

JOHAN LARSSON

Development of suppliers and supply chains

Supplier development as a purchasing strategy

Licentiate thesis in Business Administration



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Development of suppliers and supply chains – Supplier development as a purchasing strategy
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Johan Larsson

Abstract

Purchasing is a function that has developed from a more clerical function to a function of strategic importance over the last 20 years. As a result of this development we have observed that many firms engage in supplier development activities as a part of their purchasing strategy.

This thesis consists of four different essays describing various aspects of supplier development and an essay that summarise and connects the four essays as well as giving a broad introduction to the field of research.

Small and medium sized firms are of special interest when studying supplier or supply chain since they are important links in their supply chains but have fewer resources and therefore limited possibilities to develop by themselves. In the thesis three of the essays describe different ways in which this can be conducted.

Positive benefits from supplier and supply chain development reported in the thesis are lower costs, shorter lead times, increased competence and an overall improved competitiveness.

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Development of Suppliers as a Purchasing Strategy

Johan Larsson

Usually the first chapter in a traditional thesis discusses a problem area in order to arrive at a well defined purpose. In that sense, this thesis is an exception since instead of being written as a monograph, it consists of five separate essays. This essay, development of suppliers as a purchasing strategy, starts with a short introduction of the research area, discusses the purpose for the thesis, and then provides a theoretical part discussing supply chain management, purchasing, development of suppliers as a purchasing strategy, and a discussion about SMEs. The essay concludes with summaries of the four other essays as well as overall conclusions.

Introduction

“We are now entering the era of ‘supply chain competition’. The fundamental difference from the previous model of competition is that an organization can no longer act as an isolated and independent entity in competition with other similarly ‘stand-alone’ organizations. Instead they need to create value delivery systems that are more responsive to fast-changing markets and that are much more consistent and reliable in the delivery of that value requires that the supply chain as a whole be focused on the achievement of these goals.”

(Christopher, 1998:28)

This quotation brings up an important aspect to challenges facing business today namely, the notion that no business is an island (Håkansson & Snehota, 1995). In order to be competitive companies need frequently to strive for integration with other actors in a supply chain. Some of this integration is characterised by high involvement relationships, others by low involvement (Gadde & Snehota, 2000). This integration could be either virtual or vertical (Dyer, 2000). In the first case we speak about network or partnership solutions and supply chain management, etc. In the second hierarchical solutions based on ownership are dealt with. It is apparent that much development today involves focusing on core competencies and buying other services or goods instead of making them in-house. Consequently, the virtual or network integration becomes more important.

Further, the development towards “supply chain competition brings a number of challenges for all actors, past, current or future, to make sure that they are equipped to cope with this big challenge. It seems change and development are a necessity and they might affect OEMs (Original Equipment Manufacturers) as well as other actors in the supply chain. There are several other examples of this described in books and journals such as supplier development at Motorola (Gadde & Håkansson, 1998) and at Tetra Pak (Hulten, 1999). Still there are a lot of things we do not know of and have not seen studied that much. One such thing happens when the development of supply chains involves small and medium sized firms (SMEs). What specific problems are associated to such contexts?

Purpose

The overall purpose of this thesis is to contribute to the knowledge about development of suppliers and supply chains and how supplier development can be used as a purchasing strategy. The empirical focus in the thesis is on small and medium sized enterprises (SMEs) and how they are included in and affected by these activities.

Structure of the thesis

The thesis is a compilation of four essays that are summarised and held together by this essay. It introduces and discusses, the area of supply chain management, then moves to a discussion about purchasing, its development and about purchasing strategies with an emphasis on supplier development as a purchasing strategy. This is followed by a discussion of SMEs. After this broad introduction the four essays are positioned and connected together in a model followed. This essay is concluded with summaries of the four remaining essays and overall conclusions. The remaining four essays are then presented in the order they were written. A presentation and discussion about methodology is given in Appendix A.

Supply Chain Management

Supply chain management is a fairly new field within business administration that is grounded in logistics (Lamming, 1996). The supply chain management concept as such can be seen as a consequence of manufacturers working more closely with suppliers in strategic partnerships (Tan, 2001).

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The concept of supply chain management is not a concept that easily can be defined or described; it depends partly on which perspective one views the concept (Harland, 1996; Tan, 2001). Harland (1996) differentiates between four levels in which the term supply chain management can be used, see figure 1.

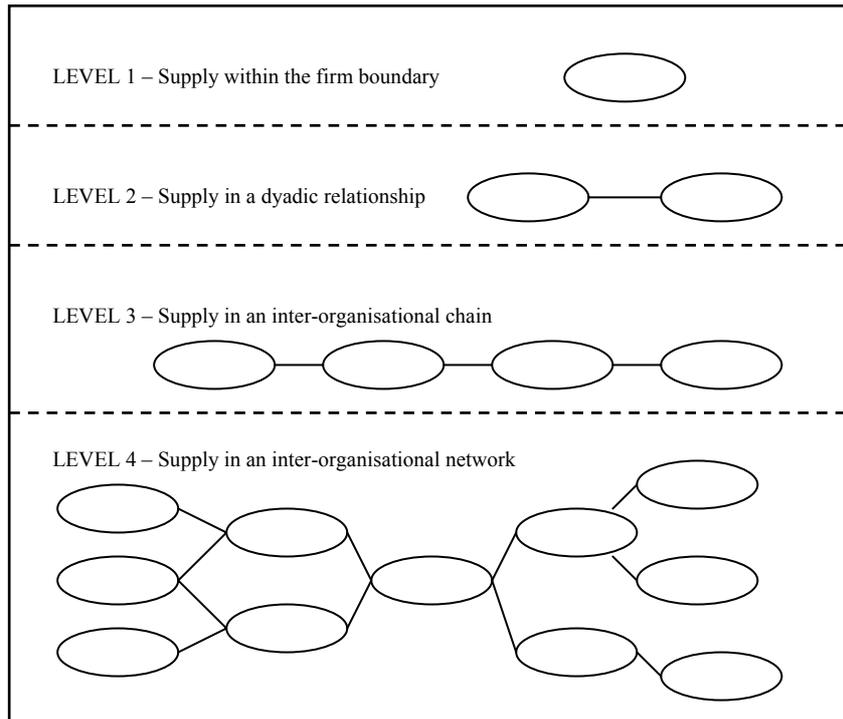


Figure 1 Four levels of research in supply chain management

The first level (1) is used when describing inbound logistics and operations management. For this level other terms or metaphors than supply chain might be more useful since no clear links to other actors providing supply are given. This level is the predominant in Porter's well known value chain (Porter, 1985).

Level 2 is the level in which most purchasing research has been carried out and the level in which the interaction/network theory of the IMP group originally was developed (e.g. Håkansson, 1982; Ford, 2001). It represents no chain since that would require at least three links, therefore the term dyad is preferable.

In level 3 we see an actual chain describing how supply goes from one actor to another and then further up the chain. Here the supply chain metaphor makes sense since it is clear that no chain will be stronger than its weakest link thus

making this level an important one for firms to consider. All firms are then seen as links that together decide the success and competitiveness of the chain. Several are the text books in which a supply chain is depicted as in level 3. One can however question the linear scheme that a straight chain consists of. Most likely this level is a too simplified model of a selected firm's tiered supply base. Independent firms can often be found at more than one tier and firms at the same tier often have business together as well as to the same customer. This brings us to the fourth level.

The last level (4) is probably the one that resembles reality the best. Rarely will we find perfect chain such as in level 3 but rather more complex and interlinked chain with connections to other chains as in this case. For this level alternative metaphors such as supply network (e.g. Harrison & van Hoek, 2005) or supply nets (Gadde & Håkansson, 2002) could be preferred.

Not only the level in terms of the number of actors involved but also the activities associated with supply chain management must be considered. According to Tan (2001:42), there are two main alternative perspectives on supply chain management, namely (1) the purchasing and supply perspective, and (2) the transportation and logistics perspective, see figure 2.

The transportation and logistics perspective of SCM literature is the oldest and it represents a well developed field aiming at improving transportation and distribution of goods. The vision for this perspective is to integrate the logistics function with transportation providers to more efficiently manage distribution and transportation of goods. The objectives are to increase visibility and to decrease costs. This is managed through a consolidation of inventories, improved information systems that together with a reduced demand uncertainty help to replace inventories with information.

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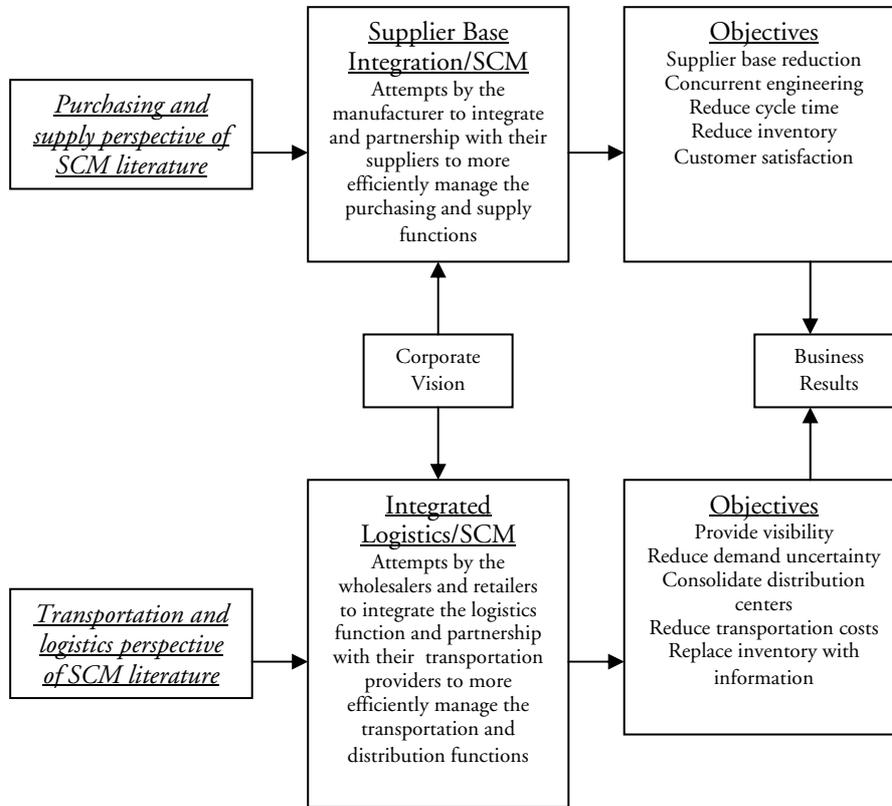


Figure 2 A framework of supply chain management literature

This piece of work is positioned within the purchasing and supply perspective of supply chain management with only some minor connections to the transportation and logistics perspective wherefore; only the purchasing and supply perspective is described in detail. According to Tan (2001), the objectives of the purchasing and supply perspective are supplier base reduction, concurrent engineering, reduced cycle time, reduced inventory, and increased customer satisfaction. I think this point to some key issues important in supplier and supply chain development. These will be further commented below.

Supplier base reduction, that can be seen as a natural starting point for supplier development (e.g. Harrison & van Hoek, 2005), means that measures are taken to shape up the supply chain and limit the number of first tier suppliers. In this process typically a few suppliers get extra responsibilities whereas others are moved down in the supplier hierarchy or even removed totally from the chain.

The advantages are several. The chain gets easier to administrate and it is possible to maintain closer relationships with the remaining few suppliers. It also presents a more visible chain and therefore helps to improve communication and the information flow.

Concurrent engineering (e.g. Cali, 1993) is a modern way to develop new products. Its aim is to reduce development time and cost by carrying out development activities concurrently (simultaneously) instead of the traditional sequential way. For concurrent engineering to be really efficient it is not enough that a firm carries out its own activities concurrently but also key suppliers must be involved. It usually means strong integrating efforts and thus high involvement relationships.

Many firms today produce after customer order instead of producing to inventory. This has created a demand for shorter cycle times so customers, do not have to wait to long for their product (Tan, 2001; Harrison & van Hoek, 2005). The fact that many firms produce after customer order instead of to inventory has helped to reduce inventory. However, in order for this to be successful it is crucial that the information flow is good (Tan, 2001; Harrison & van Hoek, 2005). Again in order to carry out such ambitions and thus develop the supply chain several integrative efforts are needed.

Customer satisfaction is the ultimate objective for a firm to be competitive today. By reducing lead times, increasing quality and giving the customers more options (made possible by the production to customer order), customer satisfaction is created and kept (Tan, 2001; Harrison & van Hoek, 2005). Often efforts to supplier and supply chain development would be traced back to this ultimate objective. In order to satisfy its customers, the company takes on such efforts.

After this introduction to supply chain management with a focus on supply chain development from a purchasing perspective, a more detailed discussion about purchasing is in order.

Purchasing

Purchasing has been defined as:

“The management of the company’s external resources in such a way that the supply of all goods, services, capabilities and knowledge which are necessary for running, maintaining and managing the company’s primary and support activities is secured at the most favourable conditions.”

(van Weele, 2005:12)

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Another and more simplified definition of purchasing states that purchasing is all activities that render an incoming bill (Teigen in Axelsson, 1998).

Purchasing as a function has traditionally been seen as a less important firm function compared to production and product development. The product development department decides which components to use in a product and then the purchasing department was responsible to purchase the component at the lowest price possible. Today companies are more conscious about how their purchasing function is working and it gets more professional (Gadde & Håkansson, 1994). The following quote from Gadde and Håkansson illustrates what has happened.

“During the last 20 years a new view of purchasing has gradually emerged. From being considered a clerical function – with the ultimate purpose of buying as cheaply as possible – it is today regarded in many companies as a major strategic function”.
(Gadde & Håkansson, 1994:27)

One reason for this development is that purchasing represents a big percentage of the final products worth (Gadde & Håkansson, 1994; van Weele, 2005). About 50-60% worth of products sold in Sweden is purchased material (Brandes et al, 1998) and consequently it will have a great impact on the result¹. The increased professionalism of purchasing has been described by Axelsson using a comparison between the passive and the active purchasing department, (Axelsson, 1998:21), see table 1, in which the passive purchasing department represents the old clerical way of purchasing and the active purchasing department works with more modern purchasing and supply management techniques.

Table 1 The passive vs. the active purchasing department

| The Passive Purchasing Department | The Active Purchasing Department |
|---|--|
| <ul style="list-style-type: none">• Wants to be contacted by the suppliers• Problems solving is handled solely by the supplier• Low costs for the purchasing department is sought for• The supplier convinces the buyer that the given alternative is the best. The buying department answers yes or no to the offer | <ul style="list-style-type: none">• Seeks suppliers actively looking for the best resources available• Creates solutions to problems together with the supplier• Cost efficiency is important but <u>also</u> the need for business development• Convinces the supplier that the firm is an interesting partner to work with. |

¹ One pedagogical example of how a more effective purchasing function influences the return on investment measure (ROI) is the DuPont matrix (e.g. Axelsson, 1998) showing that if purchasing could lower its cost through more efficient work it would increase ROI considerably.

The change in purchasing philosophy could also be described as a shift from a buying orientation, via a procurement orientation and today's prevailing supply management orientation (e.g. Anderson & Narus, 1998). The three orientations are summarised in table 2.

Table 2 Three purchasing orientations

| Buying orientation | Procurement orientation | Supply management orientation |
|--|---|--|
| <ul style="list-style-type: none">- Obtain best deals in terms of price, quality and availability- Maximise power over suppliers and avoid risk wherever possible | <p>Seeks to improve its productivity by:</p> <ul style="list-style-type: none">-Improving quality-Reducing total costs, and-Co-operating with suppliers | <ul style="list-style-type: none">- Focus all of the firm's efforts on delivering value to end users- Concentrate the firm's own resources on a set of core competencies and strategically outsource all other activities- Build a supply network that efficiently completes required business processes- Sustain highly collaborative relationships with selected supplier and sub-supplier firms. |

Purchasing as a function is responsible for the continuously incoming supply of components, goods, services etc. to the firm (e.g. van Weele, 2005). To solve this efficiently, purchasing could be described as performing three major roles (Axelsson & Håkansson, 1984), namely the rationalisation role, the development role, and the structure/network role.

The rationalisation role should keep direct and indirect costs as low as possible (Axelsson & Håkansson, 1984).

The development role should carefully match the development of the own firm with that of suppliers to make sure that the resources suppliers possess are used as efficiently as possible. This could be done in several ways, one being the involvement of suppliers in product development (Wynstra, 1998; Lakemond, 1999; 2001).

The last role that purchasing has is the structure/network role which aims at making the supply base as efficient as possible through supply base reduction, standardization of components, developing system suppliers, etc. (Axelsson & Håkansson, 1984; Lillicreutz, 1996).

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An overview of various purchasing practices indicating various levels of sophistication is provided by Burt *et al* (2002). They have developed a scheme for supplier development ranging from basic clerical activities, via a mechanical approach to a proactive approach and finally to a world class approach to supplier development, see figure 3.

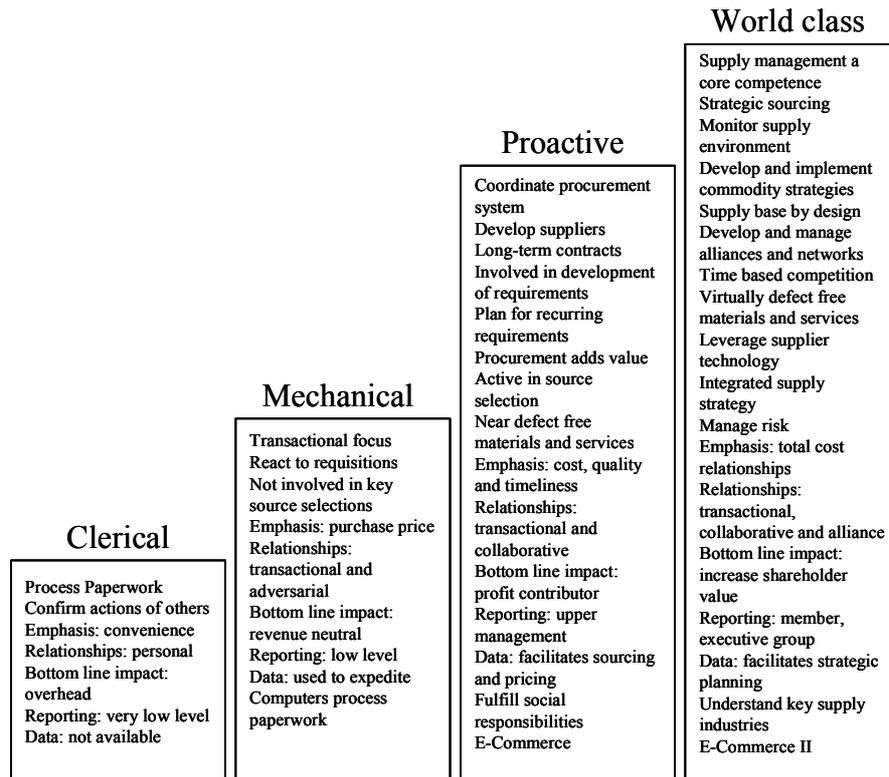


Figure 3 World class supplier development

Most important is probably the recognition of supply management as a core competence for firms striving for world class supplier development. It should also be noted that the relationship between buyers and sellers can vary between transactional, collaborative and alliances for the world class stage. A tool that can be used to foster such a development is the Kraljic matrix (1983) presented further ahead in figure 4. Using a total cost approach with top management support are other vital parts.

The previous section has introduced the reader to purchasing, its recent developments and the tasks carried out by the purchasing function. The following part dwells on purchasing strategies.

Purchasing strategy

When formulating a purchasing strategy at least three major strategic decisions must be made (Gadde & Håkansson, 1994). The three issues to be considered are (1) make or buy decisions, (2) decisions regarding the supply base structure, and (3) decisions regarding the nature of the buyer-seller relationship (Ibid.).

The make or buy decisions are strategic decisions made on a top management level (Gadde & Håkansson, 1994). Historically purchasing has not been directly involved in these decisions but today it is regarded as one of the tasks that it should carry out (Axelsson & Håkansson, 1994). The question whether something should be made in-house or outsourced to an external actors is not easy. Let's start by defining outsourcing. Outsourcing has been defined by Axelsson and Wynstra as:

“The decision and subsequent transfer process by which activities that constitute a function, and that earlier have been carried out within the firm, are instead purchased from an external supplier.”

(Axelsson & Wynstra, 2002:67)

Often the main idea behind an outsourcing decision is to focus more on the own firm's core competencies (e.g. Prahalad & Hamel, 1990) and outsource the rest of the activities (van Weele, 2005).

Among the positive aspects of outsourcing is the ability of firms to focus more on their core competencies, gets more flexible, use the third party resources in an optimal way, that you get simpler internal processes and finally obtain valuable input and spreading of risks (van Weele, 2005).

Among the negative aspects of outsourcing is the almost total dependence of firms on the supplier, risk of communication problems, risks of confidential information leaking out with social and legal problems as a consequence (van Weele, 2005), and finally the cost associated with outsourcing for the follow-ups of the supplier's performance (Ibid.)

If a firm chooses to outsource there are four main sourcing alternatives; single sourcing, sole sourcing, dual sourcing and multiple sourcing. Single sourcing is when one supplier out of many is chosen to supply the total worth of a good or a service. Sole sourcing implies that there is a monopoly. If two suppliers supply

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the total worth of a good or a service that is called dual sourcing and if several suppliers supply the total worth of a good or a service it is called multiple sourcing.

When the decision has been made to outsource a number of activities it is now time to examine the supply base structure as suggested by Gadde and Håkansson (1994).

It is evident that there is no single best strategy to choose for all kinds of purchasing and that the supply base therefore must be structured. This activity could be carried out in two steps. The first step is to reduce the number of first tier suppliers and the second step is to classify the existing suppliers. One influential article describing and discussing how this restructuring process could be carried out is "Purchasing must become supply management" (Kraljic, 1983). Kraljic refers to the growing importance of purchasing as a function. However Kraljic states that purchasing must not be considered as a homogenous activity for which it would be impossible to have one single best strategy. In the article Kraljic divides purchasing into four categories, routine-, bottleneck-, leverage-, and strategic products, depending on the financial impact of the purchased good on one axis and the supply risk on the other axis (Kraljic, 1983.), see figure 4. Routine products have a low impact on the financial results and a low supply risk. Typical routine products are cleaning materials and office supplies. Products with a low impact on the financial result but a high supply risk are called bottleneck products. Examples of bottleneck products are vitamins and natural flavourings for the food industry. A third type is the leverage product that has a high financial impact but low supply risk. In this group of products we find raw material and semi-manufactured components. The fourth category is the strategic products that are products that have a high impact on the financial result and a high supply risk. Typical examples of strategic products are engines and gearing boxes for the automotive industry.

