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Patterns of dynamic changes in supply management – a triadic approach

Working paper

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Abstract

Research has followed a network perspective of supply management from as early as the publication of Krajlic matrix. This portfolio approach is still static. Recently the triad is interpreted as the smallest unit of a network through which dynamics can be studied. Analyzing triads seems to be a promising way through which a deeper insight into the dynamics of supplier development can be gained. Using case study approach the paper investigates this dynamics with a special emphasis on cooperative behavior. Analyzing a triadic sourcing setting operating in a make to engineer (and order) environment we show the importance of governance.

Key words: supply development, dynamics, triadic approach, governance

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Introduction

Research has followed a network perspective of supply management from as early as the publication of Krajlic matrix (1983) indicating the need for a systemic approach to managing suppliers. This so called portfolio approach is still static, since it does not deal with the interactions between different buyer-supplier relationships. Recently both practitioners and researchers have recognized that relationships may have a significant effect on other relationships and suggested the relationship triad as the basic unit of analysis (Wu – Choi, 2005; Choi – Wu, 2009). This triad is interpreted as the smallest unit of a network through which dynamics can be studied. A triad is made up of three actors (nodes) and the links (relationships) that connect them. Since managing the supply base means managing interconnected relationships (Roseira et al., 2010), analyzing triads seems to be a promising way through which a deeper insight into the dynamics of supply base development can be gained. Although the importance of triads is more and more acknowledged, triadic research is still underdeveloped. Näslund and Hulthen (2012) carried out an extensive literature review and found that only 12 articles applied a triadic approach to supply chain management issues.

This paper does focus on a specific triad that consists of a focal firm in a buyer position (B) and two of its suppliers (S1 and S2). Using case study approach we investigate a specific supply chain triad interconnected through a triadic supply strategy. This strategy is interpreted as an effective means to merge the benefits of both single and multiple sourcing and create cooperation between suppliers of the triad that may serve the long term joint development of all the actors (Dubois – Fredriksson, 2008; Gadde – Håkansson, 2008).

First we shortly summarize on hand knowledge on triadic sourcing strategy. Then our case study is introduced and discussed with focus on governing problems. The paper is closed with conclusion.

What do we know about triadic sourcing strategy? - A literature review

For quite a long time both purchasing managers and academics had the interpretation that long term competitive advantage stemming from a supply base requires a conscious segmentation of supplier relationships and the way these relationships are managed (Dyer, 1996; Dyer – Singh, 1998). Buyers were expected to choose between specific relationship types, basically arms' length or strategic relationship. In the first case unit price of the supplied products (or service) and the low cost of operating the relationship were interpreted as the basic sources of competitive advantage. In the latter case quick adaptation to changing customer's requirement and so an enhanced capability of innovate. But firms have developed innovative supply management strategies that do not aim at following traditional competitive strategies of cost leadership or differentiation (Porter, 1985) but strive to implement mass customization strategy that combines traditional competitive priorities. From a supply base management perspective this requires the combination of the two traditional relationship management styles and so merge their benefits. Hybrid sourcing strategies are interpreted as an effective means of this ambition.

At the moment three types of such hybrid supply strategies are identified and described in literature, the 'parallel sourcing' (Richardson, 1993), the 'network sourcing' (Hines, 1995, 1996) and the triadic sourcing strategy (Dubois – Fredriksson, 2008). All hybrid strategies are different from the so called dual sourcing. In a dual sourcing situation two independent suppliers are used for the same component (Van Weele, 2005). In case of a hybrid supply

strategy at least two suppliers are capable of delivering the same component, still the buyer applies single sourcing for a specific product. Compared to the other two hybrid sourcing strategies, in case of triadic sourcing the buyer “actively creates and encourages interdependencies between the two suppliers” (Dubois – Fredriksson, 2008, p. 170). In creating these interdependencies the buyer has clearly a mediating role that was classified as ‘joining’ (Holmen – Pedersen, 2003). This means that the triad has three active, interrelated relationships. Not only the two buyer – supplier relationships of the triad are interrelated but there is a direct relationship between suppliers too. Using another terminology this constellation is called closed triad (Smith – Laage-Hellman, 1992), where all actors interact with each other.

The Volvo Cars’ case (Dubois – Fredriksson, 2008) is seen as the archetype of triadic sourcing, where the buyer creates a creative tension between cooperation and competition through a dynamic division of labor between supplier firms. The buyer in his case has a long term orientation and commitment to both suppliers. This allows to widen the landscape for interaction between buyer and suppliers but also between suppliers. The buyer is the key actor that governs the three interrelated relationships in the triad and forces both competition and cooperation between suppliers. Competition between suppliers is triggered using several situations or events, since suppliers compete for (i) different responsibilities/ activities (product development, component sourcing), (ii) different component and modules. At the same time suppliers are exposed to cooperation (i) in incremental type of product innovations, (ii) coordinating and leaning their material flows towards the buyer, and (iii) supplier base development and management.

