



ELSEVIER

Contents lists available at ScienceDirect

Int. J. Production Economics

journal homepage: www.elsevier.com/locate/ijpe

Learning from suppliers in the aerospace industry

Claudia Rebolledo*, Jean Nollet

HEC Montréal, Montreal, Canada

ARTICLE INFO

Article history:

Received 18 February 2009

Accepted 10 November 2010

Available online 18 November 2010

Keywords:

Inter-firm learning

Buyer–supplier relationships

Aerospace industry

ABSTRACT

Using a knowledge-based perspective, we identify and test the conditions enabling inter-firm learning in the aerospace supply chain. We focus on buyers accessing knowledge from their suppliers. Hypotheses are tested via a cross-sectional survey of supplier relationships of prime contractors in Canada's aerospace industry. The variables identified as having a significant impact on inter-firm learning are as follows: the quality of the buyer–supplier relationship in terms of trust, collaboration, socialization and information sharing; the proprietary links between both firms; and the use of ITC collaboration tools.

Crown Copyright © 2010 Published by Elsevier B.V. All rights reserved.

1. Introduction

As firms struggle to cope with an increasingly turbulent economic environment, there is widespread recognition that knowledge has become the most strategic component of a firm's resources (Grant, 1996). The complexity of modern technologies goes beyond the capabilities of most individual companies and makes it essential to manage knowledge beyond a firm's boundaries. Suppliers can be major providers of knowledge for the production of goods and services.

Firms in technological intensive sectors need to rely greatly on their partners in the supply chain to access the knowledge they need and do not generate internally. The aerospace supply chain is no exception and inter-firm learning is a critical issue for all firms in the industry. Inter-firm learning corresponds to all the knowledge outcomes (i.e. knowledge creation, retention, transfer and application) occurring in a firm as a result of the interaction with a business partner. Traditionally, inter-firm learning in the aerospace supply chain occurs and is mostly perceived as unidirectional, i.e. from prime contractors to suppliers. However, changes in the industry suggest prime contractors also need to learn from their suppliers. While in the past, most suppliers in the aerospace industry were simply considered subcontractors, they are now asked to become active participants in the knowledge creation process in the supply chain. The increasing participation of suppliers in design and improvement efforts also contributes to the development of their capabilities. In this context, suppliers are clearly becoming a potential source of knowledge for prime contractors. However,

valuable inter-firm learning is a complex process better achieved under specific conditions rather than haphazardly.

The objective of this study is to identify those key conditions favoring inter-firm learning generated by the interaction of major buyers with their suppliers in the aerospace industry.

Strategic alliances and joint ventures have been the primary setting for the empirical research on inter-firm learning (Inkpen, 1996, 2000; Kale et al., 2000; Simonin, 1999, 2004). Although the learning component of buyer–supplier relationships has received increasing attention, the studies have primarily focused at the network level (Dyer and Hatch, 2006; Dyer and Nobeoka, 2000; Hult et al., 2004; Lincoln et al., 1998; Spekman et al., 2002; Wagner and Buko, 2005) and generally privileged the supplier as the receptor of knowledge (Håkansson et al., 1999; Kotabe et al., 2003; Modi and Mabert, 2007). However, the limited empirical research on the topic does not offer detailed insights about how buyers can integrate more of the knowledge generated by suppliers. To our knowledge, no other study has focused on the aerospace industry to explore the conditions influencing inter-firm learning. Yet, this industry represents a very pertinent setting for the postulates of the knowledge based view of the firm (Amesse et al., 2001; Bessant et al., 2003; Mayer and Teece, 2008).

Using the knowledge-based view of the firm (KBV), we develop and test a framework of the conditions facilitating inter-firm learning in the aerospace supply chain, from the buyer's point of view. We intend to contribute to the literature on supply chain management in three different ways. First, we propose a framework integrating inter-firm learning research that has been performed previously in diverse settings (strategic alliances, joint-ventures, vertical partnerships, networks and supply chains) to the specific context of buyer–supplier relationships. Second, we test our framework in the aerospace industry, a neglected but appropriate and interesting setting for research in knowledge management. We also take an unusual perspective: the prime

* Corresponding author.

E-mail addresses: Claudia.Rebolledo@hec.ca (C. Rebolledo), Jean.Nollet@hec.ca (J. Nollet).

contractors learning from their suppliers. Finally, we make suggestions that could help managers increase the learning occurring in the interaction with their suppliers. Although these suggestions are based on a research performed in the aerospace industry, they could eventually be relevant to managers in other industries who are interested in improving the learning component of their supplier relationships.

The remainder of the paper is organized as follows: the theoretical background and hypotheses are presented first, followed by a description of the research methodology and the setting (the aerospace industry); then, the results and the main implications for practitioners are discussed, followed by the limitations and the directions for future research.

2. Theoretical background and hypotheses

2.1. *The knowledge-based view of the firm*

We relied on the knowledge-based-view (KBV) to develop a model explaining inter-firm learning between buyers and suppliers. We chose the KBV as the theoretical framework for this study because of its emphasis on knowledge as the key element explaining the existence of the firm, its boundaries, and the development of “hybrid” governance structures.