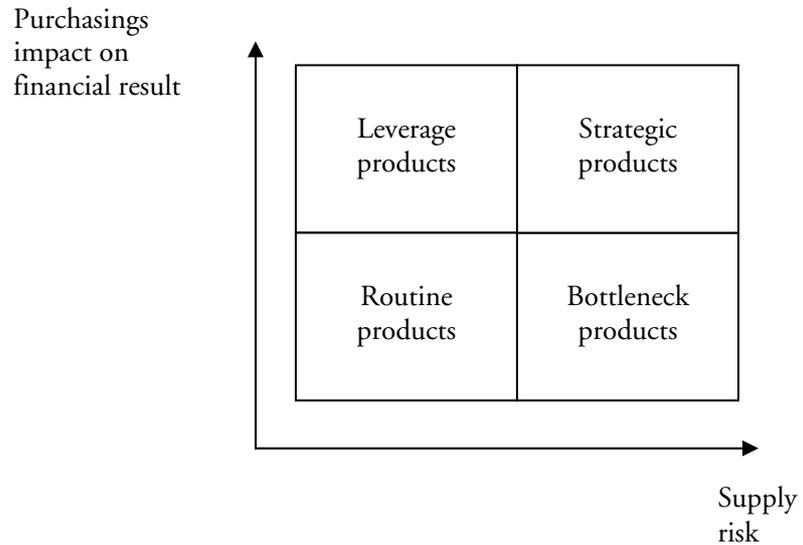


Figure 4 The Kraljic matrix

Four different purchasing strategies are suggested based upon the Kraljic matrix (Kraljic, 1983; Gelderman & van Weele, 2003). Strategic products together with the leverage products in general make up about 80% of the total turnover, which highlights the strategic importance of these purchases. For the strategic products a partnership strategy is suggested. The aim of that strategy should be to obtain improvements in areas of product quality, product reliability, product development and cost reduction. When it comes to leverage products the fact that there is a low supply risk is highlighted and a competitive bidding strategy is proposed to be most beneficial for those products. For bottleneck products the most important task for the purchasing department is to secure continuity in supply. The fourth category are the routine products that often require up to 80% of the purchasing department's human resources but represent less than 20% of purchasing turnover. For this category systems contracting and rationalisation is suggested. Areas of rationalisation could include standardisation of product assortment; supply base reduction and a reduction of number of invoices (Ibid). If used properly Kraljic's matrix can be used as a tool to better organise a firms' purchasing function and to make sure that the resources are used in an efficient way.

The final issue addressed by Gadde and Håkansson (1994) was the nature of the buyer-seller relationships. Here two main alternatives are at hand. The first alternative is a close relationship with frequent, and often personal, contacts between the buyer and the seller, and the second option is an arms-length with no, or only a few, personal contacts between the buyer and the seller. To decide this we have help och the Kraljic matrix (see figure 4) and by Gadde and

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Håkansson that has made a list of moments that purchasing should cover with respect to the actors in the network (Gadde & Håkansson, 1998:181-182):

1. Gain knowledge about which suppliers that are the most important is crucial. This knowledge must be spread throughout the organisation.
2. The existing structure must be continuously questioned.
3. It is important to analyse the actor structure in comparison to the resource- and the activity structure.
4. Purchasing must continuously evaluate different supplier categories to see if certain categories must be given priority
5. Investigate if there are any possibilities to cooperate deeper with certain suppliers. Areas of cooperation could be joint purchasing, rationalization of activities etc.

Of course there are many degrees of connectedness and closeness between buyer and sellers. For close relationships the term network sourcing has been introduced by Hines who labels the interplay between buyers and seller in industrial markets network sourcing (Hines, 1996). Hines argues that the two main drivers in the network sourcing (that according to Hines could summarize the Japanese way of approaching sourcing) are supplier development and supplier coordination, which therefore are activities that should get extra attention by firms purchasing the Japanese way. The network sourcing overview is summarized in table 3 (Hines, 1996:8). This overview shows the interplay in a buyer-seller relationship in which both parties take on responsibilities and through trust and transparency they try to create a win-win situation. Once again the commitment between the actors involved is stressed. It should also be noted that Hines talks about the chain as a whole, i.e. involving also second, third and fourth tier suppliers.

It seems clear that close relationships and structured portfolio approaches for purchasing strategies are important today. That development has increased the need for supplier development that is also mentioned by Hines (1996), see table 3.

Table 3 Network-sourcing overview

| No | Activity | Definition |
|----|----------------------------|---|
| 1 | Supplier tiering | A tiered supply structure with a heavy reliance on small firms. |
| 2 | Few suppliers | A small number of direct suppliers with individual part numbers sourced from one supplier but within a competitive dual sourcing environment. |
| 3 | High asset specificity | High degrees of asset specificity among suppliers and risk sharing between customer and supplier alike. |
| 4 | Low value added | Maximum buy strategies by each company within the semi-permanent supplier network, but a maximum make strategy within these trusted networks. |
| 5 | Bilateral design | A high degree of bilateral design, employing the skills and knowledge of both customer and supplier alike. |
| 6 | Supplier innovation | A high degree of supplier innovation in both new products and processes. |
| 7 | Close high trust relations | Close, long-term relations between network members, involving a high level of trust, openness and profit sharing. |
| 8 | Supplier grading | The use of rigorous supplier grading systems increasingly giving way to supplier self-certification. |
| 9 | Supplier coordination | A high level of supplier coordination by the customer company at each level of the tiered supply structure. |
| 10 | Supplier development | A significant effort made by customers at each of these levels to develop their suppliers. |

A purchaser must also choose whether to work reactive or proactive in the improvements of their suppliers. If working reactive a firm would monitor the performance of its suppliers and alert the suppliers when things go wrong and if working actively they would instead take proactive measures, such as education of the suppliers, to avoid problems.

Cox et al (2003:5) use a two by two matrix to illustrate the sourcing options that a buyer has, see figure 5. On one hand the buyer has to decide whether to work proactive or reactive and on the other hand if the focus should be on the first-tier suppliers or on the entire supply chain. The focus for the essays in this thesis (shown with a circle in the figure 5) is mainly on proactive measures involving the first tier as well as the rest of the supply chain.

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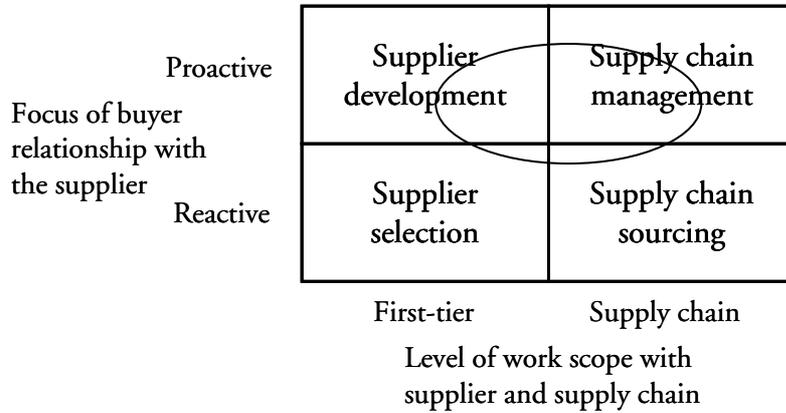


Figure 5 Four sourcing options for buyers modified with a circle to show the focus area of this thesis.

The development in industry however does not only challenge the purchasing profession but other actors as well. One first challenge is for firms that want to develop their supply base. How to go about it and what could be a sensible strategy? This challenge is dealt with in the first essay from a theoretical perspective and in the third and fourth essays from a more practical oriented perspective.

A second challenge is for those firms (often SMEs) that are contacted by buying firms wanting to involve them in supplier development projects. Is this a desired development and if so under which conditions? The second challenge is dealt with in the third and fourth essays from a practical perspective giving examples on what a development project might look like. It is partly deal with in the two first essays from a more theoretical perspective.

A third challenge is for those SMEs that want to compete for the bigger orders that become a reality when working with supply base reduction. Could they cooperate in order to meet the needs of the buying side? The second essay discusses how this challenge could be undertaken and in the third and fourth essays there is a description of how SMEs develop their skills to meet the demands of their buyers. As seen from this discussion SMEs are of particular interest for my research but why study them?

Why study SMEs?

Since SMEs are in focus for this research it is important first to define what constitute an SME and secondly to discuss why they are interesting to study. To define what constitutes an SME is not an easy task. The concept of smallness varies between different industries and it is clear that a firm could employ hundreds of people and still be considered a small actor in the world market whereas other firms employing less than 50 people can be considered big in other industries (Wiklund, 1998). SMEs can nevertheless be defined using a quantitative measure based on number of employees or annual turnover. For this research the EU definition of SMEs have been utilized. According to EU's definition small and medium sized firms are divided in three categories.

1. Micro enterprises with 0 to 9 employees. Here we often find solo entrepreneurs
2. Small enterprises with 10 to 49 employees
3. Medium sized enterprises with 50-249 employees

The first category consisting of micro enterprises has been excluded in this research due to the extremely low number of workers employed. Hence, for this research an SME is a firm with 10 to 249 employees.

Why study supply chain and supplier development involving small and medium sized enterprises (SMEs)? Well, first of all SMEs are often seen as very important for the Swedish economy and employing over 50% of Sweden's working population (Davidsson *et al*, 1996). Moreover, they are viewed as important for the creation of new jobs in Sweden (Ibid.). This means that SMEs are likely to be involved in several supply chains emanating from bigger firms. It may very well be that these firms constitute the weakest parts of many chains. A major report discussing SMEs is the Bolton report which found that a small firm is an independent business, managed by its owner or part-owners, which has a small market share (Bolton, 1971). Nooteboom (1993) concludes that the core characteristics of small business are independence (i.e. relative freedom from the capital market), personality (i.e. the intertwined bonds between the owner and the firm) and small scale (i.e. lack of scale effects not only production but also functions such as marketing and in transaction costs). To summarize SMEs lack a number of advantages that comes with larger market shares and more employees. The owner and the management are likely to be the same and often financing the firm without external money. Hence, they are only set on pressure to improve by their customers since they have scarce resources internally and don't have pressure from external owners. It could also be that entrepreneurs are less willing to respond to suggestions by outside actors (like specific customers) to start developing their business or to

embark on joint development activities. These criteria are facts that together make SMEs particularly interesting to study when the focus is on supply chain and supplier developments.

Further more, Krause and Ellram (1996) find in their literature review that previous studies of supplier development mainly have been investigating large firms, primarily in the electronics and automotive industries. Hence, there is a lack of studies involving SMEs that we are likely to find further down in the supply chain but still crucial for a firm's success since it in the end is the competitiveness of the entire chain that counts (e.g. Christopher, 1998). This fact has been drawn upon by Quayle (2002) who has made a survey of 400 SMEs in the UK investigating supply chain management and supplier development practices in the firms. Quayle states that recent development within supply chain management and the global competition makes it crucial to develop and implement strategies entailing integration and development of suppliers, this development however, may be unsuccessful if SMEs "*are neither willing to participate nor indeed understand what is expected of them*" (Quayle, 2002:173). Quayle (2002) concludes that there are a number of challenges facing not only SMEs but also their customers since they are the group that mainly influences SMEs. If they don't clearly state the importance of an improved supply chain to their customers, they will continue as before mainly focusing on quality, price.

Summary of the essays

The purposes of the four essays and their individual contributions is summarised in this section.

The first essay written by Johan Larsson is also the first written of the contributions. It is a conceptual paper that discusses supplier development and based on previous research a framework to study supplier development is suggested. It is found that most of the previous research has focused on large firms and on dyadic relationships between OEMs and first tier suppliers. Further, supplier development is labelled a strategic activity making top management involvement a critical activity. Areas that are found to be connected to supplier development as described in the specialised literature are competence development, strategic development and change, and interaction network theory. It is concluded that studies of supplier development in entire supply chains and thereby involving SMEs could be valuable for academia as well as for practice.

The second essay, written by Björn Axelsson and Johan Larsson, addresses the question of how SMEs might become co-operative partners of large

corporations through a matching of needs. The purpose of the essay is to conceptualise different network species representing ways to pool and create joint resources to better cope with market demands. The basis assumption is that the SMEs have to find ways to substantially improve their capabilities. Four possible ways of matching resources through network constellations are suggested, including the locomotive driven network, the joint umbrella, the alliance of equals, and the naturally evolving network.

The locomotive driven network is a network with one strong actor (the locomotive) that has valuable market contacts and makes sure that the other actors in the network get orders. Often the locomotive is a larger firm than the rest of the firms involved and consequently also has more power in the relationship. Being linked to a locomotive means that the other actors don't have to develop all competencies themselves but rather focus on the core competencies asked for by the locomotive and thereby managing the resources for the network as a whole more efficiently. The joint umbrella is a network formation in which several actors start a joint company to take care of common activities such as marketing and sales. In the third network pattern, the alliance of equals, an alliance with joint membership, with or without ownership bonds, is formed to foster the cooperation. The final network pattern discussed is the naturally evolving network

The third essay written by Björn Axelsson and Johan Larsson, argues that competence development is an important feature of supplier development projects. They also note that SMEs experience difficulties in adopting new practices, which is a problem not only of adequate concepts and resources, but also one of didactics, or pedagogical methods. The purpose of the essay is to describe and analysis how competence development in a case (KrAft-Norrgavel) within the KrAft-project is carried out. In the KrAft-methodology, the participants themselves decide on the themes and are supported by an academic coach and a tutor with practical experience. In the essay a detailed description of the KrAft-Norrgavel group is given and discussed. It is concluded that the project has resulted in a tighter integration between the actors in the supply net as well as in different levels of learning for the involved individuals. Surprisingly, the individuals that had the strongest theoretical backgrounds reported the most learning but also for the others examples of learning effects were observed.

The purpose of the fourth essay, written by Johan Larsson, is to give a description of the development effort that Tetra Pak did undertake together with their suppliers, to analyse the effects of this development and how they are perceived by the involved actors. The essay compares Tetra Pak's approach with theory and discusses the outcome of the supplier development project. The focus in the essay is on Tetra Pak and one of their system suppliers. To get a stronger and better picture of the effects in the supply chain a survey study of

the system suppliers supply base has been carried out together with some interviews in that tier. It is concluded that supplier development involving SMEs is hard but doable. However, big investments from the involved parties as well as commitment are necessary.

As described in the introduction this is not an ordinary thesis written as a monograph. Nevertheless, the included essays form a whole and are connected in several ways. In figure 6 the overall structure of the thesis and the connections between the four essays are described.

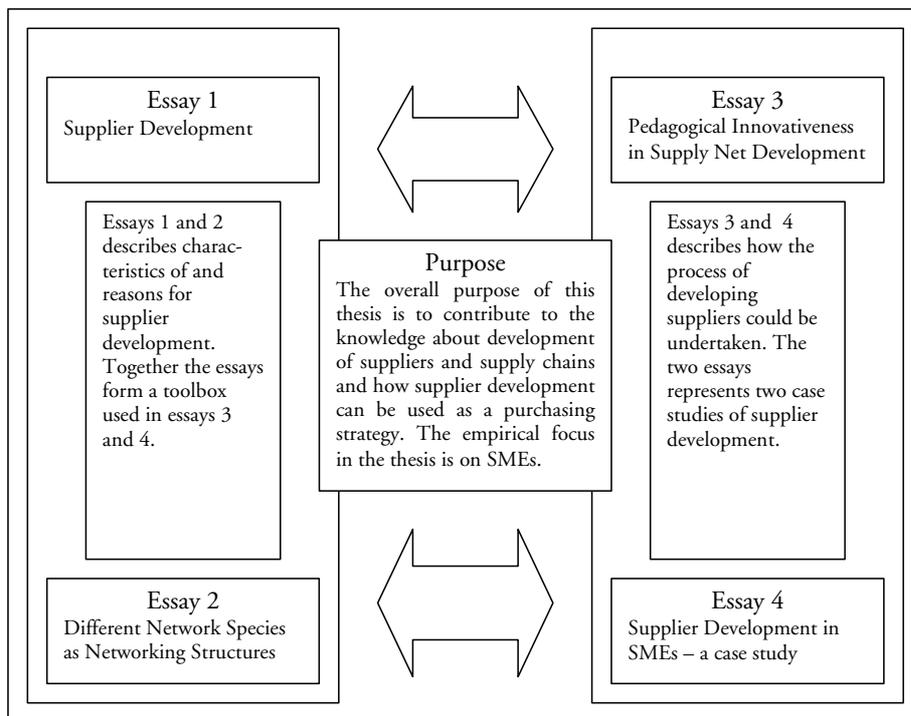


Figure 6 Overall structure and connections between the thesis four essays

This summary of the four essays brings us to the conclusions of the thesis.

Conclusions

The first general conclusion is that the area of purchasing as developed considerably over the last 20 years or so and has gone from a quite passive function to become an active supply management function and also making purchasing a more strategic activity. This development has manifested itself in numerous ways. More firms today work explicitly with supply management as

well as supplier development in varying degrees. Also there is an increased focus on the entire chain and not only on first tier suppliers, which means that we can speak not only about supplier development but rather about supply chain development.

It is often said that a chain is not stronger than its weakest link and in this case it is a well chosen metaphor. In several supply chains the weakest links are to be found in an SME which bring us to the second conclusion. Supplier development and supply chain management today increasingly involves SMEs. Thus new challenges are posed since SMEs often do not have all the necessary resources to foster the desired development processes. New pedagogical methods must be developed and included in the development projects. If such aspects are considered the probable success is higher. Further it should be noted that most SMEs don't take these initiatives themselves. More often SMEs involved in development activities have done so after an initiative from one of their major customers. It is therefore important for SMEs to prepare themselves and to think more about cooperation in order to meet demands on higher competence and large production volumes. To wait for a large buyer to take development initiatives might be risky since the alternative for the buyer is to find alternative sources of supply.

To develop suppliers and supply chains is no easy task. This however, should not stop firms to engage in such activities. In my research it is found that there is a lot to gain by developing suppliers, wherefore I would argue that more firms ought to consider such development before for instance moving out production to countries with lower wages. Examples of positive effects observed after supplier development projects are: shorter lead times, increased rate of inventory turn over, better quality and reduced costs, all elements that significantly increase the competitiveness for the involved suppliers and together with a strengthened integration between the actors for the supply chain as a whole.

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Supplier Development¹

Johan Larsson

Abstract

This paper is purely conceptual and aims at describing existing research regarding supplier development. Supplier development is an activity that has got a lot of attention in both practice and academia. However, it is concluded that the supplier development framework as it is presented in the literature with the label “supplier development” is quite narrow. To further expand the theoretical framework a number of interesting areas for future research are suggested together with some propositions on how to expand the theoretical framework.

Introduction

When describing trends in industry today concepts that often come up is TQM (c.f. Sandholm, 1997), lean-production (Womack et al, 1990), shorter time to market (Barius, 1994), outsourcing, business process reengineering (e.g. Hines, 1994; Lamming, 1993), focusing on core competencies (Prahalad and Hamel, 1990), etc. There has also been a development in the area of purchasing and we see a shift from classical to modern purchasing (c.f. Axelsson, 1998; Brandes et al, 1998; van Weele, 1994). An ingredient in the more modern relationship oriented view of purchasing is supply base reduction. Ford USA reduced their supplier base from 3200 to 2100 in a period of six years. In the first half of the 90s Chrysler went from about 3000 till 1000 suppliers. Rank Xerox is another example of a firm that has reduced its supplier base. They went from 5000 till 300 suppliers in just a few years (e.g. Ford, 1998). A recent study of large Swedish corporations shows that this is an ongoing trend affecting a large part of the supply chains (Larsson, 1999).

This leads to new situations for most of the remaining suppliers as well as for the rest of the suppliers in the supplier hierarchy. The original equipment

¹ This essay is originally published as Larsson, J. (2001), “Supplier Development”, in Chikan, A. (2001), (ed.), *Purchasing Topics at the Turn of the Millennium*, Budapest, IFPMM Publications Vol 3. Earlier versions has been presented at the IFPMM summer school in 1999 and at a JIBS research seminar in 2000.

manufacturers (OEMs) reduce their supply bases only keeping those suppliers that have adopted new good ways of working. Having rationalized the supply base the OEMs will deepen the relationships with the remaining suppliers (e.g. Gadde & Håkansson, 1998; van Weele, 1994). The suppliers that are left out will have to establish new contacts with firms that have kept their position as first tier suppliers, however also they will have to develop their competencies in order to keep up with the demands from the large corporations that determine the rules of the game. This could be illustrated by the automotive industry that demands QS-9000 certification (a standard that among other things require supplier development programs) for their suppliers (Carbone, 1996).

One way of deepening relationships with suppliers, and to take a proactive step in the direction mentioned, is to work with supplier development (e.g. Gadde & Håkansson, 1998). Basically supplier development means that the customer firms take initiatives to trigger and support the development of chosen suppliers.

This paper is purely conceptual and the purpose of the paper is to describe research that has been carried out in the area of supplier development and to give some directions on future research that is needed within the area.

The paper starts with a theoretical review defining supplier development as it is described in the specialized literature. Then other streams of research that could be beneficial for supplier development is discussed. Finally some general conclusions about supplier development research today and future directions are given.

Supplier development in the specialised literature²

Supplier development defined

One of the authors first who introduced the term supplier development in academia was Leenders who stated that supplier development properly used could “*be an extremely effective purchasing tool*” (Leenders, 1966 reprinted 1989:47), and that therefore is an area of high relevance for purchasing research. Since Leenders’ article, there has been an increasing interest for supplier development activities both in academia (Axelsson & Håkansson, 1984; Hines, 1996; Krause & Handfield, 1999; Lilliecreutz & Ydreskog, 1999;

² This chapter is based upon a literature review using the phrase “supplier development”. The search was done in library data bases, the ProQuest database and the Internet. Proceedings from the last two Ipsera conferences were also included.

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Monczka & Morgan, 2000) and in practice (Gadde & Håkansson, 1998; Larsson, 1999). Krause defines supplier development as follows.

“Any effort of a firm to increase performance and/or capabilities to meet the firm’s short- and/or long-term supply needs.”

(Krause, 1997:12)

Krause (1997) has also made a literature review and found that the supplier development literature mainly consists of case studies, and that these case studies primarily come from the automotive industry (e.g. Hines, 1994; Hartley & Choi, 1996). When investigating to what extent companies’ work with supplier development Krause found three different approaches exercised by firms to increase supplier performance (Krause, 1997). Those three were:

1. Direct firm involvement, i.e. hands on cooperation such as visits, evaluations, feedback etc.
2. Incentive commitment, i.e. promises of future benefits if the supplier increases his performance.
3. Enforced competition, i.e. the use of several suppliers for the same components.

One must keep in mind that the review made by Krause is using a narrow definition of supplier development. There are other examples of buyer-seller research that at least implicitly deals with supplier development mainly within purchasing research (e.g. Ford, 1980). These studies suggest that supplier development is a natural way to further deepen buyer-seller relationships as the relationship matures. Nevertheless, the tentative list presented by Krause gives the reader some basic ideas of how different activities to improve suppliers might be categorised.

Supplier Development – a strategic activity

When working with supplier development there is a need to stress the importance of long-term cooperation as well as short-term. Krause notes that most firms working with supplier development have short-term performance goals rather than long-term goals such as capability increase (Krause, 1997). Also Watts and Hahn (1993) found that short-term objectives often were emphasised over long-term performance in supplier development programs thus limiting the possibilities for a fruitful interaction process to take place. The same problems are described by the purchasing magazine *Innovative Purchasing* that made an investigation examining how firms work with supplier development and found that many responses:

“considered corrective actions for quality or delivery problems as supplier development or limited it to what was required by a QS-9000 quality program.”
(Innovative Purchasing, 2000:1)

This in some senses limited view on supplier development show us that many firms do not view supplier development as a long term process involving both the buyer and the supplier that both parties can gain from. It also seems like many companies see supplier development as an operational tool rather than a strategic one. If used properly supplier development can be a strategic tool that can determine how efficient the firm uses its resource base.

This could be interpreted as a non-explored opportunity that can be explored by actors through proactive work. According to Krause and Ellram necessary aspects for proactive supplier development to be successful are top management involvement and commitment (Krause & Ellram, 1997a) and that the supplier development activities are considered as a strategic activity (Krause & Ellram, 1997b; Krause et al, 1998).

To work with this kind of supplier development means that both parties must make investments in the development program. A prerequisite for supplier development is information sharing and increased communication (Galt & Dale, 1991; Lamming, 1993). According to Krause (1999), commitment, relationship continuity, and communication can be considered to be the antecedents of supplier development. Lamming (1993) argues that joint efforts can be made to reduce costs and rationalise the value-adding process once information between the parties is shared. This means that the information exchange between actors in a supplier development program must be efficient and that different levels (i.e. not only management level) in the involved organisations must interact.

Possible areas for and ways to work with supplier development

Of course there are a number of different areas that can be improved by supplier development projects. Hahn et al (1990:6) has made a scheme over different possible supplier development activities. The scheme is presented in Table 1.

Table 1 Supplier development activities matrix

| Related areas Capabilities | Product Related | Process Related | Operating Systems Related |
|----------------------------|--|---|---|
| Technical Capability | Capabilities in: Design New product intro. Feasibility testing Product improvement | Process capability Process design Automation Reconfiguration | CAD/CAM CIM/FMS JIT/MRP |
| Quality Capability | Specification limits Incoming materials control | Process capability Testing equipment Workman-ship | Quality assurance program Quality circles S.P.C. program Worker training |
| Delivery Capability | Product mix Materials lead time | Capacity level Process flexibility Set-up times | Order entry system Scheduling flexibility Transportation / inventory system |
| Cost Capability | Value analysis R&D expenditure Cost reduction programs | Process efficiency Capital investment Rationalisation of work place | Work productivity Indirect costs Control |

The scheme made by Hahn et al should only be considered as a condensed overview of different areas that can be covered. It must also be mentioned that supplier development is to a great extent a cross-functional activity that should involve a number of different functions in the involved firms (Krause & Ellram, 1997a). Further more it is very technical and doesn't cover more soft aspects of supplier development such as competence development (Mikkelsen & Johansen, 1999). Mikkelsen and Johansen draw upon the resource based perspective (see 2.4) of the firm in their conceptual work about supplier competence development that can be seen as complementary to that of Hahn et al (1990). Mikkelsen and Johansens (1999:602) work is summarized in Figure 1.

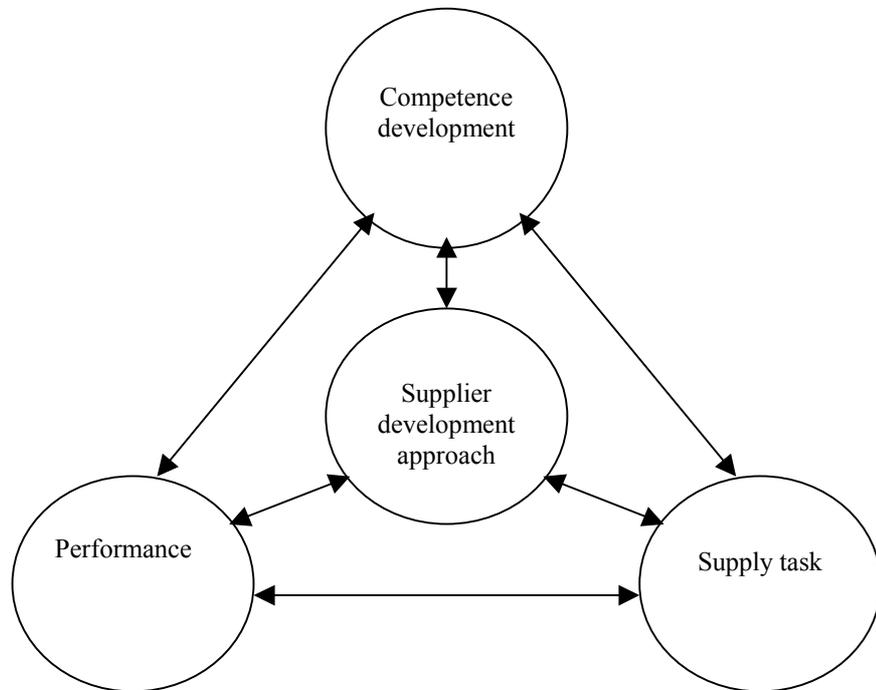


Figure 1 A framework for supplier competence development

The figure illustrates four major areas that according to the authors must be considered as they all affect each other and therefore are critical to the success of the supplier development program. In order to achieve better performance a supplier development approach must be chosen. In this process it is important to define the supply task and to raise the competence at the involved firms (Mikkelsen & Johansen, 1999). The need to include competence development can be illustrated by Motorola's supplier development program that has received a great deal of attention and is considered to be very successful (Gadde & Håkansson, 1998). The supplier development project was initiated when Motorola recognised that it would be impossible to reach the desired results from their benchmarking without including their suppliers in the process. They are seen as an essential part of the capability system. Because of that Motorola has defined the kinds of qualities they want from their supplier. They have the following demands on the suppliers that they work closely with (Gadde & Håkansson, 1998).

- They shall have perfect quality
- They shall be leading in technology
- They shall use JIT production
- They shall have competitive service

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To achieve this, the suppliers' competence must be raised. Motorola works with education program with participants from both the own organisation and the suppliers. To encourage the suppliers, Motorola has four formalised activities in the supplier development program. The four activities are the creation of an advisory board, an annual conference, technical symposia, and a supplier show. The advisory board and the annual conference have been created to increase the communication between Motorola and their suppliers. At the technical symposia and the supplier show Motorola's suppliers presents their technology to Motorola's engineers. As a result of the program, all of the four criteria above have occasionally been improved in the participating firms. (Gadde & Håkansson, 1998) The Motorola illustration also pictures supplier development as a process in which actions are taken in order to achieve some wanted results. Such a process will most probably look different from case to case. Nevertheless, some activities might be more important than other and thus included in most supplier development processes. Hartley and Jones (1997:27) have focused on supplier development processes and they see supplier development as a four-step process with the following steps:

1. Assess the suppliers readiness for change
 - Determine the degree of "fit"
 - Gauge level of management commitment
2. Build commitment through collaboration
 - Manage resistance
 - Use broad-based participation
 - Allow time for learning
3. Implement system-wide changes
 - Analyse technical, managerial and social systems
 - Ensure that team has technical and change management skills
4. Transition out of the supplier's organisation
 - Use "shadow consulting" approach
 - Establish follow-up and recognition procedures

As it is a process, these steps sometimes overlap each other, but they make a fairly good description of what the supplier development process might look like. This process starts up with the selection of firms to include in supplier development. Commitment is here an essential part for the supplier development process and it is important that the involved actors are allowed time for learning. When commitment (trust) has been established actual changes can be implemented. In this process the active support from the buyer is an important part. Lastly the implementation of follow-up procedures

ensures that continuous improvements can occur as an important part of the process.

In this section we have noted that supplier development is growing in importance. However, we also noted that the number of studies that have been carried out is limited (Krause, 1997). We have also seen that the literature about how supplier development activities should be carried out is quite normative, not fully capturing the heterogeneity that we find in buyer seller relationships since different actors have different resources etc. (Håkansson, 1982).

Other literature of relevance for supplier development

In section 2 we saw that supplier development is a cross functional activity that involves people from several parts as well as from different levels of the involved organisations. If we generalise by asking the basic question “what this phenomenon really is about” the scope of relevant theories needs to be broadened. Development at a certain supplier is very much a matter of developing corporate capabilities. The specific aspect is that it is looked upon and, maybe, initiated by the customer.

A very broad scope of relevant sources of knowledge

With such an approach there are huge amounts of relevant literature from e.g. areas like strategy development and organisational and strategic change. What is the basic thinking in such areas and what does it tell us about supplier development? The initiative to corporate development in the case of supplier development comes (by definition) from an external actor, the customer. Other sources of knowledge that may add to our understanding of this phenomenon should therefore be literature on power and dependence (e.g. Emerson, 1962). Who could force whom to do what, if that actor finds it necessary to exercise of power?

It is also likely so that research about project management is a valuable source. Much of the improvement in organisations come about in specific projects, be it quality projects, product development projects or anything else. Supplier development could be organised as a project and, if so, knowledge about such ways of organising should be valuable.

It is, thus, possible to identify quite a lot of areas of knowledge and expertise that should be relevant to our understanding of supplier development. There

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are however sources that are very close to a typical supplier development context, that, according to my opinion, really should be referred to. One such area is what is often referred to as interaction and network theory. This literature is not explicitly referred to and utilised to the extent I think it should in the previously mentioned body of knowledge on supplier development. I consider it very relevant and complementary to the literature previously described.

Interaction and network theory - broader but strongly related sources of knowledge

Supplier development as perceived by the author is really about establishing closer relationships between two (or more) actors in an industrial market. Within the interaction and network approach focusing on actors, activities and resources a number of studies have been done in the area of buyer-seller relationships exploring dyadic and triadic relationships (e.g. Håkansson, 1982; Ford, 1980; 1998), describing how these relationships develop over time. In this literature the heterogeneity of business relationships is stressed and a language has been developed to give justice to the inherent complexity of relationships involving a number of actors (Ibid.).

Håkansson (1987) identify three key elements in network theory namely activities, resources, and actors (the A-R-A-model). In a network value can be created through activity links (e.g. JIT, concurrent engineering etc.), resource ties (i.e. optimal use of other parties resources), and actor bonds (i.e. the social bonds between actors) (Håkansson & Snehota, 1995; Ford, 1998). Hence a description of the different actors, activities and resources within a network would capture the essence of the network and making the area of interaction and network theory highly relevant for supplier development research.

It is also likely so that the pressure that firms feel (i.e. power and dependence issues, see Emerson, 1962) will have impact on different levels in the network. The studies described in section 2 focused on relationships between OEMs and first tier suppliers. However, as a consequence of the observed changes in the supply hierarchy, described in section 1) it is evident that also smaller firms must take supplier development (developing their own suppliers) in consideration in order to be competitive in the future. Therefore it's of great interest to study how small and medium sized firms (SMEs) work with supplier development, by themselves or within different network constellations (Larsson et al, 2000), in relation both to their buyers and to their own supply base, an area which has been, to my knowledge, unexplored so far.

Concluding remarks

The theoretical framework of supplier development shows that supplier development is an important activity that has gotten a lot of attention from large firms and academia. It can also be noted that this review of supplier development research is quite narrow as it excludes a lot of the purchasing research that at least implicitly deals with these aspects, and that the number of studies focusing on supplier development are limited.

The importance of the purchasing function is growing. It is also so that the purchasing function has a crucial role in supplier development. Therefore purchasing research can help us when it comes to the cross functional nature of this activity.

Furthermore, studies of buyer-seller relationships using interaction and network theory may both give valuable contribution to the area of supplier development. Such studies focus on the embeddedness of firms in relationships to other actors who both facilitate and constrain development processes.

There is as I see it a need for further studies, in-depth as well as broad, in order to give justice to the complexity within this area. There is room for different contributions such as studies of different industries, SMEs, and different cooperative forms that could fit under the supplier development umbrella.

Perhaps even more interesting is to learn about changes in an entire supply chain. Here aspects of strategic and organisational change might be useful to include. We know that larger OEM firms demand higher quality etc. from their first tier supplier but what happens further down in the supply chain? A chain is not stronger than its weakest link is a saying that could be relevant also in contexts like this. Since many OEM firms today only manage their first tier of suppliers this is an interesting situation to study and learn more about.

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Different Network Species as Networking Structures¹

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Abstract

In this essay we firstly develop views of on-going practices in purchasing and supply management. There seems to be high demands on actor firms involved in such activities, not least among SMEs when faced with modern supply practices of large leading firms. Some SMEs might need external support to manage up to requests. Secondly we address the question whether it is possible for an external actor, like policy making actors, to analyse the available resources controlled within a rather big group of SMEs and from that knowledge find ways to improve matching networking activities. The basic assumption is that SMEs will have to find ways to substantially improve and enlarge their capabilities and therefore detect and find ways to get access to resources and capabilities from a broader range of providers. Thirdly, we will discuss four possible co-operative patterns, here referred to as different species of networks that all call for adapted approaches to networking activities. We will give some empirical illustrations and discuss some of the most critical topics according to each of the four alternatives. The likely success of each of those is essentially contextual, but in what ways?

Introduction

In the nineties purchasing became acknowledged as an important function in many firms. This resulted in activities such as supply base reduction (e.g. Ford, 1998, Lamming, 1993) and supplier development projects (e.g. Gadde & Håkansson, 1998) with the overall aim to create improved external resources of supply and in many cases to create world-class suppliers (e.g. Hines, 1994). This essay takes its point of departure in two empirical studies. One dealt with eight Swedish large manufacturing companies and described their practices as

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² The authors would like to express their gratitude to Professor Leif Melin for his input early on in the process of writing this paper.

well as the kinds of demands placed on their suppliers. All of the eight suppliers were to varying degrees dependent on suppliers and subcontractors in the industrial district of Gnosjö in central Sweden (Larsson, 1999). The second empirical study investigated a large sample of small subcontractors located in that same area, to gain an understanding of their abilities to fulfil the requirements set by the buyers (Lundgren et al, 1999).

Based on this background research the purpose of this paper is to conceptualise different network species representing ways to pool and create joint resources to better cope with market demands.

In the essay four network species are discussed. Also, by interviewing some policy makers and business people in the area we managed to identify one or a few cases, more or less developed, of each such network species. We use them for conceptual discussions about barriers and enablers to energize networking activities, in order to better combine resources and capabilities present in a certain regional area in order to make it possible for SMEs to match the needs of today's large firms confronted by global competition.

Purchasing trends in large firms

The investigation of purchasing trends among the eight firms (Larsson, 1999) confirmed many of the trends described in literature (e.g. Ford, 1998; Hines, 1994; Lamming, 1993). One of these trends is supply base reduction and our study provided evidence of continued work to increase the efficiency of the firms supply along the lines described by among others Hines (1994). The interviewed purchasing directors were confident that this trend echoes further down the supply chain. When the number of subcontractors having direct contact with the big buyers gets smaller, the remaining must deliver larger quantities as well as a broader range of functionality, was their natural conclusion. The actors along the supply chain must develop new contact patterns in terms of both new content in existing relations as well as making contacts with totally new customers (Calabrese, 1999).

Outsourcing is given more and more attention and a lot of the activities and functions, including product development, needed for their operation are being outsourced. This means that the outsourcing firm can better focus on its core competence (Prahalad & Hamel, 1990). This puts increasing demands upon subcontractors to match, not only by providing a broader range of activities and functions, but also to improve their product development competence. This means that they need to be able to coordinate a broad range of activities, resources and competencies from their own suppliers. Subcontractors are also to an increasing degree involved earlier in the product development process today,

which means new ways of organising their business to be able to take part in inter-organisational teams and projects (Wynstra, 1998). This, in turn, means that they need to be able to provide capabilities, not only material ones like equipment, but also in terms of knowledge. This knowledge is conceptual and technological and on a new and much more advanced level than in the past.

Emphasis is also put on the total cost of the product and – at times – on a more multidimensional view of its functionality (the improved value it provides). The purchasing directors also testified of trends towards a more active participation by large firms further down the supply chain, to support supplier development programs and to organise the supply chain. This way of purchasing requires higher competence not only in the selling firm but also in the buying firm. You cannot e.g. make simple comparisons between competing suppliers when they are part of high-involvement relationships (Gadde & Snehota, 2000), but need to be able to utilise e.g. bench marking techniques (Zairi & Hutton, 1995).

Larsson (1999) also saw much more distinctive but differentiated purchasing strategies: partnership and supply-chain co-ordination when that is considered appropriate, competitive bidding when that has the best potential. Another aspect indicated in the study was that the importance of spatial closeness, according to the interviewees in several of the eight companies, is reduced due to globalisation and IT-development. However, when it comes to voluminous components or systems the importance of spatial closeness is still perceived as a necessity in order to achieve at a low total cost. This notion is of utmost interest and relevance for the second part of our study.

The empirical study basically confirmed the conclusions made by many experts, saying that subcontractors will need to improve their capabilities. This also holds for their purchasing activities. Otherwise they will not be able to match the demands of their customers. Volvo, one of the investigated big firms in the study, illustrated this as they clearly stated that they evaluate the professionalism of the supplier's purchasing department. It was also indicated that geographical proximity, in some cases could still be of vital importance. The induced complexity, the more multifunctional and multidimensional exchange processes between buyers and suppliers will reward closeness, but only as long as the functions provided are good enough, and to make that happen the subcontractors will need the right capabilities. Based on this we think that the first empirical study points to some of the potential of developing capabilities locally. But how could this be done in a more systematic way? And is it possible for an outsider of the firms, a policymaker or a services business, to have an impact on such processes? These are issues to deal with later on. Let us first turn to the second empirical part of our study.

Subcontractors in the industrial district of Gnosjö

Gnosjö is a minor community in the county of Jönköping, Sweden with approximately 10 000 inhabitants. It is part of an extended industrial area that also includes some neighbouring communities. Not many communities in Sweden have gained as much awareness and attention from media as Gnosjö. In times of recession, other areas in Sweden jealously turn their eyes towards Gnosjö, only to discover a non-existing unemployment and successful industries. Significant for the region is the large number of small and medium-sized companies. Only one-tenth of the companies in the Gnosjö-region have more than 50 employees and the majority of companies are, according to the EU-classification, classified as micro-businesses (0-9 employees). Another characteristic of the region is the large share of employment within the manufacturing industry. Actually, there are three times as many employed within this sector compared to the national average. The region is often compared to the Italian industrial districts, even though its production is not as homogenous as that of those districts. Furthermore, there is no clear structure and categorisation concerning the manufactured products. However, the metal industry is the most dominating, followed by the manufacturing of machines, and the manufacturing of rubber and plastic products.

This second empirical part of our investigation (Lundgren et al, 1999) showed among other things that the industrial district of Gnosjö still has a very positive development when it comes to annual turnover, number of employees and results. Gnosjö firms also recognise the trends described in the study of the large corporations. Many of the Gnosjö firms have already had to respond to it. A large proportion of the firms saw quality certification as a natural step to keep up with the global competition their customers are actively involved in. About 60% of the firms turned out to already be certified according to ISO 9000 and a number of firms were in the process of becoming so. Other firms certify themselves according to QS-9000 and ISO 14000. This means that a vast majority of the firms in this district already have embarked on the "journey". During this part of the process and by a history that could be traced back for decades, the Gnosjö firms have also noticed that they get more responsibilities when it comes to activities related to product development. As much as 70% of the firms said that they were active in the customer's product development and 25% of the firms had already their own product development departments.

The study of the large firms indicated that one key for the subcontractors to stay competitive should be co-operation. Bearing that in mind, it is of great interest to notice that as many as 80% of the Gnosjö firms regarded increased co-operation with other firms as something positive and worth striving for. This means that there is awareness that, in spite of all the successes of the district, everything is not perfected. There are a lot of resources not yet connected and

not yet mobilised to face the challenges of modern business. Before moving to a conceptual discussion about possible ways of carrying out networking activities it should be noted that a large portion of such activities already take place. This is partly in everyday business buyer and seller activities, but is strongly supported by networking activities on arenas like the church and others (Wigren, 2002). There exists also a support organisation in the district, IUC (Industrial Development Centre) jointly owned and financed by the firms in the district, which is a very active participant in these processes. They help the entrepreneurs come together, arrange activities to promote and provoke knowledge, try and present visions for the future Gnosjö and for future – possible – constellations. But what kinds of constellation alternatives are possible? And what kind of problems can we expect when these (with or without) the support of IUC are to become forged?

Networks – some prerequisites for co-operation and basic functionality

To cope with new demands from big firms, several projects have been initiated by IUC among SMEs in the district. This includes education and seminars, competence development projects, as well as the joint creation of special units of technology speciality, so called “technology centres”. Much of this is done in joint activities between two or more SMEs. And initiatives are taken to investigate new possibilities to work together, e.g. a variety of “network like” solutions.

Basic prerequisites for co-operation

If we raise the question: “Who could go together with whom?”, which seems to be a relevant point of departure for the aims discussed, this has been addressed in literature. When co-operating in dyadic relationships and as well as in groups of more than two it is evidently important that the resources of the two or all actors control complement and match each other. There seems basically to be a need for the parties to possess complementary resources of some kind (Håkansson et al., 1982). But there are more aspects that need to match. Laage-Hellman (1997) provides a list of five sources of good or bad fit. The following aspects are on his list:

- Functional complementarity, which means that the parties complement each other in terms of resources; the one actor has some knowledge or other capability that the other is missing, or that the two parties are active in business that complement each other.

- Strategic fit means that the parties are heading in future complementary directions.
- Organisational fit means that the parties fit well together because of their organisational designs that will facilitate co-operation. This also encapsulates i.e. social fit between involved individuals.
- Business philosophy, the parties might have more or less the same values in terms of how to do business. Should it be opportunistic or truly co-operative, should it be joint developments and a search for synergies, should it be short term or long term?
- Timing. As all actors are involved in a number of activity processes the timing of new activities and/or co-operative ventures is critical. The parties might be unable to make a fit due to “imbalances” in their timing. To some extent the one actor could try and move faster and/or to keep prepared to act at a later moment, but there are normally limits to such adaptations.

Lorange and Roos (1992) add to this by stating that all co-operation must be based on overlapping motives in order to be successful. Axelsson (1998) in reviewing Laage-Hellman also emphasises elements of willingness. It is often the case that if two or more partners really decide that they want to co-operate, they will “always” find some areas in which co-operation can take place.

If we take a closer look at the kinds of resources that could be of relevance we could, according to Axelsson (1998), distinguish between the following resources:

- Material resources: production equipment, raw- material, etc
- Manpower resources: people in production, in management, specialists, etc with varying skills and competencies
- Immaterial resources: knowledge, databases, networks of relationships, image and reputation – legitimacy. It is worth pointing at the importance of corporate image and product brands. Such resources are often considered vital enablers of a business mission, not least because it provides varying degrees of legitimacy. (Axelsson, 1998).
- Financial resources: availability of monetary resources in the short and long term perspective. Some of it could be gained by own operations, some from donors of various kinds

It could also be worth distinguishing between various kinds of knowledge. There are different types of technologies; electronics, mechanics, biotechnology, etc. There is also knowledge about business processes such as how to carry out a supplier evaluation, how to operate the value chain, how to get organised to be able to manage a strategic relationship, how to learn from mistakes in order not to have to make the same mistake over and over again, etc.

