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Creating integral value for stakeholders in closed loop supply chains

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ABSTRACT

This paper contributes to the existing literature by researching integral value creation in closed loop supply chains (CLSCs). We distinguish between multiple types of business value, strategic success factors, and multiple groups of stakeholders that affect and are affected by CLSC activities. To gain empirical evidence, we collect and analyze in-depth data of four case studies in business to business markets in high capital goods. Our findings show that CLSC activities create opportunities and reduce risks for the focal company and their primary and secondary stakeholders. Strategic success factors such as product design, customer services, and CLSC business models modify CLSC processes and, hence, increase value. Intra- and inter organizational information sharing and stakeholder relationships strengthen value creation by influencing the strategic success factors. We conclude with the formulation of propositions.

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1. Introduction

Since the mid-nineties companies have been increasingly triggered to deal with product returns due to, for example, environmental take back and recovery regulations, (e.g. [Atasu and Van Wassenhove, 2010](#); [Prahinski and Kocabasoglu, 2006](#)), or increased e-business ([Autry et al., 2001](#); [Choi et al., 2004](#)). To handle product returns, firms usually set up a reverse supply chain (RSC). Immature RSCs often operate in isolation and are not as well developed as their forward counterparts ([Fleischmann et al., 1997](#); [Zsidisin and Siferd, 2001](#)).

Today it is increasingly acknowledged that firms create value by integrating the RSC with the original forward supply chain (FSC) into a closed loop supply chain (CLSC) (e.g. [Guide et al., 2003](#); [Talbot et al., 2007](#)). For example, CLSC activities entail economic and environmental benefits by reducing virgin material consumption with purchasing recovered parts and materials and extending the product portfolio with pre-owned products (e.g. [Wells and Seitz, 2005](#); [Zsidisin and Siferd, 2001](#)). Value for customers may result from an increased spare part availability and an extended service period due to harvested and recovered parts (e.g. [Krikke et al., 2003](#); [Kumar and Malegeant, 2006](#)). Product returns also provide valuable information on product design and the product life cycle ([Mafakheri and Nasiri, 2013](#); [Talbot et al., 2007](#)). More

CLSC research is needed that synthesizes these tangible and intangible benefits in CLSCs and investigates CLSC business value beyond economic benefits ([Klassen, 2009](#)).

Managing a CLSC involves designing, controlling and operating a system “to maximize value creation over the entire life cycle of a product with dynamic recovery of value from different types of return” ([Guide and Van Wassenhove, 2009: 10](#)). It entails taking back and recovering used products, parts or materials for reuse in the original or a secondary FSC ([Guide and Van Wassenhove, 2009](#); [Thierry et al. 1995](#)). Hence, CLSC management involves both forward and reverse supply chain functions including green purchasing, green manufacturing and material management, green distribution and marketing as well as the logistics for product returns ([Olugu et al., 2010](#); [Wells and Seitz, 2005](#); [Zhu et al., 2008](#)).

Creating competitive advantage by closing the loop has been extensively studied (e.g. [Kapetanopoulou and Tagaras, 2011](#); [Lehr et al., 2013](#); [Rogers et al., 2010](#)) using theoretical angles such as the resource based view ([Daugherty et al., 2005](#); [Jayaraman and Luo, 2007](#); [Richey et al., 2004](#)), game theoretical models ([Heese et al., 2005](#)) and transaction cost economics ([Martin et al., 2010](#)). However, the importance of risk reduction for CLSC value creation has been overlooked. Supply chain risk can affect supply chain performance and hence, competitive advantage ([Wagner and Bode, 2008](#)). Moreover, to stay competitive, companies need to address the demands of multiple stakeholders as well as the externalities that corporate processes can create for different stakeholders ([Olugu et al., 2010](#); [Sarkis et al. 2010a](#)). CLSC activities involve interaction and collaboration between the focal firm, their

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primary stakeholders (i.e. FSC and RSC actors) and secondary, external stakeholders outside the value chain (e.g. NGOs, and local societies) (Corbett and Klassen, 2006; Freeman, 1984). Previous studies acknowledged that several strategic success factors may play a role in improving CLSC performance, such as product design, the business model and service concepts such as leasing or service level agreements (e.g. Mont et al., 2006; Wells and Seitz, 2005). However, extant research has failed to analyze the role of internal and external stakeholders in the implementation and operation of the key success factors.

This study investigates the process of integral value creation by CLSC activities. Integral value covers multiple types of business value and opportunity creation and risk reduction for the focal firm, primary and secondary stakeholders. Moreover, we study how strategic success factors increase value creation and how stakeholder relationships influence the implementation and operation of these success factors. Learning about the value entailed in CLSCs, can specifically help purchasing departments to enhance the competitive advantages of their supply chains by dual sourcing recovered and new materials and, hence, supporting green purchasing initiatives.

