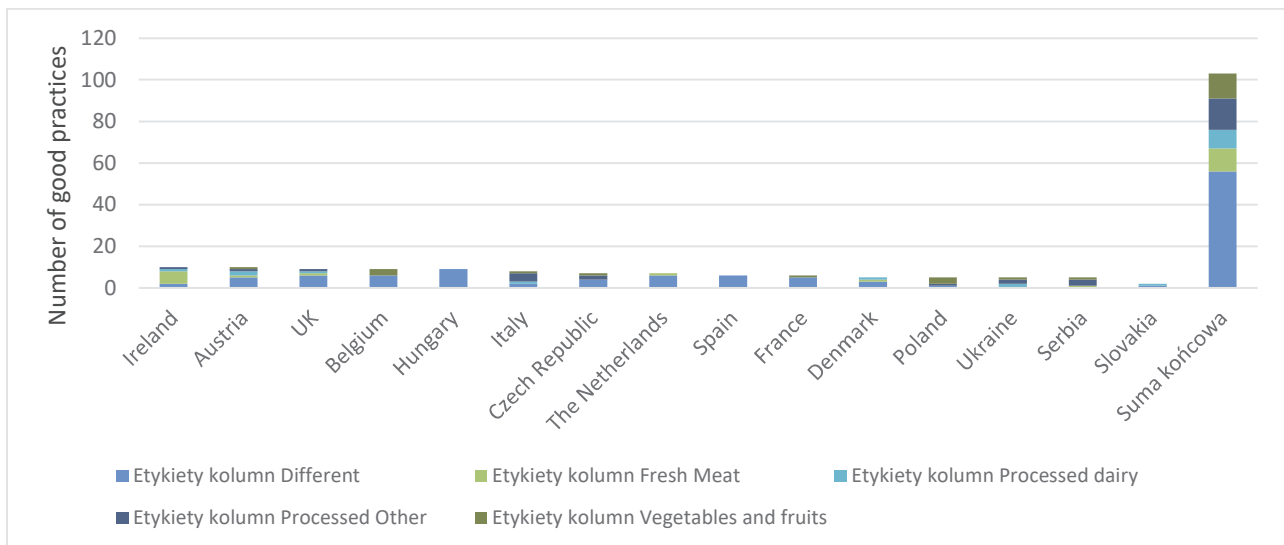


Figure 1 Good practices of SSC in EU by sector [Own work based on results of project SKIN, Horizon 2020]

3. CONCLUSIONS

One of the most commonly reported economic benefits associated with SSCs, is that of increased income for the producer, it is possible to obtain higher margins by producer with lower overheads compared to the longer supply chains. It has been suggested that producers are able to add a price premium when selling through SSCs (Pearson et al., 2011), that the elimination of the 'middleman' enables farmers to receive a greater share of the profits (Sage, 2003). Due to the implementation of short supply chains, there are more opportunities to negotiate contracts, ensure fair contract terms and to expand on a larger scale and enter new markets. An important role in this context is played by the use of modern distribution channels, i.e. dynamically developing e-commerce (e-shopping). In addition, SSCs provide producers with an opportunity to diversify and add value to their produce that would not usually be marketed (Alonso, 2011).

Another advantage of short supply chains is that producers can share resources thanks to shared data management, i.e. equipment or logistics services to improve efficiency and share costs. Information flow within short chains can help to integrate new actors in the chain. It is the model for enabling access via the Internet to a shared pool of computing resources (e.g. network, servers, storage, applications and service), they are configurable, available "on demand", can be quickly allocated and released with a minimal user interaction by allowing services by flexibly increasing or decreasing resources depending on the current demand. Due to the benefits of SSCs, an increase in the number of initiatives supporting the development of such activities is noticeable. These models have become an alternative to the globalized structure of the sectors, enabling "bringing together" the two extreme links of the supply chain and satisfying the needs of both the consumption and production side, assuring the sustainable orientation of the model.

Within the framework of economic perspective it can be concluded that short supply chains support achieving benefits as: higher margins / lower overheads (the often high costs charged by distributors can be split fairly between producers and consumers), improved product range (the product range can be diversified and/or increased so that more producers can be involved and more jobs can be created through retaining the added value in each territory), resource sharing (knowledge and skills, equipment, tools, processing facilities, transport and logistics can be shared in order to improve efficiency and share costs. can also be shared), improving local chain infrastructure (retaining or reinstating local processing facilities), increased negotiating power (more weight in contract negotiations, ensuring fair terms and conditions, gaining access to public and larger scale markets), reduced competition (between many small un-coordinated SSCs in a region), mutual support: collaboration can combat isolation felt by small-scale producers.

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