Co-ordination of activities, resources and actors – some important processes

Independently of what kind of network-organisation or network-structure we refer to, a few issues, or – rather – processes, need always be taken into account. The following are worth mentioning (Wynstra, 1998):

- Mobilising. To carry out activities of whatever kind means that the actor has to dedicate resources to these activities.
- Coordinating. This involves the synchronisation and mutual adjustments of activities to the joint mission both in the short run, in a specific project, and in the long run.
- Prioritising. This has to do with choices and decisions of where to invest resources, which activities to carry out first and later as well as which not to carry out at all.
- Timing. A special kind of co-ordination is timing. It has to do with *when* the various activities are carried out. That, in turn, is to some extent a matter of planning but also to be able to react on possibilities that occur in irregular and sometimes unexpected intervals. Without appropriate timing development and other activities will suffer from unexpected bottlenecks, unnecessary delays, and missed deadlines. It is always advantageous to be able to know when there is a proper moment to approach an actor and/or to initiate a certain activity. Also to be able to influence processes of change; make them happen earlier than else and/or make them take place later. And finally to be able to adapt ones own ability to act; be flexible enough to implement action earlier or later than desired. Timing is not only related to coordinating but also to mobilising and prioritising.
- Informing. This is a process that goes in two directions; inform and become informed.

These five processes are of importance in all kinds of networks as well as in specific organisations. Any organised economic activity has to deal with them somehow. Therefore they should provide a relevant frame of reference also here.

Levels of involvement and networking structures

We could also distinguish different levels of involvement. Alter and Hage (1993, p 86) suggest that we can divide different types of cooperation along degree of complexity according to the following³:

- Limited cooperation. This type of cooperation only demands a low degree of involvement in time and money and demands only marginal

³ We have utilised Elbe (2002) for this overview.

adaptations. This means that the cooperation is centred on a limited activity. It could e.g. be merely exchanging some information.

- Moderate cooperation. This is more extensive and more enduring than the limited. It is a developed cooperation within some defined areas. It demands more involvement both in time efforts and in financial resources. The resources need to be adapted or supplied but there is still only little demand for specific adaptations and investments. It could e.g. be a matter of joint marketing or purchasing efforts and or joint lobbying activities.
- Broad cooperation. Broad cooperation demands a major involvement, directing and reserving resources and major adaptations of the activities in focus of the activities. It could be joint production and/ or supply systems in which the parties create routines for them and for the improvement of them. It could also be joint product development that basically calls for high involvement.

The cooperation could also be temporary or permanent. This means that the efforts to coordinate resources by networking activities could be done along varying degrees of cooperative involvement. One more point of departure is provided by Storper and Harrison (1991) who discuss three types of production systems or alliances. They distinguish between the following⁴:

- Core ring with lead firm. This means an alliance that is build around a dominating actor, a lead firm.
- Core ring with coordinating firm. This alliance is build around an actor who has got the assignment of the other actors in the alliance to coordinate the joint organisation.
- All ring, no core. The third type is a group of firms where no one is dominant and no one has been appointed to coordinate the alliance.

This means that we by referring to literature have been able to define some prerequisites for networking activities in order to improve the co-ordination of resources and capabilities in a specific region. It has to do with complementarities, it deals with different kinds of resources and it cannot take place at just any time and be performed by just anyone. We also know of the most important processes. We are also aware that the degree of cooperative involvement could vary and further more, that there are some possible structures along which to carry out networking activities. The focus in the rest of this discussion will most of all be on such formations, even though we prefer a slightly modified version of the one suggested by Storper and Harrison (1991). The empirical study presented above, provided an impressing picture of the collection of resources available in the district. These resources should be possible to combine in many new ways and thereby to leverage on them. The

⁴ We have utilised Elbe (2002) for this overview.

challenge for the continuation is to firstly identify the different species of networks and realising what barriers and enablers there are to utilise those species of networks. Secondly, to find suitable examples to use as role models. The overall idea is to provide the external actor, like a policy-making unit, with a road map of possibilities to apply networking activities that can have an impact on coordination and mobilising activities in a business context.

Stereotypical network formations

In the Gnosjö region there are a number of co-operative relationships as well as alternative network patterns and network species present and in a process of becoming forged. Some of which are the following.

Network species number one: The locomotive-driven network

The first network pattern is shown in figure 1. One actor, often a larger firm takes the lead, organises and dominates the network. This could either be as a result of acquiring others or in other ways create a lead position. It becomes a “locomotive” in a hierarchically functioning network. This is identical to the “core ring with lead firm” as identified above.

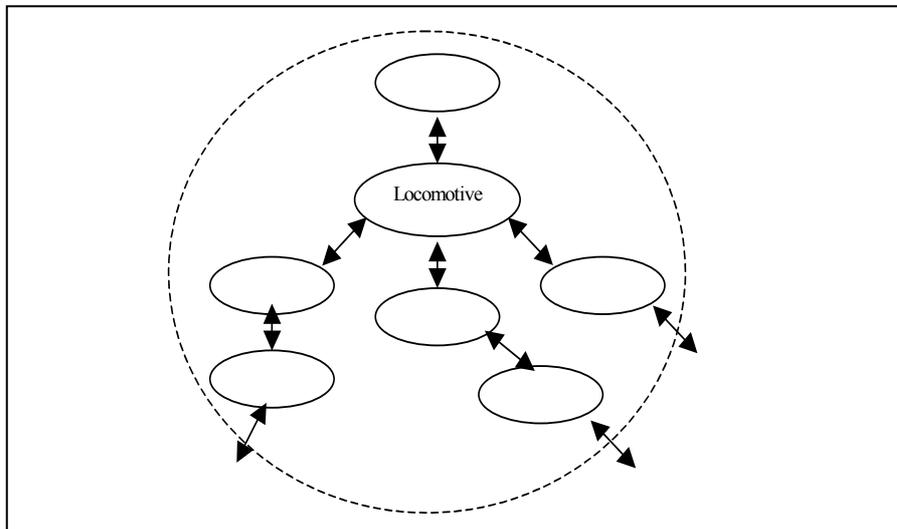


Figure 1 The locomotive-driven network.

Many advantages are gained through this network formation. Firstly, its aims clearly correspond to the demands made by large customer firms. They want to have more resourceful suppliers and this is one way of getting them. Large firms

simply dominate their supply chain and demand that the suppliers adapt to the large firms' needs. Willingly or merely forced to obey, suppliers try their best to develop in line with the desires of the locomotive. Secondly, the transaction costs (Williamson, 1989) are probably reduced for the actors involved if the locomotive manages to arrange its control in a smooth way. Thirdly, the small and medium-sized firms that are being acquired (or in other ways dominated) have a higher potential of surviving and the "locomotive" can provide its customer with more and better products. Fourth, there is a huge potential for savings in purchasing.

An example of this pattern from our district (Gnosjö) is the Finnveden group. This firm has become a "locomotive" by acquiring several firms and created a division called Finnveden Metal Sheet Components. This has been done in order to stay competitive, with the automotive industry as the main customer. By acquiring firms within this new division and selling firms that do not fit the company's new strategy, Finnveden is more clearly defining and focusing on their core competence. Internationally this example is similar to major firms in the better-known districts in Italy where i.e. Benetton acts as a locomotive. Two differences between the two mentioned firms include Finnveden's acquisition of a lot of production equipment and attempts to coordinate previously independent production resources by using hierarchical governance. Benetton is focused on design and marketing as their internal activity (core competence). By controlling these resources, critical to the entire network, it is strong and influential without owning the production resources. Its power is based on control of critical resources. Locomotives are firms leading the others (Lorenzoni & Ornati, 1988). The probability of successful operation by a network of firms is very much due to the acceptance by the others of the dominant position of the leading firm. In the case of Finnveden a lot remains to be proven. The formation of its dominant position goes only a few years back. Some progress has been made but the visions from the start are far from realised.

It is in many people's minds – and also in a great deal of our literature – a belief that if a firm has taken the lead and a position of ownership of actors in a network all the others will accept it. From that follows that the necessary co-ordination of activities, actors and resources will follow. All the mentioned processes (mobilising, co-ordinating etc.) should work well. That is, however, often not the case. We know from studies of strategic alliances that most of them fail (Porter, 1987). And that seems more often due to the ways in which the processes of integration have been carried out than the degree of structural fit (Jemison & Sitkin, 1986). There could many times exist wonderful potential for synergies in production etc., but if the motivation among the involved people is not there, a lot of friction will appear, speed and spirit will be lost. It is also, not least from studies of managing international operations in

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multinational firms, evident that, even smaller units, within a huge corporation could, in substantial ways, influence the operations of the firm and resist “demands from above”. This is an effect of its control of critical resources including knowledge of the local market (Engwall & Johanson, 1980).

We thus think that this is a network species that could be very efficient and make things happen at great pace, partly because of the powerful position of the locomotive. The joint challenge of the entire group connected to the locomotive and the power it possesses are the major enablers. Some important barriers are the risks that the suppliers still do not have the necessary capabilities but also because of their underdog situation that they loose motivation and start opposing to the will of the locomotive. This species of network is strong and powerful but not without its potential shortcomings. And, furthermore, it is not always the case that a locomotive candidate is crystallised.

Network species number two: The joint umbrella

The next pattern is that when two or more firms form a separate joint company in which the aspects of co-operation are dealt with, see figure 2. This formation would mean the forming of a new actor, by firms in the region. Also such an actor could have a different status in terms of ownership. The new actor could be an independent firm operating in the district like everybody else and qualify on its own merits. It could also be a firm jointly financed and owned by firms in the region. This is one version of the “core ring with coordinating firm”.

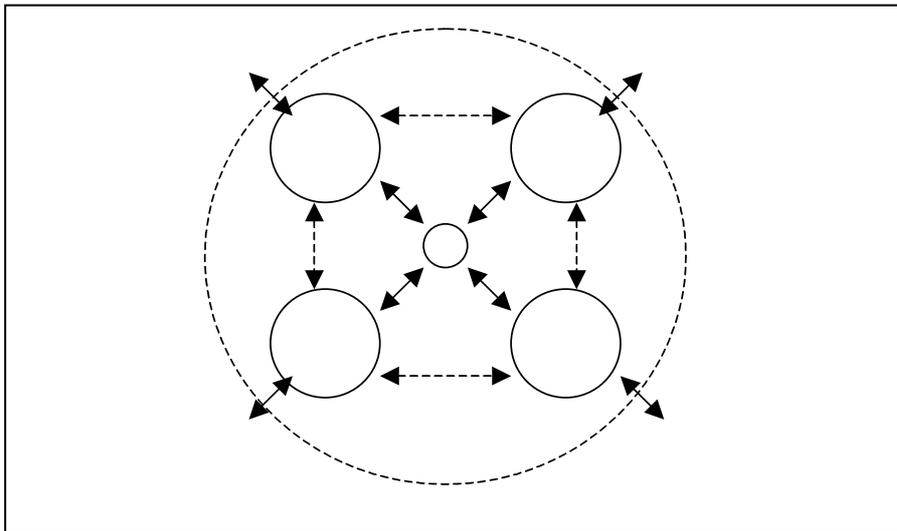


Figure 2 The joint umbrella.

In the mentioned district the – also mentioned – IUC is in itself such an example. The firms in the district own it jointly. Apart from IUC, this type of co-operation in similar settings is still in the planning phase in the specific district. There is among many of the firms a great interest to further this kind of co-operation and to establish specific arrangements either as an addition to IUC or as totally new actors. The request in that case is a narrowly defined venture in line with limited scope of cooperation. One example that has been discussed is to create a joint “face” in marketing. The study of the district indicated resources for marketing, not least internationally, as one of the scarce resources for many of the firms. Such a new firm should market the entire district by being able to present it as a joint collection of resources and broaden the market scope of the firms. This should become an additional market channel to the existing ones. But its operations need not be limited to marketing only. It could also take initiatives to find other aspects of joint efforts. Some firms in the district have e.g. solved their logistics in new and very efficient ways. Others have problems with their logistics. If the ones with a strong system would open up their systems and allow others to “hitchhike”, they would be much better off. There are a number of such possible improvements identified in the investigation. But they have to be materialised by someone. The role of this new firm should be similar to the one of Benetton in the previous discussion but in a different format and – probably – with a different ownership structure. It seems possible to create a jointly owned firm among a big enough number of firms. By having other firms inside the district as owners the commitment to the new firm is likely to be stronger. There is a positive attitude to such a new actor as it would provide value and allow the firms to (continue to) focus on their core competencies. As the actors need not invest that much and still can benefit from its activities, there are obvious enablers to make this happen. But at the same time as it is easy to join because of low barriers of entry, there is a probable risk that very little might come out of it. Furthermore, there is a danger that the members of such a “club” do not take that much responsibility as they have committed such limited amounts of resources.

This is a kind of network structure that matches the definition “*A number of actors acting together in order to achieve common goals*”. Such networks will, according to literature (Axelsson, 1996), have some general barriers to development. They need to solve a number of problems related to the common goals and the joint activities. Before the network under way in Gnosjö could come true there remain quite some efforts to decide on rules such as the goals of the venture, priorities between activities (orders) generated via this new channel and others, internal rules of dividing work, etc. To conclude, there seems to be an interest in a “joint umbrella”, but there remain to settle a lot of rules and procedures that need to be negotiated early on. This makes an alternative with a totally independently owned firm more attractive. Such a solution does,

however, raise doubts as to the strength of the commitment among the firms involved.

Network species number three: The alliance of equals

In the third network pattern, we see two or more firms that form an alliance with joint membership (with or without ownership-bonds), joint goals and an agreement on which functions that should be covered by the co-operation (See figure 3). The difference between this and the previous one is that the co-operation covers major portions of the involved parties' activities. It is not "just" a joint umbrella but also an alliance of great substance. It is a network with broad cooperation and it is basically a second example of a "core ring with coordinating firm". The alliance we have in mind is more of a formation of equals in an alliance of substance. The difference in comparison with the locomotive version is that it is not one dominant actor acquiring other actors or in other ways being able to "force" others to join. It is a network of co-operating firms who explicitly have decided to "go together" as a group. They constitute a defined group of partners who to some degree will have common goals and a joint view of and interest in the network. A typical formation could be the formation of an alliance network created for some key customers. If a group of actors enter a club and are dedicated so that they enter into a constellation of high involvement actors, this should enable a very strong force to be exercised. The complementarity between the actors should make them able to leverage their joint resources, like for example the airline companies joined in the Star Alliance constellation.

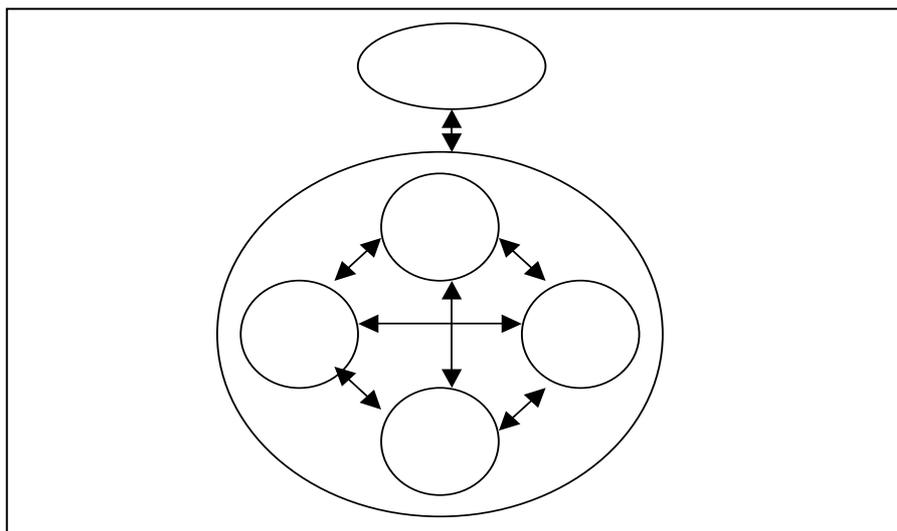


Figure 3 The alliance of equals.

In the Gnosjö region, we do not yet find any such alliances, although there is an intense discussion to try and form some alliances of this type. There are some difficult problems to overcome before it can take off. Because we, in these constellations, do not find any single strong actor – a locomotive – who naturally would take the lead, there will be much more of a “political” negotiating process in the first phases. Forming a “club” where the members are not faced with fixed rules immediately upon entry, is often difficult and time-consuming.

This is also a kind of network structure that matches the definition above, this is also a matter of “*a number of actors acting together in order to achieve a common goals*”. Interesting and critical issues, barriers, will (again) include how to reach to an agreement on the joint goal and how to co-operate and distribute the achieved values and the risks between all actors involved. How to define different actors’ varying positions in the network and their relationships to inside as well as outside actors, what procedures for entry of new members and exit of existing ones should be applied, what do the rules mean for a single actor in order to be able to develop its position and its offering to its customers are other questions, as well as how to coordinate, reach joint understandings, on operational issues and how to share the profits and losses and the benefits of joint development.

The network – the alliance - will itself be seen as an identified “actor”. It might even be a legislative actor of its own. These networks could be permanent, lasting for a long time, and cover a lot of not only predefined issues but also issues to come. According to Gomes-Casseres an alliance network can – naturally - vary by 1) size, 2) pattern of growth, 3) composition, 4) internal competition, and 5) governance structure (Gomes-Casseres, 1994). We know that alliance networks are often started in order to gain economies of scale or market share, and to do so a minimum size must be established. Size could be determined by the number of actors and by the size of the actors. We also know that the growth pattern is of importance. To attract new members, a network must show some potential benefits. Also previous relationships between allies and potential allies can be important in attracting new members. The composition deals with the importance of having all relevant technologies or markets crucial for the product represented in the network. In a network alliance there could be different views about internal competition. Some networks allow it and even encourage it while others try to limit the competition. Finally, one can distinguish between network alliances with and without a joint management. (Gomes-Casseres, 1994). To the ongoing efforts in the Gnosjö district this should be worth considering.

Network species number four: The naturally evolving network

The fourth network pattern could be labelled a naturally evolving co-operation processes where each party takes part based on its own self interest, but without any kind of “super-structure”, see figure 4. It is *not* exactly the same as “all ring, no centre”. It is basically a more fluid pattern with no ring – or a ring that varies by situation and issue considered. This network formation is a generic view on networks. Everyday buyer seller relationships take place in a context of dependencies between relationships. Relationships between any two parties are often connected – directly or indirectly – with other relationships. This means that firms (and other actors) often act in some kind of network setting. Such everyday co-operation may quite often lead to more and more co-operation between the parties involved, not just between the buyer and seller, but also of the suppliers’ supplier, the customers’ customer and/or other actors (e.g. Ford, 1980, Håkansson, 1982). For every company, but also for every situation and issue to be dealt with, specific networks could be identified (Axelsson, 1992). This kind of network is illustrated in figure 4.

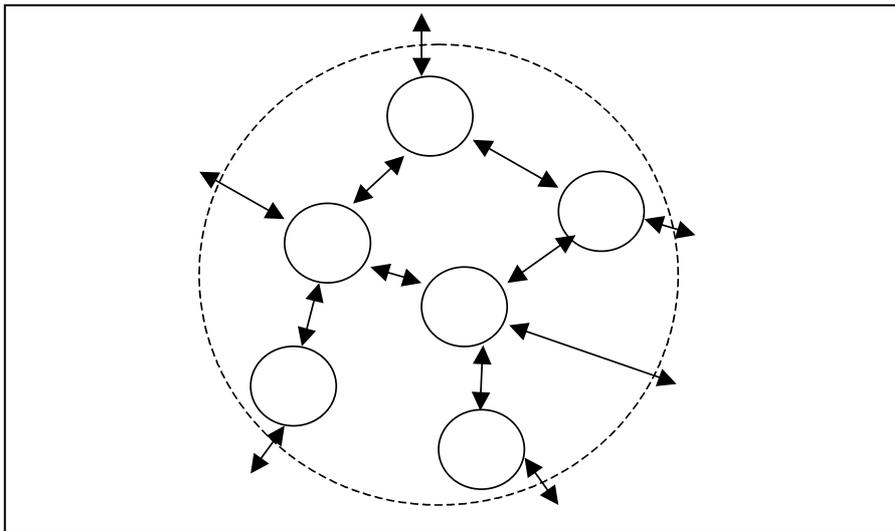


Figure 4 The naturally evolving network.

If we discuss firm-focussed networks we can conclude that one firm co-operates with a number of actors and so do other firms. To some extent the partners involved in the one firm’s network could be identical to those of another, to some extent they could differ. The buyers and sellers around whom the networks are formed could for example be active in different stages of a typical value chain. But they are all to some extent connected. It could also be possible to distinguish a number of more or less overlapping networks. A firm could be a part in many networks within and between an application area, it could be a

part of numerous networks of professionals, etc. This is a kind of network defined as “*a number of connected exchange relationships*”. This view of networks is much more in line with an open system like for example a market or the Internet (which could be regarded as a giant network in which numerous of sub-units (nets) could be distinguished). The enabling aspects are evident. As long as an actor finds at least one other actor willing to interact and exchange resources including information, the network is in operation and contributes to the mission of the involved parties. The networks that fit this definition are open to anyone who has something of interest to contribute and a new actor needs only to be accepted by one of the others.

In the Gnosjö district we have hundreds and thousands of such “informal” co-operative relationships and a long history of co-operating this way. It leaves the initiatives to the individual firms and individuals within them. It has a number appealing attributes (enablers) but also some shortcomings that we could refer to as barriers. Among the appealing aspects are that they build upon established relationships where trust has been created over time. They activate increased co-operation by building on the past, which should be a “safe” way to success as far as the co-operative aspects are concerned. It is also natural and it will not only take into account the degree of structural fit (resources, organisation, etc) but also other, even “softer” aspects such as trust between people and corporations. The shortcomings include speed, as it might take too much time. It could also be a matter of direction, as it might not evolve in the “right” way, if our point of departure is the demands on the subcontractors emanating from the new purchasing philosophy of the big firms. Current activities within the district include gathering firms in order to present the views of the big firms. Trying to make the entrepreneurs more aware of the need for action and the “gigantic” amount of resources that could – and most probably need – to be mobilised one way or other. This excludes neither the creation of more naturally emerging co-operation, nor intensification of the activities in the existing ones.

From literature we know that some important issues due to this view of networks are the following. How could a strong structure of actors, resources, activities be created in a network like this where there are no natural arenas for “all” actors involved to come together and where there are no such things like a joint group? How could activities and development be stimulated? What ways are there to influence and coordinate? How to support the “right” processes when there are a lot of countervailing processes going on at various places in this network? How to make the network a strong force e.g. to influence the over-all attitudes to a new technology when it does not have any negotiated centre?

The network formation in question will e.g. stress influencing as a process of activities taking place at many forums – not primarily in boardrooms.

Influencing is more a matter of being at the right place, winning others' approval by challenging ideas, etc. It looks much more like a market where each actor has to be accepted and chosen by others to qualify. Still, also these networks are often very well organised structures of activities, actors and resources (Håkansson & Snehota, 1995). The core relationships act as highways in which a large share of all exchange processes take place. Still they are complemented by small roads of more or less frequency in utilisation (Axelsson & Wynstra, 2002).

Successful co-operative patterns

Processes of mobilising, co-ordination, prioritising, etc. are crucial for activities in any network (Wynstra, 1998; Håkansson & Eriksson, 1993) and for any network formation to be successful. Of course, the levels of involvement from low to moderate and further to broad, according to the distinction made above, has a role to play in a discussion about efficiency and effectiveness in networks. It could be easier to make a network effective if it only deals with limited involvement, requiring only limited resources. On the other hand, the leverage effects of a broad and high-involvement network are likely to be much more substantial and in such a way more efficient. Lorenzoni and Ornati (1988) identify four unconventional mechanisms of co-ordination that emerge when organisational designs like networks mature. These four are trust among the partners, reciprocity, mutual adjustment between the partners, and multiple lines relationships. Moss-Kanther argues, along the same line, when she says that successful relationships (as well as networks) have to meet eight criteria or "I's" to be successful, namely:

- Individual Excellence. Every actor, individual or corporation must have something of value to contribute with in the relationship.
- Importance. The relationship must be of importance for both (all) parties strategic and long term visions (goals).
- Interdependence. The parties need each other because they control complementary capabilities. No- one could alone achieve anything in comparison to what the parties can do together.
- Investment. The parties are prioritising the relationship(s) and are investing in it. Through resources and commitment a long-term co-operation is emphasised.
- Information. It is important that the communication is relatively open and that the information needed to make the relationship(s) to work is shared between the actors.

- Integration. The parties should craft links of connections and joint modes of operating to jointly facilitate and improve the work. This creates possibilities to broaden the contact surface between people.
- Institutionalisation. The relation and the activities performed will as such craft a distribution of responsibilities, decision rules and operative processes. The relationships will facilitate work mode and the process of institutionalisation implies that it cannot easily become disrupted.
- Integrity. The parties act from the point of departure of their own interests. Honesty and good performance will - over time - strengthen trust between the parties.

These aspects basically refer to prerequisites for high-involvement networks to work. Still, the aspects seem to be relevant independently of what kind of network-formation we are considering. Questions to be asked when confronted with a specific situation include the following; Can we be sure that most (all) of these eight prerequisites are present? If not, is it really necessary? What kind of improvements could be made in order to create a situations where as many as possible of these apply?

Miles, Snow and Coleman (1992) emphasise a different aspect when they point to some important roles that have to be performed in a capable way, in order for a network to be successful. These roles are:

- The Architect. One important role is that somebody has a vision of what the network in question should look like. This is not to say that a single actor must have the complete view and be able to dominate (control) other actors. That could be the case, but the core issue is that of someone being a facilitator and having a reasonable structured idea about where to go.
- The Lead Operator. An actor (or all actors) who in a more formal sense bond together actors within the specific network carries out this role.
- The Caretaker. This is a role focussing on improvements of the joint activities that are performed within the network in focus. It is desirable that the actor(s) performing this role has a broader view of the network as such – a broader network horizon does.

The same kind of questions raised above could be raised here. Is somebody performing the architect role? Are there existing lead operators? Is the caretaker function in operation? However, two very basis aspects remain to be discussed. One has to do with the cooperative situation in the region as such, the other has to do with the actors intended to trigger the processes.

The importance of the over-all cultural context and the actors intended as triggers

So far we have looked at possible ways of carrying out networking activities to face the challenges presented by large manufacturing firms being actors in global competition. By more efficiently coordinate and mobilise resources, that challenge could be faced. We have also identified several specific enablers and barriers connected to different network species. But more remains to be said.

One concept that does have an important impact on the things discussed, is trust. A specific kind or aspect of trust discussed by Putnam (2000) is reciprocity. He argues that the ways in which networks function, are dependent on the environment in which they appear. In different societies and in different networks, there exist different norms of reciprocity and those need to be understood and differentiated. Putnam talks about specific reciprocity and general reciprocity.

The norm for specific reciprocity means that if I do something for you I count on you to do something of similar magnitude for me. The general reciprocity, in contrast, means according to Putnam the following; *“I’ll do this for you without expecting anything specific back from you, in the confident expectation the someone else will do something for me down the road”* (p. 21). The social capital, i.e. the extent and value of the relations between individuals and groups characterised by general reciprocity, is more efficient than when specific reciprocity rules as it facilitates cooperation for mutual value. Such a society is characterised by a *“culture of trust”* (Alter & Hage, 1993, p.16).

We have reason to believe that Gnosjö has a strong ingredient of general reciprocity (Wigren, 2002), and thereby the possibilities to better exploit the region as a resource constellation via combinations of applied network species should be good. But it is also important to consider who the triggering actor is and what kind of legitimacy he/she/the organisation possesses. Suchman (1995) argues that we could distinguish three types of legitimacy, which exist at the same time. All of those deal with generalised interpretations, whether an actor’s actions are desirable from the point of view of socially constructed systems of norms, values and definitions, but on different levels. Cognitive legitimacy deals with whether an actor is culturally and socially legitimate. The actor’s legitimacy is more or less taken for granted if it fits these basic values. The other two aspects are pragmatic and moral respectively. The pragmatic aspect is based on the immediate and calculative value associated with exchange processes in consideration. The moral aspect depends on whether an actor’s role and actions are considered fair from a societal perspective. We will not dig deeper into these aspects here. But the conclusion is that the possible success of an intensified networking activity to better coordinate resources in the specific regional area, is

not only dependent on what kind of resources exists and which network species are applied and prioritised, but also on the general trust in the society, as well as the legitimacy of the actors taking initiative.

Conclusions

Our point of departure was two previously conducted studies. One deals with purchasing trends and how these tend to influence actors further down the supply chain. The other deals with the resources available in a specific industrial district. The specific issue addressed, concerns the ways in which stronger constellations of sources of supply can emerge taking this district as our point of departure. We identified four network species, pointed to the prevalence of such structures in Gnosjö and/or the likelihood that these emerge. We also referred to literature when we discussed issues of critical importance to make each of the four constellations work. There are some general success factors that should apply to all networks like the ones proposed by Moss-Kanther. But there are also a number of specific issues that need to be solved for each of the proposed network formations.

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Pedagogical Innovativeness in Supply Net Development¹

Björn Axelsson and Johan Larsson

Introduction

Supply chain or supply net (Gadde & Håkansson, 2002) development seems to be on the agenda for most world class companies in e.g. the car manufacturing and the electronics industries (Larsson, 2001). Companies have learnt that in order to rationalise and develop new values e.g. new or improved products) it often takes the co-operative efforts of more than two actors along a supply chain. If, for example, a manufacturing firm wants to have its logistics operations improved it is not only a matter of the firm itself adjusting its behaviour and asking the logistics firm for something else. In order to make significant and sustainable changes also the supplier or the customer to the manufacturing firm needs to become involved and to change and adapt its behaviour. Sometimes the changes need to be stretched out over more than three actors in the chain (Waluszewski, 1995). Activities in business systems are thus often chained, synchronised and forged to fit the specific system in which they operate (Gadde & Håkansson, 2002). Therefore, changes of activities inside and between business firms often call for changes and developments of resources and product- as well as process technologies (Ford, 2001). It could be material resources like transportation equipment or immaterial ones like knowledge, e.g. conceptual and cognitive understanding among the personnel.

The kinds of knowledge indicated are likely to become more critical and difficult to improve the further down a chain a development takes place. There are studies of changes in the supply chains of car manufacturers in which researchers e.g. have followed the changes of roles and assignments among their previous suppliers, before and after an intensified move towards supply chain integration (Calabrese, 1999). The research reveals some interesting patterns. Among previously rather non-transparent supply markets where almost all suppliers were approached directly by the main actor (the car producer) and seemed to have similar roles, a clear pattern of division of labour emerged.

¹ This essay was originally published in a JIBS Research Report in 2002 (Agndal & Axelsson, 2002). Earlier versions of the essay have been presented at the Anzmac conference 2001 and at the Ipsera conference 2002.

Some suppliers moved into systems suppliers with an assignment to coordinate the activities of several other component suppliers. Some of the component suppliers had their own products, others became subcontractors managed by predetermined designs from the customer. Some of the systems suppliers also had responsibility for development of the system and became integrated into the development processes of the car producer and so forth. In total, it is argued, that this way of organising supply chains often have proven to be much more efficient than previous ways of supplying the production in question (Ibid.; Hines, 1994). It seems to be a vital thing that a significant enough group of actors in a company and a supply chain have the conceptual understanding of the intent of such reorganisation of the management of supply.

What is especially interesting to us is that it seems often to be so that the further down the supply chain one comes, the smaller the firms and thus the scarcer the resources – and most of all knowledge – the scarcer the aspects such as the conceptual understanding of new managerial methods. Resources are not wholly variable. A robot costs the full price even if it is not utilised more than one hour per day, an engineer is likely to ask for the salary in line with his profession even though his knowledge and skills in line with the profession in question is only utilised one hour per day. This means that small firms are not likely to be able to carry the cost burden of the kind of advanced resources, human and knowledge as indicated (Noteboom, 1994; Äyväri & Möller, 1999). This means that they are faced with – possibly – two other options. If they want to develop they could either rent such capabilities on a time basis, acquire the necessary knowledge and skills by recruiting new staff or train the existing staff. The latter possibility that normally is the most feasible one is frequently restricted in these kinds of firms. Their employees have often a limited experience from studying and thereby a resulting lack of absorptive capacity (Leonard-Barton, 1998), at least when it comes to cognitive and conceptual understanding. University education and similar theoretical studies aims at developing such abilities, which also prepare people for continued learning (Axelsson, 1996). Theories and concepts support us in relating different issues and realising the deeper meaning of issues under exploration. If such prerequisites are not in place to the extent necessary and – still – someone wants to improve the entire supply chain also among SMEs, knowledge and capability development needs to be addressed. It needs to be adapted to the specific situation of these kinds of firms and their human resources. This is what is done in the Swedish KrAft- project.

The purpose of this essay is to describe and analysis competence development in a case (KrAft-Norrgavel) within the KrAft-project.

The KrAft-project

The KrAft-project aims at capability development among SMEs. The basic idea is to connect managers and other significant actors in SMEs to researchers at universities in order to try and bring the two worlds somewhat closer. From the SME perspective it is intended that researchers bring their theoretical knowledge and in a dialogue add its relevance to the practitioners. This must not be the classical approach to learning with the initiative from the teacher, and plenty of overheads and passive students. The idea is, furthermore, also to create some learning in both directions.

The basic set-up is that the small firm is invited to a development program and is urged to bring the CEO and one more key actor. The issues dealt with should be decided by the participating firms. A typical KrAft-group consists of around 15 people and, thus, 7-8 companies. The theme for the group should always be a part of a firm's strategic development. But this means that the specific theme(s) could be anything from logistics, production improvement, organisational change, design, branding and many other issues. The specific KrAft-group could also concentrate on one theme during the entire program or move between a number of themes. The organising team consists of one Project Manager who is an academic from the university (or business school) and who is responsible for the content and the level of the program. It should, however, be strongly emphasised that the participants are forging the content based on their needs. The Project Manager should be a part of this process and support the participants in identifying and make explicit what kind of learning (themes) should be best fitted to the needs expressed and also to connect experts from academia with his KrAft-group. The Project Manager is supported by a Field Coach who should be an experienced business manager or similar with an interest in development issues. The structure could be illustrated as follows:

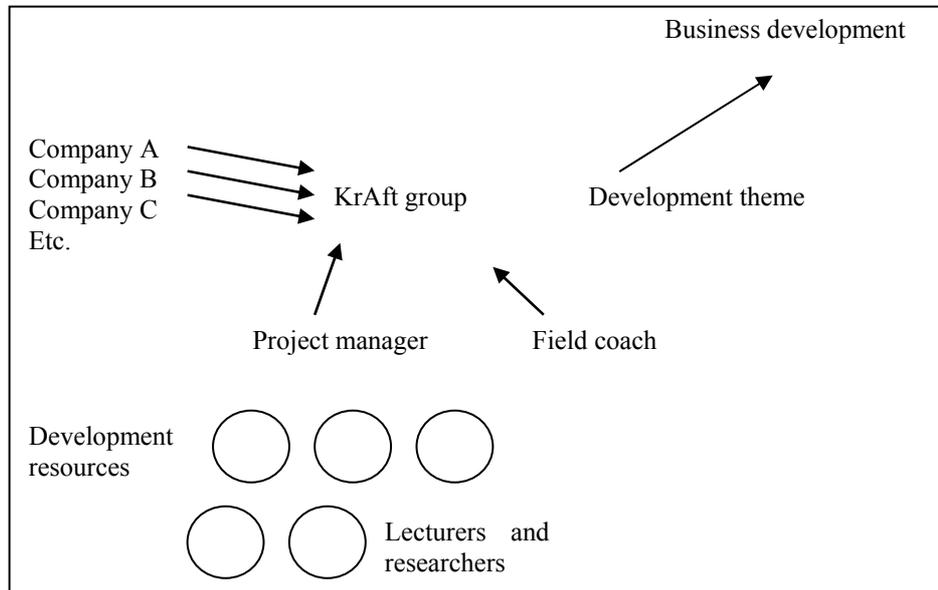


Figure 1 The structure of a KrAft-group.

A typical KrAft-group has 15 days of being physically together to jointly discuss important topics, share experiences and to get input from the Project Manager and other resource persons hired by him/her. Often the 15 days are split into 8 times 2 days. In between those gatherings, each individual company is expected to perform assignments decided on at every joint meeting. The typical duration of a program is one year. The Field Coach is a resource who could be called on by the participating firms during the process. It is expected that he or she should visit each participating firm at least two times during the program. His/her role is then to support the learning at the specific company, give advice and train the people at the firm to make preparations and the analyses asked for. In this way, the Field Coach acts as a “translator” of the theoretical aspects of the capability development from the academic world but also the reverse way from the practitioners to the academic world. It is meant to become a genuine experience-based learning venture. The basic idea behind the decision to connect researchers is to try to make the participants move from their specific problem and ways to approach it to a more generalised learning in line with e.g.

Kolb (1984)². The total cost per company is 8.000 Euro. Half of it is subsidised by government funds, the other half is paid by the participating firms.

The Norrgavel case³

The Norrgavel case is especially interesting for several reasons. Firstly, in this KrAft-group the initiative to change and development is taken by a customer who challenge its suppliers. Norrgavel is increasing its sales and is in a process of international expansion. Those of their suppliers who intend to follow should need to improve their capabilities, both in volumes and by increasing the qualitative of their processes, such as logistics. The suppliers are challenged to improve their professionalism in terms of lead-times, logistics utilising the possibilities of ICT, etc. And that calls for a substantial share of cognitive understanding. Secondly, all the involved firms have a common interest that Norrgavel will manage to achieve in making its vision come true even though many of them operate in different industries. This, in turn, makes it evident that a temporary project like KrAft, should have good odds not to cause the participants to fall back after the project is finished. They are all in continued operation and need to be as capable as possible. The project should act as an injection. Thirdly, Norrgavel acts in this case as locomotive in the network (Lorenzoni & Ornati, 1988). Research has shown that such a point of departure, i.e. the existence of a company having taken that role, strengthens the likelihood of a positive outcome (Lorenzoni & Ornati, 1988; Miles et al., 1992). Similarly, experiences from product development clearly demonstrate the importance of demanding customers for the likelihood of success (von Hippel, 1986; Håkansson, 1987). The other participants in this network are six of Norrgavel's suppliers.

Norrgavel markets products with an attractive design based on key words like timelessness, genuine solid raw material, Scandinavian style, and strict coherent design. It has its own stores which act as showrooms for the entire product line. The firm is still a rather small producer and retailer in the field with a turn over of roughly 4 million Euros. It is strongly niched and has a top of the line price level, but does not have the necessary body of resources to train its suppliers up

² Kolb (1984) describes the Lewinian experiential learning model. The Lewinian learning model starts with the concrete practical experience of the actors involved. Observation should be followed by reflection. The reflection part is followed by the formation of more abstract concepts so that the reality observed could be generalised to be valid for the different actors. The model further suggests that these concepts are tested in new situations, which in turn creates new practical experience. In this way there will be an accumulated qualitative growth among the involved individuals and firms.

³ The research presented in this essay is based on participant observation of the meetings and in-depth interviews with the actors in the KrAft-group formed around the Swedish furniture producer Norrgavel.

to the standard desired. Norrgavel is currently in the process of making a strategic internationalisation effort. When the project started the firm had planned to set up a store in Copenhagen, Denmark, about a year later. This was expressed as “*Be with us in Copenhagen next year and join us on our international adventure*”, or a message intended to attract the suppliers to take part of the KrAft-program. Three of the suppliers in the Norrgavel KrAft-group are carpentry shops, one is a producer of lamps, one imports carpets made to design and the last supplier is a flax producer (see table 1 below). All actors have in common that they deliver high quality and designer products that all contribute to the ambience of the Norrgavel stores and are important contributors to the Norrgavel brand. We thus had a group of suppliers who were all challenged by a customer and the vision expressed by that customer.

Table 1 Companies participating in the Norrgavel KrAft group.

| Company | No of employees | Annual turnover 00 |
|--|-----------------|--------------------|
| Norrgavel, furniture manufacturer, acts as locomotive in the network | 21 | 32,7 million SEK |
| Ateljén i Anderslöv, lamp manufacturer (Zlamp) | 5 | 4,3 million SEK |
| Kathe, carpet importer | 1 | 1,5 million SEK |
| Lammhults Snickeri, furniture manufacturer | 11 | 6,8 million SEK |
| Stol och Fätölj i Ruda, furniture manufacturer | 2 | 2,0 million SEK |
| Torsten Nilsson Snickeri, furniture manufacturer | 12 | 7,6 million SEK |
| Växbo Lin, flax manufacturer (table clothes etc.) | 10 | 4,8 million SEK |

Altogether there was a group of 15 people as all firms had at least two participants, with Kateha as exception. They had all agreed to the idea of strategic development. The academic background among the participants was generally low, except for 3-5 people who had studied on university level or equivalent. Two of those came from Norrgavel, who has a different role than all the others. The Program Manager was a professor of Business Administration from Jönköping International Business School (JIBS) with extensive experience, also from contract teaching and consultancy⁴. The Field Coach was an experienced previous CEO and policy maker who was also well acquainted to the kind of firms and people involved. He happened furthermore to be one of the major shareholders of Norrgavel. There was also a PhD candidate involved. He acted most of all as a researcher but supported the process with some administrative services and some presentations of theoretic topics⁵. He was

⁴ We refer to professor Björn Axelsson who is also one of the authors of this chapter.

⁵ We refer to PhD candidate Johan Larsson who is also one of the authors of this chapter.

present at all meeting and he also made contact with every single one of the participants between each meeting to listen to their points of view and to try and check the learning process as such. He could get signals that some participants would like to change subjects and he could ask for their learning experience. The method even allowed him to challenge the participants, e.g. in cases when they said that they had not learnt anything or had not gotten any new ideas. As he was an active participant he could confront them by fraises such as “*but, when Mr x said that he had some experience pointing in a different direction than yours – what was your reaction?*”

The program consisted of 15 days of joint meetings divided into 7 times 2 days plus one day of introduction. No schedules and no content were produced far in advance. The time between each meeting was planned to be around 4-6 weeks. Between each meeting with the whole group, they all had exercises to prepare, both practical tasks and reading assignments. The duration of the entire process thereby equals slightly more than one year. One basic ingredient was also that every member of the network should act as hosts for at least one meeting. Thereby all companies were visited by all participants during the process. Each such meeting should start with a company visit so that knowledge and understanding of the different actors' businesses could be fostered. One basic idea in the total concept is that of learning *from* each other as well as learning *with* one another (Simonin, 1999).

The process

We will now describe the activities that took place and structure the story along a chronological order with a focus on each occasion the group came together. We cannot describe all details of what happened but, instead, focus on some activities, events and micro stories (cf. Wigren, 2002) that we find of particular relevance.

In the table below a participation grid is presented. The frequent presence of the participators all through the process has been one of the strengths with this network constellation.

Table 2 Participating firms/meeting.

| Participating firms / Meeting number | No 1 | No 2 | No 3 | No 4 | No 5 | No 6 | No 7 | No 8 |
|--------------------------------------|------|------|------|------|------|------|------|------|
| Ateljén i Anderslöv (Zlamp) | X | X | X | X | X | | X | X |
| Kathea | X | X | X | X | X | X | X | X |
| Lammhults Snickeri | X | X | X | X | X | | X | X |
| Norrgavel | X | X | X | X | X | X | X | X |
| Stol och Fätölj i Ruda | X | X | X | X | | X | X | X |
| Torsten Nilssons Snickeri | X | X | X | X | X | X | X | X |
| Växbo Lin | X | X | X | X | X | X | | X |

The First meeting – Norrgavel presents the challenge

The natural joint point of departure was to gather the group at the first of the, by that time, four Norrgavel stores. This store is situated in Lammhult in Småland, a small community with an impressive number of furniture producers. The village and its surroundings are sometimes referred to as “The Kingdom of Furniture”. Two of the suppliers, one of which was involved in the KrAft-project, are located in this area too. The others come from much more remote places.

After an introduction and presentation of the companies and people involved, it was a natural start for this very first day to look at mission statements and foremost the one by Norrgavel, the customer/locomotive. The CEO of the firm, Maria Månsson, told the story of the firm’s history, and reminded the participants about the basic values that form the vision and what impact it has on the products, the range, the ambience strived for in the stores, etc. Of course, much of the overview was directed at the future challenges of the company and the promise as well as the barriers one could foresee. The vision also included the suppliers. The CEO wanted to make them come closer to the market of Norrgavel. “*When a customer buys a chair in one of our stores it should ring a bell in the production site of the actual supplier*”, she said. The message was that the entire group of suppliers, the supply net, should organise like a team with the customer to increase market share and to make Swedish design, especially as it is exposed by Norrgavel, known and appreciated also abroad. A second major message was the internationalisation - and fist of all the Copenhagen - challenge.

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It was then natural to take a closer look at the other companies, the suppliers' business ideas/mission statements. Everyone described their view of their operations. Maybe not in such a streamlined way as the introductory presentation, though.

A second step was to ask for reactions from the suppliers to this challenge from Norrgavel. Was it interesting? Could they identify any shortcomings on their part when facing the challenge from the customer? Were there any important areas of improvement that needed to be addressed? Were there specific pieces of knowledge missing in their operations/companies, for them to be prepared for this challenge? Other important enablers like production equipment, ICT infrastructure etc. was also asked for. All these possible shortcomings were listed on a white board. The Field Coach who already had visited all the suppliers once and the Project Manager from the business school, had also prepared a list from which some further additions of possible knowledge gaps could be made. The white board was full of important areas in which one or more of the companies needed to improve their capability.