The knowledge-based perspective explains the existence of the firm by its ability to create and transfer knowledge efficiently (Kogut and Zander, 1992; Nonaka and Takeuchi, 1995). To the extent that KBV focuses on knowledge as the most strategic of the firm’s resources, it is an outgrowth of the resource-based view (Grant, 1996).

Research on the KBV aims at understanding how firms create, transfer, store and apply knowledge (Argote et al., 2003). Knowledge creation occurs when new knowledge is generated in organizations. Although the creation of knowledge basically occurs at the individual level, the firm provides necessary incentives and direction favoring the integration of many individuals’ specialized knowledge (Grant, 1996). The knowledge transfer process explains how knowledge is disseminated among different individuals or groups inside the firm or between organizations (Amesse and Cohendet, 2001). Knowledge storage involves embedding knowledge in the form of standard operating procedures, routines and scripts. so that it exhibits some persistence over time (Huber, 1991). Finally, knowledge application involves all the activities oriented to deploy existing knowledge to create value (Grant and Baden-Fuller, 2004). It makes the transformation of knowledge into goods and services possible. Since production implies the combination of many different types of specialized knowledge, efficient knowledge application requires diversity of knowledge (Grant and Baden-Fuller, 2004). All these knowledge management processes are highly interconnected (Argote et al., 2003). For example, the application of knowledge often generates new knowledge. Similarly, the transfer of knowledge requires addressing the issue of knowledge retention.

The KBV has been recognized as a theory explaining the existence of the firm; it also has been used to explain the emergence of governance structures that are more involved than a standard market exchange but do not merit full integration, and which are also known as hybrid structures (Grant, 1996). According to the KBV, the need to access knowledge from supply chain partners would promote the development of long-term, cooperative relationships in the supply chain (Mayer and Teece, 2008). The search for knowledge dispersed in the supply chain would justify governance structures that otherwise would be considered unnecessary or too risky (Amesse and Cohendet, 2001; Ahmadjian and Lincoln, 2001).

2.2. *Knowledge components*

The general consensus among researchers is that knowledge takes two forms: “tacit”, which expresses skills, know-how and practical knowledge; and “codified” (explicit), which consists of knowledge expressed in a tangible way, such as books, tapes, drawings, etc. The emphasis of KBV is on the tacit component of knowledge since it raises more complex and interesting issues. A high level of tacitness makes the transfer of knowledge within and outside the borders of the firm very challenging (Kogut and Zander, 1992; Simonin, 2004; Wagner and Buko, 2005), because the tacit component of knowledge is difficult to articulate, formalize and communicate. Since it is also highly context specific and has a personal component, tacit knowledge is best learned through collaborative experience (Nonaka and Takeuchi, 1995). The processes of knowledge creation and transfer rely on the mastery of transforming one form of knowledge into another (Nonaka and Takeuchi, 1995). In fact, the transfer of knowledge requires at least a partial codification of tacit knowledge (from tacit to explicit), while applying it requires an internalization of the acquired knowledge (from explicit to tacit).

2.3. *Inter-firm learning in buyer–supplier relationships*

The KBV provides a useful perspective to understand buyer–supplier relationships, especially in sectors where the production of goods and services has broad knowledge requirements (Grant, 1996), as is the case in the aerospace industry. Inter-firm relationships are indeed considered efficient mechanisms for knowledge management, superior to markets and firms for the transfer and application of knowledge (Bangens and Araujo, 2002; Grant and Baden-Fuller, 1995; Kogut and Zander, 1992). In particular, buyer–supplier relationships have been identified as a governance structure promoting knowledge sharing (Håkansson et al., 1999). However, not all buyer–supplier relationships have the same ability to promote inter-firm learning, and there is a need to identify the characteristics of the relationship that could foster the transfer and application of knowledge between partners (Mayer and Teece, 2008).

Prime contractors in sectors with a broad knowledge base, like the aerospace industry, need to maximize the learning occurring in their relationships with suppliers. The knowledge specialization required in technologically intensive fields makes it impossible for prime contractors to generate all the critical knowledge required (Beckman and Sinha, 2005). Therefore, they need to rely on suppliers that provide access to complementary sources of knowledge faster, at less cost, with less risk and with more flexibility than if such knowledge was developed within the firm (Powell, 1998). Through the supplier relationship, the customer receives accessibility to and can utilize knowledge resources which they have not developed (Axelsson, 1987).

The development and assembling of complex products requires that prime contractors access and apply knowledge they do not possess. Since the knowledge required is not completely embedded in the products or services purchased, some tacit knowledge must be transferred by the supplier. Therefore, the market transaction is insufficient from the buyer’s point of view (Choi and Lee, 1997). In high tech sectors, such as the aerospace industry, customer innovative efforts generally require the recombination of the knowledge of several suppliers. Such knowledge integration entails specific conditions of the buyer–supplier relationship.

Inter-firm learning has definitely captured the attention of researchers in operations management. Several empirical studies focus on supply chain learning as a strategic resource having a positive effect on operational performance (Bessant et al., 2003;

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات