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Management of outsourced forest harvesting operations for better customer-contractor alignment

Mattias Eriksson [a,c,*], Luc LeBel [b], Ola Lindroos [a]

[a] Department of Forest Biomaterials and Technology, Swedish University of Agricultural Sciences, Skogsmarksgränd, 901 83, Umeå, Sweden
[b] Département des sciences du bois et de la forêt, Faculté de foresterie et de géomatique, 2405 rue de la Terrasse, Université Laval, Québec, Canada G1V 0A6
[c] SCA Forest Products, Skepparplatsen 1, 851 88, Sundsvall, Sweden

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ABSTRACT

Performance of harvesting operations is vital for wood supply chains to enable delivery of the right product to the right market at the right price. Consequently, the performance of harvesting contractors has been the topic of many studies over the years, but few of these have investigated the critical issue of whether contractor performance is in alignment with downstream needs. Furthermore, no previous study has suggested a clear route that forest companies can take to promote alignment of their employed contractors. This paper presents a framework specifically designed to help managers measure and foster contractor alignment within their wood supply chain.

The framework was tested on a large sample of harvesting contractors operating in Sweden, for which a performance survey and a statistical procedure was utilized to segment contractors into groups of varying levels of alignment with their customer company. Results from the test were then used to suggest to the customer's managers the most viable blend of four generic alignment approaches for each contractor group: active sourcing, adapted incentives, active use of power advantage, and tailored contractor development programmes. If implemented, such a structured but differentiated approach to contractor alignment should lead to the most beneficial response from each contractor, and eventually to improved performance of the wood supply chain. Consequently, forest companies need to use, and be proficient in the use of, a variety of approaches to contractor alignment to make the most of their contractor force.

1. Introduction

The outsourcing of non-core production units and service functions has been a strategy frequently adopted by companies over the last few decades. In forestry, large forest companies all over the world commonly outsource operations such as silviculture, harvesting, trucking and road construction to independent contractors.[1] Many forest companies started to outsource most of their harvesting operations to small contractors in the 1980s and early 1990s, usually by offering to sell their machinery to selected machine operators who could then continue as independent contractors (e.g. Hultåker, 2006). The outsourcing of harvesting operations introduced a new business interface to the wood supply system and put both forest companies and newly-started contracting businesses in new roles as customers and contractors of harvesting services. This shift promoted dramatic improvements in harvesting operations efficiency, but also put considerable pressure on the contractors (Ager, 2012). The immediate consequences for forest companies were new challenges due to the fact that harvesting crews were no longer under their direct control, but also new opportunities such as the increased flexibility associated with outsourced resources. These new conditions changed the way forest companies could manage their harvesting operations and, consequently, their supply chain.

The fact that most harvesting contractors can be classified as small or medium-sized enterprises (SMEs) implies certain diversity among them. While some contractors are entrepreneurially oriented (St-Jean et al., 2010), and, by taking entrepreneurial action are likely to vitalise the wood supply system, other contractors are likely to be motivated by lifestyle objectives rather than business objectives (Drolet and LeBel, 2010; Wang et al., 2007). Small and medium-sized businesses (such as the majority of harvesting contractors) have been found to put little emphasis on strategic planning (Wang et al., 2007), lack adequate follow-up routines (Cacot et al., 2010) and be resistant to change (Gray, 2002). As a consequence of the contractor base complexity caused by this diversity, large companies with a need for harvesting services that require efforts from multiple contractors are likely to experience challenges in managing their contractor force (Christopher, 2011).

* Corresponding author at: Department of Forest Biomaterials and Technology, Swedish University of Agricultural Sciences, Skogsmarksgränd, 901 83 Umeå, Sweden. Tel.: +46 60193174.
E-mail addresses: mattias.eriksson.skog@sca.com (M. Eriksson), ola.lindroos@slu.se (O. Lindroos).

[1] In this article, the term "contractor", which is common in forest operations literature, is preferred over its near-synonym term "supplier", which is more common in literature from research fields such as supply chain, and production management.

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Ideally, all contractors in a company's contractor force strive to conduct and improve their operations for the overall good of the supply chain of which they are part. However, this ideal state requires the contractors' strategy, their organization's culture and leadership style to be aligned to those of the customer's and, ultimately, to all the downstream actors' needs (Chorn, 1991). Normally, alignment can be assessed using several dimensions such as, for instance, cost reduction efforts, pricing, reliability, responsiveness, and quality management (Siguaw and Simpson, 2004). Misalignment of supply chain partners may harm overall effectiveness and are typically caused by, for instance, lack of information, unclear responsibilities and roles, and incentives that promote behaviours that are not in the best interest of the supply chain (Lee, 2004). Furthermore, a lack of commitment, insufficient resources, and conflicts between organizational cultures can also lead to poor alignment (Handfield et al., 2000). Compatibility, cooperation, communication, trust, and commitment between supply chain partners mitigate misalignments and help form a basis for the formation of fruitful alliances and partnerships in the supply chain (Cavinato et al., 2006). Additionally, buyer-dominated relationships facilitate alignment with downstream needs (Cox, 2001). The previously discussed diversity of motivation, capabilities and processes among contractors indicate that active management of the contractor force may be a prerequisite for forest companies to experience alignment with all of their contractors. However, for a typical wood products company, active management is made complex by the large number of contractors supplying services, the often decentralised work organization, and system complexity (Erlandsson, 2013). Consequently, the lack of guidelines and tools to help managers to successfully achieve alignment with their contractors represent a significant challenge for the forest industry.