Based on this long list, a first overview of possible and important themes for the joint development process was made. It was evident from the list and the frequent mentioning that various aspects of logistics was a key area, but a number of aspects of marketing weighed heavily too. Some of the other topics were contract law, accounting (calculating investments), production economy, fashion and design as well as recruitment and training issues. The meeting ended by a joint agreement that the main issue for next and possible some coming meetings would be logistics. The participants also agreed that until next time they would put down their mission statement on paper along with a description of strengths and weaknesses in general and specifically in relation to the presented challenge. Furthermore, they got some material on these topics to read. The empty leaflet started to become filled.

Logistics and Kateha

The second meeting started with a visit at the carpet importer, Kateha. The owner and CEO of this very small firm (1-2 persons) presented her business and, most of all, the logistics problems related to it. Among such aspects was the balancing between service level, availability of the products when the customer wants them, and costs of storing. Several of these problems were recognised by most of the other present firms, which was a good start. It is otherwise a general tendency to consider one's own business as "very special". A neighbouring furniture store renowned for its history of avant-garde design was visited and along with that followed the story of the firm by its CEO. That had a lot to do with design and marketing. This was a very stimulating activity. It

did put the minds in motion on all participants. The Program Manager and the Field Coach realised that this visit should not be forgotten.

Next stop was a conference centre where the core of the activities was a review of all firms business ideas typed and better distilled (according to instructions) since the first meeting as well as a review on the topics in need for improvement. The review gave some indications for future priorities of topics to deal with. The participating firms were promised individual comments on their mission statements later. Before the dinner a very significant activity took place. The Field Coach had prepared a “getting to know one another” activity. All participants were asked to utilise the necessary tools (provided) for an artistic piece of art. About two hours of artistic painting took place and the assignment was to capture “what’s on your mind right now”. The completed pieces of art were placed in an exhibition room. After dinner each artist should present and explain his/her efforts. This was a nice activity and it turned later out to have made a strong contribution to form a group of these individuals.

In order to introduce logistics the Program Manager was complemented by an invited assistant professor in logistics. He described some of the core elements in logistics, a historical overview of the development in the field and current trends in that area. This was accompanied by a classification of levels of development. A general discussion about the relevance of the issues covered was also part of the exercise. The Program Manager and the Field Coach challenged the participants by asking them about their levels of operation. The ideas behind vendor managed inventories, VMI⁶, (e.g. Simchi-Levi et al, 2000) which was presented as the “top of the line” received special attraction and interest. In order to make progress along such lines it was evident that a company need to trace its present behaviour and map the processes it already had. To move one step in such a direction and to deepen the reflection part, all participants agreed to go back home and make a flow chart describing their inward, internal as well as the outward logistics of their firm. This along with some articles with supportive instructions and explanations was the agreed on preparations for the next meeting. It was also clear that next meeting would continue to focus on logistics.

To support the fulfilment of this assignment a set of material and instructions were sent out. This did not, however, suffice. Some of the participants made contact and explained their difficulties in fulfilling the assignment. As a result the coach paid field visits to them all and supported the construction of the flow chart. But this meant that they all had been working with three

⁶ VMI means that a supplier takes responsibility for the levels of stock and refill activities etc at their customer. The only important thing is that the supplier has access to information about present status and requested items ready for sale at any time. It is one of the most advanced methods and it demands that the two or more parties are on line communication wise.

assignments so far. The mission statement and the S-W-O-T- analysis related to the Norrgavel challenge had already been done. In due time they all got individual feedback on these documents as well as support to improve them. Now the third assignment was at stake.

The second logistics meeting with Torsten Nilsson Snickeri as the host

The host of this meeting was a company with 10 employees and with rather old machinery equipment as well as a limited use of ICT. Last time it had been evident that Internal logistics could be improved with the help of ICT and, of course, equipment suitable for increased flexibility. But the second-generation owners of Torsten Nilsson Snickeri had not been too impressed. “*We can’t see any reason for investing in a CNC-machine⁷, nor do we see any reason for acquiring any MPS- system⁸. We know what we already have and how it works. Changing that will do no good*”, they had expressed by then. Now it turned out that they were actually planning to invest in a CNC-machine and those they since last meeting had made contact to discuss the matter with one of the other firms in the group that already had such equipment. But they saw no reason to invest in an MPS-system.

A guest from a producer of MPS-systems targeting SMEs was invited to show how the system works and what possibilities such a system might bring to the actors in the Norrgavel network. During and after the presentation the participants were challenged with questions such as “*in what ways do you think that a function such and such could have an impact in your case?*” The degree of openness for possible influences varied considerably.

At this meeting the participants also presented the flow charts they had prepared, covering activities and measures of the time each activity takes, the coach-supported assignment, produced since last meeting. That led among other things to a discussion on similarities and differences in terms of logistics problems in each of the participating companies. The intention was to, thereby, give room for reflection and some generalized learning. It turned out that all companies, even though they were not in the same industry, had similar problems and all of them found the exercise very rewarding and relevant.

The evening was spent at a very special nearby firm. In the Brösarp village there is a very well known entrepreneur who is active in the antiques business, more

⁷ A CNC-machine is like a robot. it could be programmed to carry out several operations in a sequence and is meant to rationalise the production.

⁸ An MPS-system is a software that electronically provide information that enable firms to better coordinate and time their production activities.

precisely buying and selling old furniture. He described his business, the logics of it and the charm and beauty of timeless furniture. It was right in tune and created some insights about Norrgavels furniture of today and how it might be considered in a hundred years time.

The second day meant, to begin with, continued mapping of material flows and discussions about the pictures that arose. In the ending part of the meeting Norrgavel had a proposition to make in line with a VMI-concept. This was discussed in groups of firms, in general and with specific focus on the consequences for the participating firms. The assignment for next time became to further develop this concept and to decide on needed improvements of routines as well as knowledge and equipment to match it. Furthermore an assignment to “put money on the flows” was agreed on. Much had been said about possible savings, but how much were they really talking about and what would it take to complete such intentions? Based on this coming exercise it should be possible to know what the different parts of the logistics flow cost e.g. for storing raw material or ready-made products as well as product under operation. Furthermore, to know the costs of transportation and – as a result of all this - in more systematic ways discuss alternatives to the present procedures. Texts on possible ways of doing things different in logistics were sent out for reading and reflection.

The last meeting focussing primarily on logistics – The Lammbults Snickeri and JIBS-meeting

This time the meeting started at a firm similar to Torsten Nilsson, but in this case it was a technologically much more advanced firm. It had a CNC-machine since some years and it had a quite advanced MPS-system. Furthermore, the CEO was a trained mechanical engineer. The company made a nice contrast to the previous one and gave a lot of room for reflections. The two firms were very similar and very different. The Program Manager and the Field Coach were both very active to make the discussion focus on all the similarities and the differences and also to try and trace the effects in various dimensions of all these differences. After the company visit, Jönköping International Business School took over as host.

During the time that passed between the two meetings it had turned out to be difficult for the participants to really be able to “put money on the flows”, even though they had some written material to support them. This had become evident from reports from the participants during the meantime since last meeting. The assignment had to be postponed. In order to make them all better prepared until next time and to be able to provide a hands on experience from the involved firms, a student had helped one of the firms, Stol och Fätölj, to carry out a production analysis and CNC simulation (covering different

alternative ways of carrying out specific processes) of one product. This was used as a demonstration and as a possible role model. The study was presented to the group and discussed intensively. Still, the exercise back home to really carry out such an analysis was never really fulfilled.

To strengthen, and make explicit, the economic dimension of logistics as well as of other improvements an associate professor in finance was invited for two hours to teach on the subject. Return on investments from logistics demonstrated by a model, the DuPont-analysis⁹, was a way to further the discussion on possible ways to improve logistics. It is a robust way to illustrate what different courses of action will do to the return on investment. Here it was also possible to play around with other changes such as increased sales and the ROI consequences of that. A handout covering and explaining the DuPont model was distributed.

Outside the activities of this project the normal business went on. Since last time, the challenge by Norrgavel had matured into a suggested formalised agreement in line with VMI but also some other commitments for each party. The variables involved in the agreement which meant to have impact on each party's ROI were immediately confronted by the DuPont matrix as a preliminary test of consequences and critical numbers. Based on this it was decided that the assignment for next meeting would be to carry out a DuPont analysis with accurate numbers from each involved firm. Instructions on how to do that as well as some readings about the method were asked for.

The CEO of Norrgavel was also invited to show some of the other developments at the locomotive firm. After all, it had been almost a year since the very first meeting. The company was ready to invest in software that could connect all the suppliers to Norrgavel more tightly. They could get all the news from their customer, a tight follow up on sales and even to by a web-based interface get that "bell" in their production site when one of their products has been sold. This was received very positively and was presented as part of the bargain (the agreement that Norrgavel had prepared).

Next morning the group returned to an additional aspect of the logistics issue. They had not yet covered much of the internal logistics and organisational consequences of going more flexible and applying the VMI- concept. A video describing the idea behind and consequences of process organising production activities was shown. It gave room for reflection. The Program Manager asked, "*could you all describe how you have organised your production?*" A discussion on this topic emerged. The two owners of Torsten Nilsson came into focus. Since

⁹ DuPont analysis is a way to connect all financial data of the firm into one diagram. When one variable, such as costs for inventories is changed the effects on the change in the company's return on investment (profitability related to the money spent) can immediately be estimated.

the visit there they had already invested in a CNC-machine and had it delivered. A natural question in relation to internal logistics was the following: “*which considerations did you make when you put this new equipment into your production?*”. The answer came promptly: “*There was only one place possible!*” Interesting, the same question was promptly placed to Lammhults Snickeri: “*we analysed the flows of materials and decide on an optimal position for the machine. This meant that we had to move at least three other machines to a new position*”. Reflection: “*what do we know about optimising the materials flows in your firms?*” This reflection turned into a decision to take a closer look at the internal organisational aspects next time.

A PhD Candidate specialising in brands was invited to give a talk about branding, mostly in connection to business-to-business marketing. This gave rise to many ideas arise among the participants. Especially the branding of the joint locomotive, Norrgavel, came into focus, but also issues like “*Torsten Nilsson inside*” to attach the Norrgavel furniture!? Further, possibilities to make the Växbo brand as well as other brands more visible in the stores. However, from the Norrgavel representatives it was made clear that all these measures were only interesting if they contribute positively to their own brand. We hereby had a nice demonstration of a general market channel conflict. Again there was a possibility for generalised learning and the Program Manager tried to make that point. A follow-up and continuation of the marketing and brand theme was asked for and promised. Before the next meeting, all participants should thus produce a DuPont scheme with consequences of different changes for their firm attached to it. Furthermore, they should start thinking about the ways in which they build their brands¹⁰. A reading assignment was distributed.

Internal materials flow and process organisation - The Zlamp hosted meeting

The presentation of the Zlamp company made it clear that the most important aspect of its production is to create a good job climate for the personnel. Since the firm cannot afford to pay high salaries a good climate is their way of competing for skilled and dedicated personnel. When Zlamp was founded it was important to have a design of their own and to build environmentally friendly lamps, something that is as important today as it was then. The host brought everyone one a tour of the factory to see the manufacturing of lamps and the equipment for this, machines that in several cases have been modified by Lars, the founder and CEO, to be suitable for lamp manufacturing. The tour was concluded by a visit at the factory shop where the participants got to see all the different Zlamp models.

¹⁰ The theoretical presentation has emphasised an integrated marketing approach to branding which means that basically all activities in a firm contributes to its branding (Nilson, 1998).

After this the program continued at the conference centre and farm Ängavallen to continue the program. After lunch a management consultant, Kurt Johansson had been invited to speak about flow organisation and to play a production simulation game. Kurt has experience from helping among others Tetra Pak suppliers to implement a flow organisation in their production. According to Kurt the functional organisation has existed for a long time and has its responsibilities tied to functions, whereas the flow oriented organisation has the responsibilities tied to a process. He also emphasized the need to develop the personnel when moving into a process-oriented¹¹ logic. This made a nice connection to the personnel focus of Zlamp.

Thereafter followed the simulation. Kurt had prepared a number of workstations where each person took place. One of the participants was made foreman and the first simulation, functional organisation, started. Quite soon the work got stuck. A number of participants had nothing to produce, whereas others had work piled up. The participants quite soon discovered that they had bottlenecks. But how to solve them? It was soon time to rearrange the game and to introduce the flow-oriented organisation and get rid of the foreman.

Before the start of the second simulation there was a discussion so that the participants could agree upon where the bottlenecks were. Some thought it was were the jobs piled up but the bottleneck was the operations take the longest time. Quite soon the group agreed that a top priority was to make sure that there were jobs at the bottleneck station all the time. This time the game went on very smoothly and it seemed like the participants all got the message on how to design an effective flow in the production and to take responsibilities for the production. After the game, several people said that this was the funniest part that we had had in the network so far. In the discussion afterwards a lot of attention was given to competencies needed in the organisation to be able to implement this kind of organisation. It pointed to the need for broader work descriptions as well as empowering the employee. This issue and the possibilities of empowering the personnel back home were raised for reflection. There was also a handout that was given to the participant explaining functional and flow oriented ways of organising.

During the second day we first had a presentation about trade fairs. This was an activity planned to meet the demands for some more marketing knowledge and training. All of the firms had recently been active participants at a trade fair and were very motivated to reflect on this and to learn the more conceptual thinking around such events. PhD candidate Johan Larsson presented trade fairs, how they should be planned, performed and evaluated and during the whole session there was a lively discussion about how different things were

¹¹ Process orientation means that the specific processes are put in focus.

carried out by the participants themselves and what could be new and interesting for them. A handout with small books from Fairlink together with lecture notes were given to all participants.

The second and last item on the agenda for the second day was a follow up of the DuPont model. The Field Coach had prepared a handout and a task was assigned to the participants so that they should become even more acquainted with the model. Still, they seemed to think that this was somewhat too complex to deal with.

More on marketing and business mission issues- The Växbo Lin meeting

Some years ago the founder and CEO, Rolf Åkerlund got a question from a childhood friend if he would like to take on an old water-driven mill in Trolldalen, Växbo. After thinking about it for some weeks he took the decision to buy and restore the mill and the surrounding buildings. Other buildings restored were available but in need for restoring linked to the historical production of flax and the preparation of the flax before it could be spanned.

One dream that Rolf had was to, yet again, establish Hälsingland as a flax county and to help making the flax fields once again blossom in the region. The question was where to start. It would be too risky to start growing flax right away and too costly to start to hackle flax. Then the idea came up to start a spinning factory using Belgian flax already hackled. The big challenge was then to find spinning machines. Thanks to the use of Rolfs personal network machines were found and bought from France. With the spinning machines in place in Växbo the manufacturing of high quality flax yarn that could be used for e.g. tablecloths was established. Some years later also power looms were bought in order to start weaving. Today Växbo Lin produces high quality flax yarn and original design clothes weaved in Växbo.

After this followed a tour of the factory and the group got to see how flax was spun and woven into beautiful fabric. The machinery used was old and relied on punch cards. According to Rolf it took about three years to fully master the machines and the art of weaving. The factory tour, taken by 40 000 tourists a year, was concluded with a visit to the factory shop where we could see the manufactured clothes displayed and ready for sale. The rest of the morning activities consisted of a tour of Trolldalen where the participants visited the restored mill and learned about old time flax production.

The first joint discussion was connected to the specific visit at this firm that we had done. The participants were asked to act as board members of Växbo Lin and to give them advice on how to develop their business concept. The most

important thing to achieve was to increase sales volume, as there was a 60-70% free capacity in the machinery at Våxbo Lin. The free capacity together with a need to increase sales by about two million kronor seemed to be the big challenge.

Some important facts were the following. The guides were previously not employed by Våxbo Lin but by the local folk museum. This year Våxbo Lin has hired professional guides as a means to draw more attention to the factory store. Even though the factory was visited by 40 000 it was still only half of the tourists visiting Trolldalen. Anki Bolin from Våxbo Lin believed that *“we will make a lot of money by having the guides employed by us and to make an increasing share of the tourists visit our factory”*. All participants thought that it was a step in the right direction. It was also important to make the customers that come shopping to buy more per person. Today the average customer shops for 70 kronor, when the prices on a number of tablecloths is 1 000-2 000 kronor.

All participants agreed that it is not only the high quality of the products that create market successes. In this case the story behind Våxbo Lin should be an important part of its brand. Is the fascinating story really exploited? A suggestion was to develop and explore the story further. This could be educating the shop personnel e.g. at Norrgavels shops, that will sell their products. *“Invite them to Trolldalen for a weekend to learn the story”*, was the suggestion. The further exploration of the story could also be done by a strengthened by a small leaflet telling the story to the customer. The theoretical lesson on branding has taught us that it is important to activate all senses.

The total pattern of ideas that was developed were summarised by the Field Coach who also put some figures to it according to the table below. The table illustrates how Våxbo Lin can go from a sales volume of 5 million kronor to the desired level of 7 million kronor or higher, and the cost associated with such an investment.

Table 4 Illustration of how a sales increased might be achieved.

| Sales place | Today | Future objective | Cost to arrive at objective |
|------------------|-------|------------------|-----------------------------|
| Våxbo Lin | 2,00 | 3,00 (4,00) | 0,20 |
| 10 biggest shops | 1,00 | 2,00 | 0,30 |
| Other shops | 1,50 | 1,50 | - |
| Public interiors | 0,25 | 1,00 (2,00) | 0,10 |
| Clothes | 0,25 | 0,25 | - |
| Sum | 5,00 | 7,00 (-9,00) | 0,60 |

An alternative or additional possibility to the ones listed above was to find another sales channel such as the DUKA-stores. This kind of alternative is particularly interesting if a majority of the customers buy products as presents. But what does Växbo Lin know about their customers. What is it that the customers really buy, a present, a traditional product, a souvenir, or what? This suggestion led to a discussion of what products and brands could be distributed and marketed via which market channels. It was a generalised discussion that took off from this concrete experience based discussion.

To summarise what Växbo Lin could do increase profitability, according to the participants was to:

1. Better, more systematically learn about who's the customer. Who buys hat where? The sales people have a rough understanding but it is not robust enough to make expensive market investments form today's knowledge.
2. Find out the purpose of the sale (i.e. birthday, own use etc.)
3. Find out contribution to cover fixed costs per sales place
4. Find out contribution to cover fixed costs per product

This was a very hands-on activity and already the first day after the meeting Rolf, the founder and CEO, and Anki met again to complete the activity plans.

This part of the session ended with a more generalised discussion initiated by the Program Manager. He felt that it was important to step-by-step increase that ingredient of the program. After all, the idea was to create an ability to learn also in the future i.e. to develop the strategic and or absorptive capability (Teece et al, 1997). The first question to all participants was the following: *"During our visit here we have seen the production, the sales and the attraction as such. We have also discussed the acute problems of Växbo Lin including its sales and branding issues. I wonder whether you see any more or less identical problems that you too have in your firms. Please, think of what you have seen and how that might relate to your own situation"*. This was followed by silence, but gradually it started to grow. We had heard that there were some sections in the production where the capacity was limited and that it takes three years to educate someone for some of the tasks. This was very similar to problems dealt with last time during the production game. How could that be changed and what would be the consequences in terms of competence development and empowerment of the personnel in the specific case? An interesting incident was that one company that last time had been convinced that it needed to train more people in certain operations to get rid of a narrow section, now denied that they had one. Challenged of this they declared, *"no, we don't have that because that's handled now"*. Several other common issues emerged, e.g. the decision by Växbo Lin to outsource some of the hacking operations, which equals Stol och Fåtöljs

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outsourcing of the drying process. What had previously seemed exotic, appeared to be a business like most other businesses.

After this session an old "Hälsingegård" built from flax money at the peak of the county's time as flax producer was visited. It was interesting to see this old wooden palace built up only to show the surroundings the wealth that the owner had.

For the evening session The Field Coach had prepared an assignment, to again train the participants in the DuPont model, based on figures from Torsten Nilsson Snickeri, in which the objectives were the following:

1. What will happen with the rate of return during 2002 given the facts we have on the development until May this same year and given the fact that most agreements with suppliers and customers are fixed?
2. At what volume lies breakeven for 2002?
3. What measures can be done to arrive at a 5% rate of return?

It was clear that there would be a minus for 2002 and that a substantial sales increase was necessary to arrive at breakeven. The participants were divided into two groups and they arrived at basically the same results. The discussion that followed was really rewarding, probably for two reasons 1) the assignment was well prepared and 2) it involved one of the participating firms making the will to help bigger. The discussion was lively and the participants together came up with the following list, with nine suggestions to answer the third question.

1. Increase sales volume with 10, 20, or preferably 25%.
2. Reduce personnel costs with the equivalent of tow lay-offs.
3. Re-negotiate prices, both in- and out.
4. Find out where the money is made, from certain customers or certain products. This should be done in order to make the best priorities on new sales.
5. Increase the usage of the CNC-machine. This is related to point 2.
6. Consider the product mix.
7. Increase marketing efforts.
8. Sell the estate to the owners and rent it back.
9. Reduce stock with 5-25%.

It was particularly interesting to hear the comments to all the suggestions. It was evident that a combination of measures was needed. At first the representatives of Torsten Nilsson Snickeri AB were reluctant to agree upon any of the suggestions and said that they already were good at a number of things but towards the end the discussion they shifted more to a willingness to try different options. To arrive at that the Field Coach somewhat irritated said

“Hey you can not have done everything!” to which they had to agree. The investment in the CNC machine had not resulted in any savings or any new sales because they had not bothered to apply the technology to enough operations. They had not taken any marketing measures to increase sales, nor had they considered measures to lowering stocks. But the measure of greatest interest seemed to be no. 8. This should get the highest priority.

The second day was devoted to marketing. The Program Manager started by mapping up different activities and to show the participants that if a measure is taken, i.e. to reduce stock, that will affect a number of activities in the company and might for example lead to need for education of personnel. He also gave an introduction to marketing and what kind of marketing that is right for different situations depending on a) few or many customers and b) business to consumer or business to business. Johan Larsson followed up with a presentation on segmentation and positioning followed by a discussion on how this could be applied to the participating firms. This exercise was a way to put many of the previous activities, especially those on branding and trade-fairs in perspective.

The Program Manager then wrapped up the meeting and gave the participants some homework to be prepared before the next gathering, at Stol och Fåtölj i Ruda. The assignment was to prepare to a marketing activity plan for the coming six months and with an outlook into the future thereafter. Some documents and readings to facilitate this exercise were distributed.

Marketing, business creation and leadership - The Stol och Fåtölj meeting

At the meeting at Stol och Fåtölj in June, the CEO Styrbjörn Ström, presented the company and its history. After that followed a tour in the factory to see the production as well as a number of products manufactured by Stol och Fåtölj. One critical feature for Stol och Fåtölj to grow and achieve profitability was to increase sales. After lunch there was a long discussion on how that could be done. Two main alternatives were listed. The first one was to increase sales to customers and to further develop as a subcontractor to customers like Norrgavel. The second alternative was to start developing, producing and marketing furniture of their own.