The Finnish Company Case developing triads into quadrats – the issue of governance

According to literature triadic sourcing strategy creates competition between suppliers in the triad. Therefore supply managers have to overcome the traditional trade-off approach suggesting that increased competition is possible only accepting a decrease in cooperation between partners. Using case study approach we aim at understanding how this can be achieved, what are the core challenges.

Case study research as a research strategy that aims at understanding the internal dynamics of an individual case and is aiming at understanding comprehensive and relevant phenomena of real life. The method is especially useful when a researcher cannot control the target. Furthermore, it is useful when the focus is on concurrent events in a real time manner especially when the border between the event and context is not clear. There are three types of case study research: explorative, descriptive, and explanatory research. We apply the descriptive approach. Its aim is to provide as accurate image of a phenomenon as possible. In the research the focus is not in clarifying connections between phenomena or factors interpreting behavior, but only in describing a situation. The aim of explanatory research is to explain causal relations between phenomena and testing related hypotheses (Yin, 2009).

The focal firm of our triadic case is a Finnish Company (**FC**) that shows achieving cooperative behavior of suppliers is not easy to achieve, and requires thorough development of governance mechanism. The firm of the triad in the buyer’s position (**B**) is **FC** operating in Finland. **FC** is engaged in developing mainly tailor made industry products and offers complex services globally, and is one of the leaders in the industry. Products are produced engineered to order or make to order and there are no warehouse of ready products. Because of high level of customization and uniqueness of products both the operation of **FC** and its suppliers is extremely knowledge-intensive. In this respect our case fundamentally differs from the well-

known Volvo case, where the focal firm is operating in mass customization environment. In our triadic setup the batch size is very small, in most of the cases one. The length and the volume of one contract that has to be competed for by the suppliers are smaller compared to the Volvo case and generally the car industry. The operation is more project based leading to a more frequent bidding process and so creating more room for competition and less for cooperation in the triad.

FC has tried to develop a triadic sourcing strategy with Company *A* and Company *B* in the position of Supplier1 and Supplier2 (S1 and S2). Company *A* is also located in Finland and produces subassemblies for the core product of *FC*. It is part of the global supply chain, but mainly supplies products sold in the European region. Components and raw material are purchased mainly from local suppliers as well as component suppliers from Europe. Company *B* is a private company in Slovakia supplying *FC* partly with the same subassemblies than Company *A*, but also some other products. In these latter case Company *A* and *B* are independent suppliers. 70% of its total turnover comes from *FC* in case of Company *A*. The same ratio is 50% in case of Company *B*. According to a triadic sourcing strategy competition is present in the triad. As noted earlier due to the project based operation this competitive atmosphere is very strong between suppliers. Still, in order to create long term interdependencies among actors and strengthen joint development *FC* actively tried to create cooperative situations between supplier *A* and *B*. For example, in case of capacity shortage one supplier was expected to help out the other one. Due to the knowledge intensive nature of the product and technology this inevitably forced suppliers to share sensitive information and offer component supplies. Product knowledge and technology, but also process capabilities are consequently partly known to each other in the triad. Although the buyer in our case tried to create creative tension between suppliers and build a cooperative type of relationship described by Dubois and Fredriksson (2008), it was not very effective.

Raymond Noorda, the former CEO of Nowel Inc. (Branderburger – Nalebuff, 1996) was the first to come up with a new type of horizontal and/or vertical relationship, labelled as co-competition. Since that several research programs have been carried out in vertical cooperative relationships, such as supply chain relationships developed between buyers and suppliers (Dowling et al., 1996; Castaldo et al., 2010 –) Determined by the intensity of cooperation and competition between partners Luo (2007) has identified four different situations in a cooperative relationship (see Table 1): contending, isolating, partnering, and adapting situations.

The original Volvo case has also pointed out that competition and cooperation between suppliers in a triad are event based. For example, each time when a new product in the suppliers' portfolio is planned to be developed, competition becomes stronger. On the other hand in times of new product launches cooperation in optimizing material flows becomes dominant. These events may occur parallel and may have contradictory effects on perceptions of both suppliers.

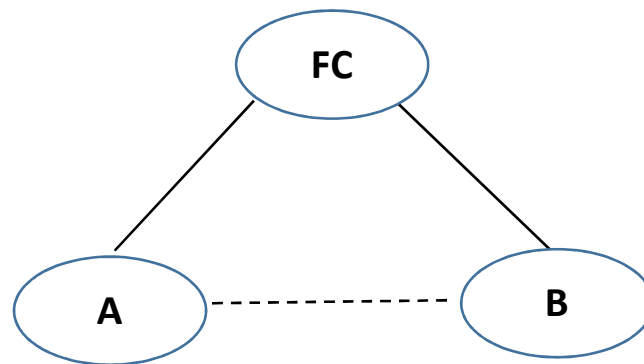
Table 1: Relationship situations based on the intensity of cooperation and competition between partners (based on Luo, 2007)

Competition	Strong	<i>Contending Situation</i>	<i>Adapting Situation</i>
	Weak	<i>Isolating Situation</i>	<i>Partnering Situation</i>
		Weak	Strong
		Cooperation	

According to our research results attitudes of suppliers in a triadic supply relationships in a project based operation change very intensively over time. Short partnering and contending situations forced by the focal firm could have been detected parallel with long isolated periods with extreme closed attitude toward the other supplier in the triad. The reluctant attitude of suppliers have led to serious performance problems in critical situations, with unexpectedly low cost efficient, problems in delivery punctuality, quality and flexibility. These problems raised the question of relationship governance and initiated a structural change in the supplier setup.