Despite the increased complexity of the wood supply system that was caused by the outsourcing of harvesting operations, little if any research has been carried out addressing the new challenges and opportunities that followed this change. Furthermore, to our knowledge, previous research has not addressed the potential of using the management of contractor relationships as a tool for alignment and improvement of the wood supply chain. This represents a significant research gap, since addressing the relationships of interrelated firms has been recognised since the 1990s as being important for the development of competitive advantage (e.g. Dyer and Singh, 1998). Consequently, this study will contribute an attempt to fill this gap by synthesising issues such as contractor performance, contractor capabilities and approaches to contractor alignment. The following section (Section 2) presents a literature review that provides the theoretical foundation for this synthesis. In Section 3, the framework developed to measure alignment is presented and the case study is described. Results are presented in Section 4. A discussion pertaining to the utility of the proposed framework and the implications of the empirical results is presented next in Section 5. Finally, the main conclusions from the study are summarised in Section 6.

2. Literature review

This section provides the theoretical background of a framework for contractor alignment, which is proposed in later sections, and is divided into three subsections. The three subsections reviews literature on performance alignment, contractor capabilities, and approaches that a customer can use to foster performance alignment.

2.1. Performance alignment

In the current business environment, supply chains of interlinked, rather than individual, firms compete with each other in the market (Li et al., 2006). To optimise performance of such supply chains, the objectives of independent supply chain members need to be aligned, and their decisions and actions coordinated for the common good (Li and Wang, 2007). The notion of end customer satisfaction has a broad acceptance as a key objective of a supply chain's operations (e.g. Beamon, 1999). Indeed, some authors even define supply chains as "… the investments, processes, and flows of goods designed to meet the needs of a set of ultimate customers or consumers" (Cavinato et al., 2006, p. 8). As a consequence of this objective of end user satisfaction, each firm in a supply chain will understand that the benefit that its direct customer enjoys from an offered service or product is ultimately determined by the configuration and requirements of the downstream value chain (Porter, 1985; Ravald and Grönroos, 1996). Consequently, the satisfaction of a buyer of harvesting services with its employed contractors can be used as an indicator of the contractors' alignment with the needs of the downstream supply chain, at least in cases where the customer is aligned to actors further downstream. Hypothetically, an unbroken supply chain of satisfied customers would be a supply chain in which minimal effectiveness is lost due to misalignment. However, the customer often appreciates several attributes of a service or product, which may complicate the assessment of customer satisfaction (Alpert, 1971). A classic way to facilitate this is to simultaneously measure the customer's perceived importance of each attribute, and the perceived performance of the service or product on the same attributes (Martilla and James, 1977). The importance/performance method highlights attributes which the customer perceives as important, but in which the product or service fails to perform. This characteristic makes the importance/performance method useful for producing assessments of performance alignment. In the remainder of this section, we will explore the notion of service attributes in general, and attributes of harvesting services in particular.

The customer's perceptions of received value, and the sacrifice needed to gain this value, are broadly recognised as the two essential parts of customer satisfaction (Cronin et al., 2000; Ravald and Grönroos, 1996). Typically, the customer's perception of received value is multidimensional, and commonly measured for ranges of quality attributes specific to the studied product or service (Mersha and Adlakha, 1992). The customer's perceived value of a certain offering will be dependent on the perceived quality of each attribute, but also on the customer's valuation of the offered quality attributes (Yang, 2005). In the same way that the received value is normally a multidimensional item, a range of short and long-term sacrifices are normally necessary to gain this value, such as the actual price, transportation costs, maintenance costs and so on (Ravald and Grönroos, 1996). Grönroos (1997) synthesised thoughts from many of the more specific theories of customer satisfaction into a generic model of customer-perceived value, well suited for the analysis of business relationships in service industries. He argued that customer-perceived value of a service can be regarded as a function of four main attributes: 1) core solution, 2) additional services, 3) price, and 4) relationship costs (Eq. (1)). The numerator of the equation represents the total perceived benefits from a service, while the denominator represents the total perceived sacrifice necessary to gain these benefits.

- *Core Solution* refers to the physical outcome of a service.
- *Additional Services* refers to immaterial values of a service.
- *Price* refers to the monetary cost of a service.
- *Relationship Costs* refers to all costs related to maintenance of the business relationship.

$$\text{Customer-Perceived Value} = \frac{\text{Core Solution} + \text{Additional Services}}{\text{Price} + \text{Relationship Costs}} \quad (1)$$

Since the introduction of the concept of customer-perceived value, it has been applied to studies of services in a range of sectors, such as IT, ICE (information, communication, entertainment), finance, and tourism for which several sets of sector-specific attributes of customer-perceived value have been identified (Lapierre, 2000; Sánchez et al., 2006). However, it has yet to be applied to the study of forest harvesting services.