When discussing the first alternative the participants were asked how they got new customers. One of the participants used an agent and others used trade fairs to generate new contacts and sales. Word of mouth is also a powerful source of new customers, but of course it requires that your firm is well known in the market.

The second alternative was basically one of creating a sustainable totally new business including being able to brand a product in spite of scarce resources. It would among other things require someone to design the furniture. The idea to handle the problem with scarce resources and the need for a designed product was to organise a design contest, with participants from the design universities in Sweden. Such a contest would clearly catch interest and result in a lot of free PR.

Stol och Fåtölj was going to move to another factory and the participants went on a visit to that location and to the new “partner” of Stol och Fåtölj called Trälogik. The joint future plans included among other things the joint purchase of a CNC-machine. It was also clear that the changed behaviour, the outsourced drying process, that had come up as an idea when the CEO of Stol och Fåtölj made his homework by mapping the logistics flow had been implemented.

The rest of the day was spent on the homework since last time. Barbara from Kateha had prepared well and was used as a role model. Barbara presented which products and which sales channels that were the best for her and it also was a discussion about the usefulness to make such overviews. Unfortunately, some of the participants had not done equally as well on this exercise. But its usefulness was clearly demonstrated.

Next day started with a presentation, made by Johan Larsson about quality and basic values needed to develop firms. The discussion about quality and basic values (SIQs 13 basic values) was interesting and it seemed like the participants could agree upon them. The SIQ basic values (Ljungberg & Larsson, 2001) are: 1. Customer orientation, 2. Committed leadership, 3. Everyone’s participation, 4. Competence development, 5. Long-range planning, 6. Public responsibility, 7. Process orientation, 8. Preventive actions, 9. Continuous improvements, 10. Learning from others, 11. Quicker reactions, 12. Fact based decisions, 13. Cooperation.

This was a way to summarise many of the aspects that need to be addressed in order to become a high quality operation. It included the need to involve all of the personnel. After a short discussion the video *Medarbetarsamtalet* (co-worker talks) was shown followed by a discussion about advantages with this kind of activity. Some of the participants already used this method whereas others were a bit reluctant to start. The Program Manager challenged them all by asking, “*don’t you have any problems with your personnel at all? Do you know everything you need to know about them even though you never have an individual discussion like the ones in the video?*” It turned out that one of the firms was experiencing a very serious problem where two employees were in a serious conflict. The two conflicting individuals had not spoken to another for two

months and could definitely not make up the same team. The managers had not yet dealt with the situation. The natural question was whether a co-worker talk should not be a possible way to start uncovering this complex situation.

The last item on the agenda for this day was leadership. The Program Manager held a lecture and distributed a material about leadership and different kinds of leaders. It is through leadership the strategic development of firms should materialise and this was a possibility to recognise one's own leadership style and to reflect on how it affects the strategic development of the firm. Leadership could to a great extent be considered signalling. He turned to the managers of the firm with the conflicting employees and challenged them. *"You have for months signalled to your staff that it in your company it is all-right not to greet one another and to refuse being a part of certain teams. What about the long term effects of that?"* That was said in a friendly way and was made a generalised issue strongly founded in leadership theories and, thereby, a way to lift the discussion to a generalised learning¹². That was the end of the general activities with homework and other assignments. Still, the finale remained.

Making the learning journey explicit – The meeting at the Norrgavel store in Copenhagen

The first day of this meeting was held in October four months after the previous session and one and a half year since the development process took off. It started by a presentation of the present state of activities by the CEO of Norrgavel. This was the third time she was actively involved in the program. As always, she took her time to stay on also after she had finished her talk. It became a summary of what had happened in Norrgavel and in the supplier relations since the process started. Among other things the new computerised communication, the stronger integration och the activities between all involved etc. She also described future moves by Norrgavel.

After that the designer and founder of the firm, Nirvan Richter, talked and described his role as a designer and what he wanted to achieve. The participants were very interested and to almost all of them this was the first time they had met him. One of the characteristics of Norrgavel is that it only utilises one designer, Nirvan. This is to facilitate a coherent product range strategy and is thought of as a strength.

After that the Program Manager, the Field Coach and Johan Larsson made a thorough evaluation of the program. As an introduction the Program Manager demonstrated, in a similar way as during the Växbo Lin meeting, how the

¹² The lecture was partly based on Schein (1980) Organisational Psychology.

Pedagogical Innovativeness in Supply Net Development

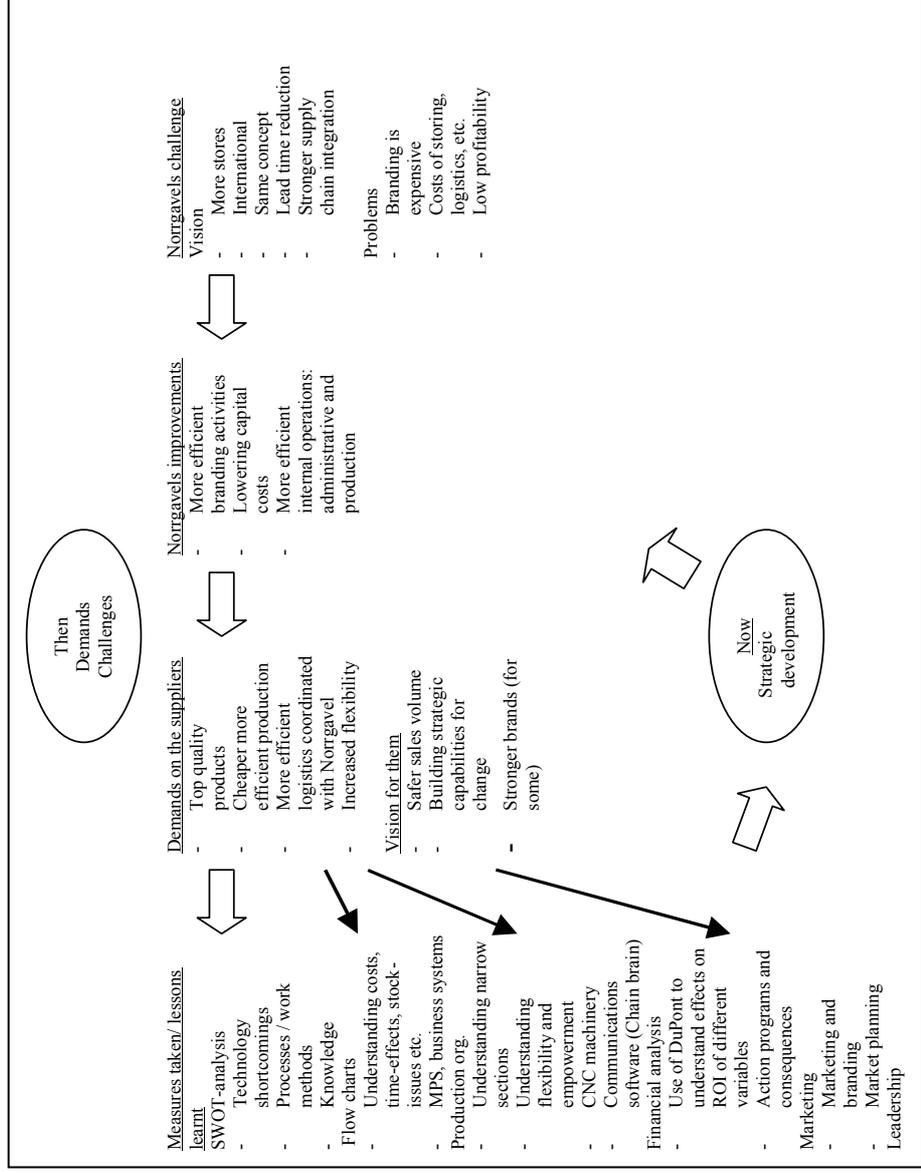
various aspects that had been dealt with were connected and contributed to strategic development. It is reproduced in Figure 2.

The group had from the start been confronted with a challenge and had to consider their needs for development to face this challenge. In this process the group basically started by digging into logistics as a way to improve. The focus had later on changed into other but related areas as indicated in the figure. It should be emphasised that this figure was arrived at in a dialogue with the participants. It became a way to evaluate their abilities to generalise and see connections between different aspects of business activities.

In the evaluation we wanted to catch several aspects. How the program had influenced the participants' thinking about business and possible changes in their mental maps. What had they learnt? But it was also important to get their genuine picture of what had happened inside their firms as well as within the relationship to Norrgavel and the supply net of which they all are part. Of course, the connection between the development process and the changes and developments of their firms needed to be addressed. We will return to these issues in short.

The second day was devoted to future plans. Given the situation as it was at that time what were their plans for the coming six months, for the coming year and beyond that? This is basically the exercise that had not been performed that well in June. This gave them all a chance to recover. And as a grand finale, they all visited the newly opened Norrgavel store in Copenhagen! It was actually there and the suppliers were still around, just like the vision at the start of the project!

Figure 2 A
systems view of
the venture –
how every issue
is connected and
contribute to
strategic
development of
the entire supply
net.



Back to the starting point – what have we learnt about developing supply nets among SMEs?

In the introduction we positioned this case as one of supply net development. We also defined the context as several SMEs with limited resources, limited time on their hands, as well as personnel with limited experiences from studies and with a low level of academic training. Still, they were embedded in a context where there was a request for strategic development that called for a certain amount of such understanding. This request was materialised by a challenge from by their joint customer, Norrgavel, which acted as a locomotive in this case. From the description of the development process it seems evident that this has been a process rich in content and with strong involvement by the participating firms and individuals. But what could be said about more specific results in terms of:

1. Specific results in supply net integration?
2. Specific results in terms of learning?

The latter aspect needs to be qualified to some extent. It was an important aim not only to support the people involved in solving specific hands-on problems, but – in addition – to support the generation of generalised knowledge. The reasons for this latter ambition was that it should increase their absorptive capacity and provide an ability to learn in such a way that coming problems should be easier to solve (cf. strategic capability). Being equipped with theories and a richer cognitive framework supports people's process of understanding as this provides them with algorithms, patterns of thinking, that should be supportive in future challenges.

Specific results in supply net integration

We could not argue that everything that has happened in and among the involved firms during this process is a result of the KrAft-project. But we definitively think it has contributed, if nothing else to speed up the processes.

In the case description we could read that there is today a VMI- arrangement in place supported by software, Chain-Brain, that gives all suppliers immediate information about the sales development in Norrgavel stores. Furthermore, it provides them with a lot of other information to make them “come closer” to the customer market of Norrgavel, including insights into the branding activities performed by their joint customer. The potential improvements in logistics (more timely, shorter lead-times, smaller stocks, better priorities at each production site, etc.) and in production planning, made possible by this arrangement, are supported by a written agreement between the parties. The

understanding of the conceptual ideas behind this and the demonstrated – potential – economic effects of such a changed pattern of operations learnt within the KrAft-project is very supportive. There are already some realised improvements and there is awareness of future possible rationalisation effects.

In addition to this some of the suppliers have changed the relationships with their own suppliers. Stol och Fåtölj has outsourced the drying process, moved to new facilities to via a strategic alliance to get access to a CNC-machine and also to get better flexibility by being able to share some tasks and people with the partner. They have also analysed their situation and clarified the conditions for possible future choices of their business mission. Växbo Lin has improved their relationship with the Norrgavel stores by teaching the Norrgavel sales people the story of Växbo. However, this does not yet take place on site at Växbo. They have also sharply addressed not only internal logistics problems in their production but also in sales channels. Kathea has created a system including a purchased of soft-ware to better trace where carpets sell the most. Hereby, it will be able to fine-tune its service level in combination with optimal costs of storing and transporting. Torsten Nilsson has bought a CNC-machine and started to utilise it much more professionally, not least because of the support they have got from the more technically skilled and experienced CEO of Lammhults Snickeri. Since the meeting at Växbo Lin where they were criticised for not having taken full advantage of the machine, they have improved a lot. They have also reconsidered the internal material flows and learned how to estimate future profits and losses and the possible effects of various measures to influence otherwise determined patterns (the DuPont-analysis). Lammhults Snickeri that was technically the most advanced firm when it came to logistics, CNC-machines and MPS-systems, have fine-tuned a lot of activities. They utilise the potential of the CNC and the MPS to an even greater extent than before in order to optimise production priorities which has now become possible thanks to the application of the VMI-concept. Furthermore, they have been able to replace their accountant by better utilising the software and by outsourcing some of the activities previously performed by the accountant. This has meant important savings. They have also developed a new product, a pellet for energy production made from waste products. The investment required for this had a payoff time of about one year. Zlamp has reconsidered several aspects in logistics and marketing conceptually, and so forth. It should also be emphasised that Norrgavel had made their share. An improved store has opened in Gothenburg and a totally new one in Copenhagen. Further more, a very expensive advertisement campaign has been carried out and all stores have been rebuilt. Still, they do have some profitability problems due to a generally negative business cycle. This effort and economic problems had even forced the company to lay-off their purchasing and logistics manager. Interestingly Torsten Nilsson who had not done their marketing homework immediately hired him.

We can thus point at quite a lot of changes that easily could be considered strategic for all companies involved. But again, all this is not due to the KrAft-project alone. From our evaluation it is clear that the process gave good support to many of these developments. All of the participants graded the project as good or very good. The following quotations also illustrate some results of the project: *“It has been positive to work in a close relationship and solve different problems”* and *“We now have a greater understanding of each others situations”*.

Specific results in terms of learning

There are different levels of learning. We could distinguish between learning to the level of orientation “having heard of” but still being a novice, and deep insight like an expert “being able to perform and understanding all consequences of actions in every context” (Göranzon, 2001). In this development project our follow-up indicates that we have most of all achieved a level that is closer to the novice than to the expert. But thanks to the method of experiential learning starting from needs identified by the individuals in the firms and being applied to their contexts it became more than a general orientation. We are hereby thinking of aspects and activities such as the mapping of logistics flows, the application of the DuPont analysis to their situation, the internal materials flows demonstrated to each one at every company and discussed and questions, the creation of market planning, activity plans etc. This has created an understanding that goes beyond merely orientation. We think that one reason for this rather positive outcome in this case is the long duration of the program. It was possible to be quite sensitive to the upcoming demands and desires in the group and it gave the Program Manager time enough to forge a suitable activity including readings and speakers as well as pedagogical methods during gatherings. We are referring among other things to the initial painting exercise, the demonstration of the MPS-system in Brösarp, the production organisation game at Atelier in Anderslöv (Zlamp), the video on leadership and co-worker talks at Stol och Fåtölj, the adapted DuPont exercises at Anderslöv and at Växbo, the visits to nearby attractions like the avant-garde design firm at Kateha and Warnaco, the antiques dealer in Brösarp, the visit to the “Hälsingegård” built from flax money at Växbo, the visit to the ecological conference centre Ängavallen, etc.

However, we think, and the evaluations support this, that we never reached very far when it comes to generalised learning. The Program Manager and the Field Coach tried, ever more intensively during the joint gatherings the longer the process went on, and it made some progress. We are here referring to such occasions as when the two owners and managers of Torsten Nilsson were challenged by their thinking behind internal production flows in which they were confronted with a different approach from Lammhults Snickeri which then made the move to a generalised learning about organising production

natural. Further, their limited use of the CNC-machine and other possible adjustments to avoid this becoming only an extra cost, that gave all an eye-opener to the use of financial analysis and the use of the DuPont scheme. Also issues rose in relation to branding problems and the self-evident response from Norrgavel not to allow everyone to become highly visible in their stores. This revealed market channel problems of a general magnitude. Also the managers' reluctance to deal with a problem among its personnel, which was easily brought to theories of managerial behaviour.

Still, we think that this development process and the people who experienced it, in general, have a long way to become "experts" and to be able to easily deal with coming problems of a similar nature. It takes a lot more reading and learning of general knowledge in combination with training (to do, how to). This is verified in our evaluation where most aspects learnt were referred to on an "orientation level" or "knowing how" but rarely listed feeling almost like "an expert". Had the program Manager and the Field Coach been able to make all of them willing to read more and to follow up, discuss and relate the theoretical body of knowledge more intensively, they should have come further. But that is maybe to expect too much. The basic question, whether it is possible to forge supply net development among SMEs in cases when there is a need for conceptual and theoretical understanding, has received a positive answer. It seems also to be possible to support such processes in line with the KrAft-design and to provide some learning of generalised theories also among this kind of firms. But, it does not go without an effort among all involved. In the Norrgavel case the success was due to several prerequisites such as the existence of a locomotive firm with dedicated management (a clear and challenging vision), the strong involvement by Norrgavel (two participants and the Field Coach as one of the owners¹), the long duration between each gathering the helped tailor make the sessions and exercises plus the regular on-going business activities in line with the desired development. Further, the composition of the group of firms and individuals was crucial. Very early on an excellent social atmosphere was achieved among the participants, maybe supported by the organisers. It also helped that the group was managed by a well-functioning group of three advisors. Not only the Program Manager and the Field Manager contributed. The contacts by phone after each gathering carried out by PhD candidate Johan Larsson made the team very well informed about the desires and questions by the group members. It also contributed to the learning as the participants had to reflect on what they had experienced and also to have their interpretations challenged. A particularly interesting observation was that these participants who had the most to learn, who had the weakest theoretical

¹ Interestingly, during the contract phase one of the participants turned to the program Manager and to PhD- candidate Johan Larsson to get a third party view of the contract suggested. They turned to JIBS experts in law for consultations. This event was the only one where it was apparent that it could be a negative thing to have a Field Coach that is not totally neutral

background, frequently reported that they had learnt rather little and only got a few new ideas. Over time this changed and they began to see and experience more. A nice illustration of this is the spontaneous declaration by one participant who said to the Program Manager: *“The first times we came together your comments and lecturing parts were way out there and had no connections with our business. Later on you have managed much better”*. This could be a correct notion but probably not. We think the great difference lies in the participant. It is unclear whether this change was primarily due to their gradually increasing understanding, their broadened and deepened frames of references, or most of all due to the enduring efforts of reminding participants about this aim. Those participants who had the best theoretical background and who already should be aware of most of the aspects studied and discussed, surprisingly reported a lot of learning, many new insights and ideas already from the beginning!

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Supplier development in SMEs - a case study¹

Johan Larsson

Abstract

This essay explores and analyses supplier development in a supply chain ranging from an OEM supplier to the system suppliers (first tier). The essay explores how Tetra Pak works with supplier development in an integrated manner involving a number of SMEs. The study is based on interviews with key actors, a survey study of involved firms, observations in form of company visits, trade fair visits and a visit to Tetra Pak supplier forum, as well as secondary data.

Keywords: Supplier development, SMEs

Introduction

Outsourcing of other functions than the core competence is a trend that is evident in industry and the amount of purchased goods in industrial production often represents 60-80% of the production value (Gadde & Håkansson, 2002). As a result of this development there has been an increased professionalism of the purchasing function (Lamming, 1993; van Weele, 2002; Gadde & Håkansson, 2002) resulting in, among other things, that supplier development activities (Hahn *et al.*, 1990; Hartley & Jones, 1997; Krause, 1999; Larsson, 2001) has received increased attention over the last, at least, five years. The research on development activities however, has focused mostly on either one single actor or on dyadic relationships (Larsson, 2001).

The research presented here focus on the development of a supply chain with Tetra Pak Carton Ambient, the part of Tetra Pak producing filling machines, (hereafter called Tetra Pak), as the end customer and locomotive (e.g. Lorenzoni & Ornati, 1988) in the chain, and Andrénerken AB, a medium

¹ This essay is primarily based on two papers (Larsson, 2002; 2003) presented at the Ipsera conferences 2002 and 2003 in Enschede and Budapest respectively. The research has been funded by the KK-foundation and the Platform project at the Jönköping University and Jönköping International Business School.

sized firm and first tier (in this case also a system supplier) supplier to Tetra Pak. Tetra Paks suppliers are investigated as chains of actors performing more or less synchronised activities. This chain is particularly interesting for a number of reasons. Tetra Pak has taken an interesting development initiative for their suppliers and restructured their supply base and supply chains (Hulten, 1999; Persson, 2001). Tetra Pak has also spent a lot of resources in this process and funded a lot of the development activities (Hulten, 1999; Westling, 2001). It is also interesting since the chain to a high extent consists of SMEs² that don't have all necessary resources themselves (e.g. Nooteboom, 1994).

The purpose of this paper is to give a description of the development effort that Tetra Pak did undertake together with their suppliers with a dual perspective describing the efforts both from Tetra Pak and one of their system suppliers. This is done in order to get insights into problems and improvement potentials such setting.

In order to fulfil the purpose a frame of reference describing key aspects of supplier development is included.

Point of departure

A usual starting point in supplier development activities is to reduce the size of the supply base (Burt *et al*, 2002; Harrison & van Hoek, 2004). An example of a company that have reduced their supply base significantly is Rank Xerox that over a period of three years reduced their supply base from 5000 to 300 suppliers. Other firms that have had a similar development are Ford and Chrysler. The basic idea behind the reduction of the supply base is to make sure that enough time can be devoted to the remaining suppliers therefore making the first tier more visible and easy to administrate. When reducing the number of suppliers some firms are eliminated from the chain whereas others are moved down the supply chain to second or third tier. The suppliers that remain as first tier suppliers often get more responsibilities and quite often larger volumes as well. However, this new role brings on a need for development and not all firms are ready to take on such big responsibilities without external help in early phases.

Supplier, or supply chain, development is a cross-disciplinary activity that could involve all functions in a firm and focus on different capabilities, such as technical, quality, delivery and cost capabilities, and on product, process or operating systems related aspects of the business (Hahn *et al*, 1990). From previous research on supplier development we have learnt that a number of

² SMEs are in this research defined as firms with 10-249 employees following the EU definition.

prerequisites and other aspects and are especially important for this activity to be successful. Among prerequisites for supplier development to be successful are dimensions such as commitment, relationship continuity important as well as trust (Krause, 1999; Burt *et al*, 2002). Other aspects that need to be addressed and considered are communication (Lamming, 1993; Krause, 1999; Burt *et al*, 2002) and measurement of the results of the development activities (Burt *et al*, 2002).

Finally, a critical part of supplier development is competence development (Mikkelsen and Johansen, 1999) since the competence/capabilities³ of the individuals as well as for the firms must be strengthened as well as the ability to act within the supply chain.

With this kind of development follows a lot of changes in the supply chain. Ford and McDowell (1999) have developed a model to investigate what effects, and the value thereof, that different actions result in for different levels in the network. The levels used are 1) In the relationship, 2) On the relationship, 3) On the relationship portfolio, and 4) Within the network, see table 1.

Table 1 Relationship effects and nature of value to the participants

| | <i>Level 1</i> | <i>Level 2</i> | <i>Level 3</i> | <i>Level 4</i> |
|----------------------------|---------------------|---|--|---|
| <i>Level of the effect</i> | In the relationship | On the relationship | On the relationship portfolio | Within the network |
| <i>Nature of value</i> | Immediate | Value in terms of change to the state of the relationship | Value in terms of change in the total relationship portfolio | Value in terms of change in the network |

This overview represents some part of a general understanding on key aspects related to supply chain development. Let's move to the case studied to see how these and/or other aspects come into play.