We postulate that brand owners are the most suitable candidates to be the focal firm in a CLSC. They are in the position to make decisions on strategic success factors, such as product design, customer services and business models (Krikke et al., 2004; Wells and Seitz, 2005), and can affect different stakeholder groups. Moreover, brand owners are often pressured and held responsible for adopting environmental practices throughout their supply chain (Caniato et al., 2012).

The paper is set up as follows. First, we present extant literature related to value creation in CLSCs, stakeholder theory, as well as strategic success factors for CLSC value creation. Second, we conduct four in-depth case studies in CLSCs within a high capital goods context. Thereby we attain in-depth insights into how focal companies create value for themselves and other stakeholders. Third, by cross-comparing organizational- and CLSC-specific factors we discuss how strategic success factors affect CLSC activities and value creation and how stakeholder relationships affect these factors. We conclude with synthesizing our findings into propositions and present opportunities for further research.

2. Theoretical background

2.1. Closed loop supply chains

A RSC significantly differs from a FSC with regard to its operations, management and stakeholders (e.g. de la Fuente et al., 2008; Fleischmann et al., 2000) (Fig. 1). For example, while products in the FSC are produced according to market demand forecasts, the RSC is more reactive to market returns of uncertain quantity and quality (Tibben-Lembke and Rogers, 2002). In a well-

developed CLSC, FSC and RSC activities influence and support each other. For example, IT applications used in the FSC can keep track of products in the installed base and increase the return rate in the RSC (Östlin et al., 2008; van Nunen and Zuidwijk, 2004). Also, sourcing recovered materials and parts from the RSC can affect supplier relationships in the FSC as suppliers may lose business from new components, and instead recover returned ones (Thierry et al., 1995). Hence, stakeholders from both supply chains need to be involved in the value creation process.

2.2. Stakeholder theory and value creation

Exploring and expressing how firms differ in a competitive sense, is researching a firm's form of value creation (Stabell and Fjeldstad, 1998). Value chain theory suggests that firms create value in a chain of strategically important activities that produce products and transfer value between the firm and its customers (Porter, 1985). Other value creating logics include value shops (Simon, 1977), value networks (Stabell and Fjeldstad, 1998), or the resource based view (Barney, 1991; Wernerfelt, 1984). These theories mostly focus on value creation for the customer, as the customer is considered as being the major source of competitive advantages (Gummerus, 2013; Walter et al., 2001).

Stakeholder theory suggests that competitive advantage and performance depend on managers' capacities to react to various stakeholder demands and maintain a relationship with various stakeholder groups other than customers or value chain partners (Freeman et al., 2004; Mitchell et al., 1997). In this way, value is created and shared among multiple stakeholders (Freeman, 1994; Freeman et al., 2004). "Stakeholders" can be defined as "any group of individuals that can affect or is affected by the achievement of an organization's objective" (Freeman, 1984: 46). They can hold companies accountable for social and environmental outcomes, and thereby influence a company's decisions (Parmigiani et al., 2011).

CLSCs result in integrating more stakeholders, namely non-supply chain actors such as local communities, NGOs, governments or future generations (Corbett and Klassen, 2006; Zhu et al., 2008). Addressing more stakeholder groups with possibly conflicting and ambiguous demands creates complexities that exacerbate efforts to create sustainable supply chains (Hall and Vredenburg, 2005; Matos and Hall, 2007). Focal companies not only need to identify major stakeholder groups, but also must decide which groups to prioritize (Mitchell et al., 1997).

Studies have categorized stakeholder groups in different ways (e.g. Abdulrahman et al., 2012; Choi et al., 2001). Focal companies create value for and with so called primary stakeholders, while secondary stakeholders are affected or influenced by the value created, but are not involved in transactions (Clarkson, 1995; Freeman, 1984). Primary stakeholders include customers, suppliers, service provider and leasing companies. Secondary stakeholder groups are the natural environment, governmental and

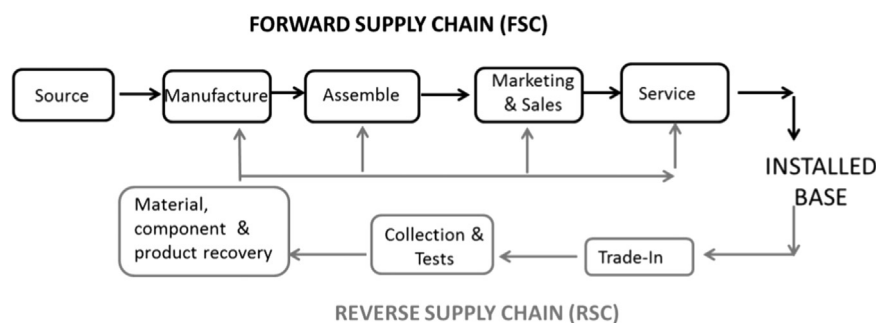


Fig. 1. Closed loop supply chain processes. Note. Adapted from e.g. Thierry et al. (1995) and Van Hillegersberg et al. (2001).

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