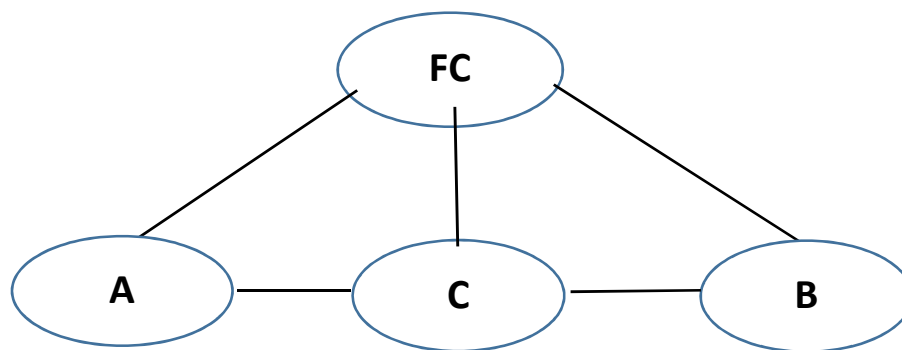
The concept of governance is originated in Transaction Cost Economics (TCE) (Williamson, 1981). Governance mechanisms are interpreted as safeguards against opportunism that firms employ in order to govern their relationships (Jap – Ganesan, 2000; Wang et al., 2008). The two formal coordination mechanisms are the market and the hierarchical (or bureaucratic) coordination. In case of market coordination the contract is seen as the means of governance; while hierarchical coordination uses ownership rights and properties for governing relationships. Besides these classic coordination and their aligned governance mechanisms Ouchi (1980) has early stressed the importance of a third type of governance, where common values and beliefs (e.g. trust) play the crucial role in governing the relationship. Ouchi has called this clan coordination, but later own this type of governance was labelled as relational (Medlin et al., 2005).

Figure 1: The initial triad and its governance mechanism (dotted line indicating relational while continuous line contract based governance)



In our case the original triad was formally governed using contracts in two relationships from the three, the relationships between the focal firm and its suppliers. Relational characteristics – such as trust for example– were expected to act as a safeguard between the two suppliers. This relational governance mechanism has been proved to be weak in enhancing really intensive, rich and effective cooperation between suppliers. Therefore the buyer has decided to strengthen the governance of the critical supplier-supplier relationship and partly acquired a third supplier, Company *C* in Estonia. This company is a joint venture of the focal firm delivering huge variety of subassemblies to focal company. 90% of total turnover of supplier *C* comes from *FC*.

Figure 2: The quadratic setup and its governance structure (continuous line indicating contract based governance)



This third supplier created formally governed relationships with both Company *A* and *B* and is expected to play the direct mediator between suppliers. The newly developed quadratic setup helps the FC govern the indirect relationship between supplier *A* and *B*.

The issue of governance is only an example of management problems in triadic supply strategy. The objective of our research is to map in a systemic way the perceptions of the suppliers related to both cooperative and competitive situations and see the key management challenges of such quadratic supply strategy. These perceptions may help us understand the dynamics in supply network and describe management challenges, prerequisites, and key characteristics of network supply in a more sophisticated way.

Conclusion

Many scholars have researched supplier management and supplier development. This paper presents a core management situation related to manage and develop suppliers in a triadic setting. Triadic approach is unique and there are not too many publications with empirical evidence. In triadic sourcing the buyer “actively creates and encourages interdependencies between the two suppliers”.

The empirical case study states that utilizing triadic sourcing strategy could create competitive advantage for the focal company. The presented case study is unique, where the focal company is sourcing engineer to order and make to order products from its supply partners. For case products focal company has developed triadic sourcing approach where three suppliers are developed utilizing supplier development concept. Focal company’s role to develop suppliers is extremely important: they are facilitators to develop suppliers and invest resources for development activities.

The issue of governance is only an example of management problems in triadic supply strategy. The objective of this research is to see the key management challenges of such quadratic supply strategy.

Our preliminary results indicate that there is a reasonable gap in understanding triadic supplier settings, their functioning in different operational strategies, core management limitations and challenges. The literature in this field is more focused to theory development and that’s why empirical case studies are needed to show more empirical evidence on triadic sourcing.

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