³ The use of the terms competence and capabilities sometimes confuse the reader more than it clarifies and in some articles like in the seminal piece by Teece *et al* (1997) the terms are used together competences/capabilities. In this research competences are used to describe individuals and capabilities are used to describe firms.

Case description and analysis

Introduction to the case

The case study is based on interviews with key actors representing companies at various positions along the supply chain as well as a survey investigating the supply base of one of Tetra Paks⁴ system suppliers. The respondents for the interviews have been selected using the snow-ball technique (e.g. Lekvall & Wahlbin, 1993), starting with the CEO of one of Tetra Pak's system suppliers. For the analysis observations during company visits, trade fairs and the Tetra Pak supplier forum (trade fair for Tetra Pak suppliers) are also used together with secondary data in form of a book (Persson, 2001), journal articles (Hulten, 1999; Westling, 2001) and a video 'Flödesorganisation' (flow organisation) recorded by Tetra Pak at their system supplier Andrénerken.

The development described here started in 1996 when Tetra Pak invited a number of their suppliers to a closer collaboration and a supplier development project, going from low to high involvement (Gadde & Snehota, 2000). The aim for Tetra Pak was that they should reduce the number of suppliers with whom they had direct contacts and create a supply base with system suppliers, with a much broader area of responsibilities. To emphasize the importance a subsidiary, Tetra Pak Com Tec, was formed with Jan Persson as CEO. For Tetra Pak, this development was a direct consequence of a thorough analysis of their supply base. Based on that analysis the following goals, for Tetra Pak, with the supplier development project were set to (Jan Persson):

- reduce the number of suppliers
- increase capacity
- shorten lead times
- work directly with customer order driven production
- increase efficiency
- form partnership with selected suppliers

The rest of the case description and the analysis thereof are done thematically starting with supply base reduction.

⁴ The part of Tetra Pak studied in this paper is Tetra Brik Packaging Systems AB.

Supply base reduction

The first objective for Tetra Pak was to reduce the number of suppliers. After a thorough analysis Tetra Pak decided on a strategy in which the existing supply base was divided into four groups with the fourth group consisting of those suppliers that Tetra Pak chose not to continue to work with at all. For the remaining suppliers Tetra Pak has chosen a strategy to work with a) system suppliers, like for instance the automotive industry, b) assigned suppliers and c) recommended suppliers to help the system suppliers to deliver the right quality. The different categories are described below.

- a) A Tetra Pak system supplier develops complete modules or machines and is responsible for purchasing of included parts, testing, and construction support to Tetra Pak. The supplier fulfils well defined demands on organisation, purchasing and logistics. A Tetra Pak system supplier must be ISO 9000 certified and all system suppliers also must change their production organisation and adopt a flow organisation.
- b) An assigned supplier manufactures Tetra Pak specific products and forms long term co-operation agreements with Tetra Pak direct even if the assigned supplier delivers to the system supplier.
- c) A recommended supplier is focused on a certain type of production and has an efficient machine park within that area. The supplier can manufacture short production volumes with high efficiency and has a well developed system to reduce adjusting time in production.

The structure of the supplier network is the following. A system supplier is responsible for a well defined part (system) of the machine. One example is Andrénerken, a manufacturer with 50 employees that is responsible for the machines conveyor system. The system supplier, Andrénerken, uses assigned suppliers for some (critical) parts and own or recommended suppliers for the rest. This means that the system supplier has direct contact with significantly more suppliers (in some cases 100-150 suppliers) than Tetra Pak that today only has frequent contact with the system supplier (Jan Persson). In figure 1 the change is presented schematically. Assigned and recommended suppliers are called suppliers in the figure.

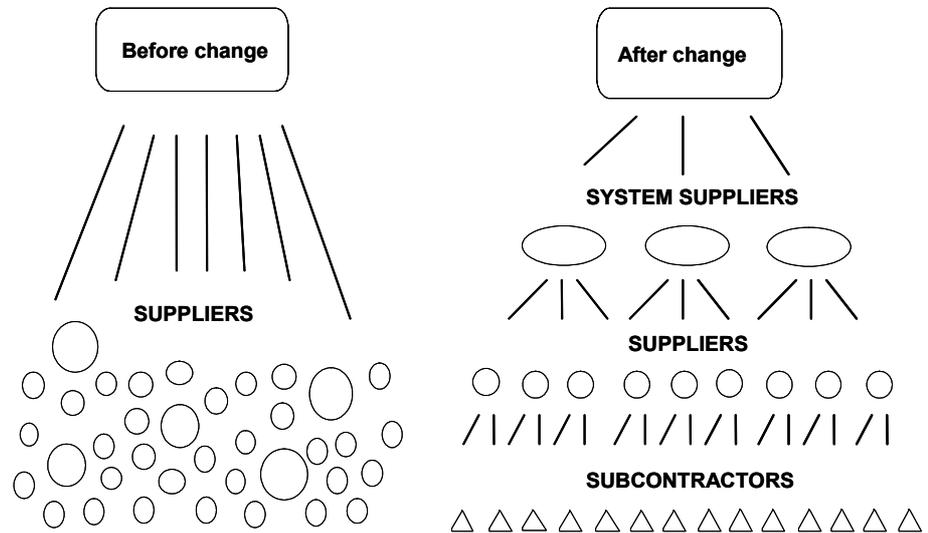


Figure 1 The changing structure of Tetra Paks supplier network

Using this structure and a strategy to go from multiple sourcing for a number of items to single- or dual sourcing Tetra Pak, in a period of three years, went from having about 3000 first tier supplies to about 500 of which 252 suppliers deliver 90% of the production value (Jan Persson). This meant that many of Tetra Paks initial suppliers remained but had a role as second tier supplier och even third tier. Others, however, were cut of from Tetra Paks supply system.

Commitment, trust and top management support

Literature stated that commitment and trust (Krause, 1999; Burt *et al.*, 2002) together with top management support (Krause and Ellram, 1997) were essential for supplier development activities to be successful

The purchasing manager at Andrénverken describes the relationship in the following way.

I would describe the relationship with Tetra Pak as very open. Examples of this is that we show them our calculations and have many contact patterns, not only involving purchasing...Cooperation is very important, but there has to be trust in the relationship."

(Christer Haraldsson)

From Tetra Pak it is stressed that there has to be an agreement upon future directions and to secure that development project is transferred in to a

development process at the end of the project. The importance of handling relationships and mutually agree upon future improvements is stressed by the purchasing manager at Tetra Pak Arne Nilsson:

”For me supplier development is about handling relationships and to agree upon how to improve certain things. That I as a buyer know my customer demands and is able to break them down and transfer them further down the supply chain.

(Arne Nilsson)

In literature it is stated that it is important that the selected suppliers commit themselves to this project. Anders Stensson, CEO and owner of one Andrénverken, described the decision process to undertake this development challenge as this:

”First we created a picture of what it would entail. Then we took a board decision to introduce the flow organisation...The reason was the market demands made upon us to have shorter lead-times, and delivery times and we also had to shorten the time from the enquiry to offer stages...All in all, that was a way for us to prepare for the 21 Century.”

(Anders Stensson)

The commitment must of course work both ways and also from Tetra Pak the commitment was high:

”We have supported, and continue to support, our suppliers in the change process by having audits, reviewing business as well as giving training in flow organisation, organisational development, purchasing, marketing management and quality standards.”

(Jan Persson)

The quotation from Jan Persson brings us to the next area to highlight namely that of competence development.

Competence development

The development with an increased use of large system suppliers (sometimes even larger than the buying firm), is particularly evident in the automotive industry. The problem for Tetra Pak, compared with many other OEM (e.g. the automotive industry) manufacturers, was the nature of Tetra Pak's supply base. A typical Tetra Pak supplier in 1996 had according to Jan Persson the following characteristics. The Tetra Pak supplier:

- is a small or medium sized corporation where the owner and CEO often are the same person

- is to a high degree controlled by Tetra Pak
- has no contact with the final customer of Tetra Pak
- follow blueprints without remarks

Considering the state of the suppliers' supplier, development of a whole chain becomes difficult since a lot of responsibilities are put on rather small firms with limited resources, especially when it comes to managing their own supply base. Further, supplier development often covers a number of activities (Hahn *et al.*, 1990) where SMEs seldom have specialists for all of the concerned activities (Nooteboom, 1994). Hence capability development was necessary in order for Tetra Pak's goals to be met. This meant that the system suppliers all had to be educated by Tetra Pak. This was a process a process in which a number of key actors at the selected suppliers did undergo a number of days training. Experiences from other supply chain studies suggest that education is a critical part of supplier development in order to raise the competencies of the involved firms (Mikkelsen & Johansen, 1999). As can be seen from the following quotation education was a large, and important, part of the process of developing the Tetra Pak supply chain.

"We created special educational programmes for our suppliers and involved some of the best teachers available".

(Jan Persson)

In all Tetra Pak spent 12-15 millions SEK over a period of three years to educate their suppliers (Hulten, 1999). The main part of this education was the executive management training, a 13 days training program, divided into three parts with home work to be carried out in the own firm between the meetings. The cost for the education was 40 000 SEK, a cost that was split between Tetra Pak and the supplier (Hulten, 1999). The main topics in the education was process improvements, flow organization, purchasing and quality management (Persson, 2001). Another aim of the education was to give the suppliers support to develop suppliers further down in the chain (Jan Persson).

The executive training was a big part of the education but not the only. To implement a flow organization means training for all categories of employees (Westling, 2001). Their capabilities must be increased and their ability to adapt to different situations developed.

The CEO of one of the system suppliers described it like this.

"It meant a lot of training... We chose a number of co-workers to receive special training in marketing, purchasing, production management, and production co-ordination. Those who undertook training then became mentors for others at work."

(Anders Stensson)

One of the reasons for the education involving personnel for many categories of employees was the implementation of the new organization for production and administration.

Implementation of a new organisation

In order to shorten lead times and increase efficiency a new production and administration organisation, flow organisation, was implemented at the selected suppliers making the need for education even bigger (Jan Persson).

To implement a new supply structure for Tetra Pak, and to educate and change production organisation at the selected suppliers took some time and the need to consider this is illustrated by the CEO of Andrénverken.

“We estimated that the transition period should take about eighteen months, a time which we managed to meet.”

(Anders Stensson)

After training and implementation of the flow organization an audit were carried out and certificates were awarded to the suppliers that met Tetra Pak's criteria. This was one way for Tetra Pak to award the suppliers for their work and is also in line with the objective to form partnership with the suppliers.

When examining the results from the development project a number of impressive effects were achieved. Firstly, Tetra Pak and their suppliers managed to reduce lead time considerably going from 18 to 6 weeks. Secondly, productivity increased by 16% and thirdly, the rate of inventory turn over increased from 4,5 to 8 times (Jan Persson). All results well in line with the objectives. Another positive effect was that Andrénverken based on their certificate as system supplier to Tetra Pak managed to get contracts with new customer (Anders Stensson).

Communication

Communication was considered another critical aspect of supplier development (Lamming, 1993; Krause, 1999). Tetra Pak meets according to Arne Nilsson with the system suppliers four times a year, every second time at the supplier and at Tetra Pak. Further more Tetra Pak and the system supplier have telephone meetings once a week.

“A large part of my time is devoted to relationship building activities. If you don't have a good relationship to your supplier this can affect other things. So, I devote approximately half my time to relationship building activities. I work with four

system suppliers and ten of the assigned suppliers. I meet with the system suppliers once each quarter and speak with them regularly on the phone. I don't meet that often with the assigned suppliers that often just once a year for price negotiations and if there is a need for it. Otherwise it is the system supplier that is responsible for the day to day contact with those suppliers.

(Christina Rinaldo).

Both Tetra Pak and their system supplier Andrénverken really appreciate this regular communication with company visits and telephone meetings every week. So far this essay has focused on Tetra Pak and Andrénverkens efforts and now it's time to examine the developments in the rest of the chain.

Developments further down the chain

As we saw from the restructured supply base in figure 1 a lot of first tier suppliers have been moved further down the supply chain to second or even third tier, whereas others have been cut from the chain entirely. This has had effects for all involved actors. Tetra Pak has considerably reduced the number of suppliers with whom they have direct contact and Andrénverken (first tier/system supplier) have increased their supply base. The firms moved down the chain has direct contacts with system suppliers or other by Tetra Pak assigned suppliers instead of like previously dealing directly with Tetra Pak. But how has these changes been perceived?

After reviewing the result of the survey carried out at Andrénverkens supply base it is clear that the involved actors rate Andrénverkens significance lower than Tetra Paks. This could cause problems in the relationship if the upgraded supplier (in this case Andrénverken) doesn't get recognition as an important customer in spite of the fact that Tetra Pak still is the ultimate customer. Tetra Pak rated four or five on a five grade scale and the average for Andrénverken was slightly below three.

To get an even better picture four telephone interviews was made interviewing four suppliers selected from the supply base of Andrénverken. These respondents and the firms they represent wanted anonymity and therefore only a summary of their common opinions is given. Focus was put on how they perceived the changes made in the supply chain and how they perceived that they had been affected by the changes. A summary of these results together with results from Tetra Pak and Andrénverken is presented in table 1. Inspired by the framework of Ford and McDowell (1999) the perceived values in different levels of the relationship has been summarised for Tetra Pak, their first tier supplier and the second/third tier suppliers, in table 2.

Table 2 Relationship effects and values in the Tetra Pak supply chain

| <u>Level/Value</u> | <i>Tetra Pak Buyer (OEM)</i> | <i>Andrénverken (1st tier/ system supplier)</i> | <i>2nd and 3rd tier suppliers</i> |
|--|--|--|--|
| <i>Level 1 In the relationship</i> | Fewer direct contacts with other suppliers Lead time reduction Increased productivity Increased rate of inventory | New role in the supply chain Higher staff competence Lead time reduction Increased productivity | New place/role in the supply chain (in some cases higher competence) |
| <i>Nature of the value</i> | Financial value | Financial value | No direct value experienced |
| <i>Level 2 On the relationship</i> | Deepened relationship with some chosen suppliers Trust | Deepened relationship with the OEM Bigger volumes Trust | Less (or no) contacts with OEM No direct value experienced |
| <i>Nature of the value</i> | Trust | Trust | No direct value experienced |
| <i>Level 3 On the relationship portfolio</i> | Reduced supply base | New suppliers | New customers |
| <i>Nature of the value</i> | Financial value Less administration | Financial value | No direct value experienced |
| <i>Level 4 Within the network</i> | New customers of the suppliers | New customers | New customers |
| <i>Nature of the value</i> | Indirectly new competence is brought to the relationship | Increased turnover New competence brought in via new relationships | New competence brought in via new relationships |

From the table we can see that the perceived value has been biggest at the OEM level (Tetra Pak) but value is also seen at the first tier level. High value is related to trust (Burt *et al*, 2002) that existed when the development started but it has also been deepened through this work. This brings us to a deepened discussion about the case.

Discussion

It may seem from the case description that the project that Tetra Pak engaged in is quite easy to accomplish. However, there have been several obstacles and not all actors involved have been happy with the process. To sell in a huge project like this is not an easy task. The involved SMEs may initially think that the large OEM-buyer is the party that will gain the most from the development.

Probably they are right. Even though first tier suppliers to the OEM in this case has reported a lot of perceived value such as higher competence, improved production, and new customers it is impossible to ignore that in this case the initiative to as well as the design of the development project has come from Tetra Pak making them the actor that gain the most from the project. This observation should not be read as a critique to Tetra Pak or as an advice to SMEs to decline offers from OEMs to engage in development activities. Rather it should be one factor out of many to be considered before engaging fully in such a cooperation project. As seen in this case there is a lot to be gained not only for Tetra Pak but also for the other involved actors.

That there is a joint commitment and a joint investment as in this case when Tetra Pak and their suppliers jointly paid for the project (Axelsson, 1999; Hulten, 1999) is likely to have had an affect on how they perceived the value of the project. At first it seemed strange that a firm actually paid to develop their suppliers but after reviewing the case it seems more rational. It seems like education actually pays off.

One must also bear in mind that relationships of this kind are to a high extent depended upon the involved persons. If they get along that will help a lot and it seems like the relations between the actors that I have interviewed are good both on a professional and a private level.

Those suppliers that have been forced down in the supplier hierarchy to second or third tier suppliers are of course not pleased with their new situation. Previously they have been able to use the fact that they are Tetra Pak suppliers as a strong reference in their own marketing and now they have direct contact with a smaller not as well known firm instead.

Conclusions

The case presented show that the perceived value of the Tetra Pak model for developing the supply chain is quite high and that the relationship between Tetra Pak and its first tier suppliers seem to have a healthy foundation built on cooperation and trust. After this general comment we have arrived at some more specific conclusions.

To develop SMEs is probably more difficult than to develop larger firms, due to their smallness and limited resources. The Tetra Pak method with the combination of system suppliers and assigned suppliers, not handing over all responsibilities to the system supplier like in the cases from the automotive industry has shown to be an interesting approach to solve this problem. Also, supplier development requires a lot of resources and since SMEs often not

posses the necessary resources themselves a big part of the cost must be carried by the buyer. In the case of Tetra Pak the cost for development of the program was carried by Tetra Pak and the rest was divided between Tetra Pak and the suppliers. The Tetra Pak case is quite successful and some of the reasons for that include actual commitment to the task, trust, clear measurable objectives, and capability development.

Education and capability development is a necessity for actual development of a supplier to take place. The ultimate goal is to develop and maintain the dynamic capabilities of the suppliers. A lot of the perceived value from the change in the supply chain comes from the education since it has meant higher competence in the participating firms.

Further, it seems like well functioning communication on different levels in the chain is a key aspect for the desired development of the supply chain to take place. Top management commitment together with support from the owners is also important for the outcome to be positive.

Finally, it is found that as a base for supply chain development lays the ability to create trust and stability between the actors in the chain. To do so it is important that all involved actors feel that they gain from the cooperation.

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Interviews with

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Arne Nilsson, Head of purchasing at Tetra Pak Carton Ambient (011002)
Jan Persson, former CEO of Tetra Pak ComTec (010905, 011001, 011108)
Christina Rinaldo, Purchaser at Tetra Pak Carton Ambient (011002)
Anders Stensson, CEO and owner of Andrénverken (001108, 010510, 010905, 011106, 021106)

Video

Flödesorganisation ‘Flow Organisation’ recorded by Tetra Pak at Andrénverken.

Observations

Elmia Subcontractor Trade Fair (001108, 011106, 021106, 031106, 041109)
Tetra Pak Supplier Forum (020305)
Company visit Tetra Pak (011002)
Company visits Andrénverken (001214, 010118, 020228, 020502)

Appendix A Methodology

When choosing a research strategy there is a number of challenges that faces the researcher. According to Gummesson the first challenge is access to reality, the second challenge deals with pre-understanding and understanding and the last challenge is quality (Gummesson, 2000). This section starts with a discussion about pre-understanding followed by an introduction to the research design chosen for the papers in the thesis. Then the methods used for the two cases (used for essays 3 and 4) are described including a discussion about access. The section is concluded with a discussion about trustworthiness and quality.

Pre-understanding

According to Gummesson “pre-understanding refers to things such as people’s knowledge, insights, and experience before they engage in a research program or a consulting assignment; understanding refers to their improved insights emerging during the program or assignment” (Gummesson, 2000:57). My pre-understanding about purchasing and supply chain management has developed over the last five years. It consists of four elements; practical experience, theoretical experience, teaching experience, and research experience, elements that to a high degree are interconnected and cross fertilised. The theoretical pre-understanding is expressed in the different chapters of the thesis. In addition to that valuable pre-understanding has been gained through several projects that I have participated in as researcher or consultant

My pre-understanding of the subject in focus has helped me to establish some interesting areas to research. I have learned from theory and observation (of practice) that supplier development is more challenging when it involves SMEs and when the buyer not only focus on the first tier suppliers but rather on the supply chain as a whole. I have also seen that development projects can take varying shapes and differ in a number of aspects, one important being the lead actor, the locomotive, and the resources that it possesses. It is also important to gain access and be trusted by the actors in firms that you research (Gummesson, 2000).

Introduction to the case study approach

Merriam (1994) states that the case study approach not is a method in its self, meaning that different methods (quantitative as well as qualitative) can be used

within a case study. Merriam (1994:29) defines the case study approach as: "an intensive, entirety description, and analysis of a single unit or phenomenon".

Another definition of the case study approach is given by Yin who defines the case study approach as an empirical inquiry that (Yin, 1989:23):

- investigates a contemporary phenomenon within its real-life context; when
- the boundaries between phenomenon and context are not clearly evident; and in which
- multiple sources of evidence are used

When choosing a research approach the researcher should be guided by research question. Yin argues that "how" and "why" questions are likely to favour the use of case studies (Yin, 1989).

Since the objective of the research is to describe how supplier development is facilitated in supply chains which goes well the definitions by Merriam and Yin the use of a case study approach seems highly relevant for this kind of research. For this research two cases have been selected, cases that in some respects differ from each other. Therefore, selection criteria, sampling procedures and data collection is described separately for the two cases.

Essay 3 – Pedagogical innovativeness in supply net development

This essay is based on the Norrgavel KrAft-group case. The selection of this case has been based on my pre-understanding as described above. The main reasons for choosing this case are the following. The first reason is that the Norrgavel KrAft-group consists of a locomotive, Norrgavel and their key suppliers, see table 1, aiming to facilitate business development and development of dynamic capabilities in the Norrgavel supply chain. Since there is a locomotive in the group this is a project with a high likelihood of success and prolonged cooperation between the actors.

Table 1 The Norrgavel KrAft-group

| Participating firms |
|--|
| Norrgavel, furniture manufacturer, acts as locomotive in the network |
| Ateljén i Anderslöv, lamp manufacturer (Zlamp) |
| Kathea, carpet importer |
| Lammhults Snickeri, furniture manufacturer |
| Stol och Fåtölj i Ruda, furniture manufacturer |
| Torsten Nilsson Snickeri, furniture manufacturer |
| Växbo Lin, flax manufacturer (table clothes etc.) |

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Secondly, this case involves small firms, firms that previously hasn't been that well investigated in this area and that have limited resources to develop themselves.

The third reason is that the project is partly funded by public funds via the newly established KrAft-program. The KrAft is a new interesting initiative with methodology that let the participating firms determines the focus of the projects themselves, which makes this a very interesting project to follow.

The fourth reason is that I got the possibility to follow this group and their work from the beginning since one of my supervisors, professor Björn Axelsson, acted as the academic coach in that group. By helping out and participating in all the meetings I got trusted by the participants and gained good access. In all there have been eight meetings with the group of seven companies. The locomotive Norrgavel has been the host of two meetings and the other firms have hosted one meeting each. The introduction meeting was one day meeting and all other meetings have been two day meetings (Friday to Saturday).

For this case study both primary and secondary data have been gathered. The main sources for empirical data in case studies are interviews, observation and documents (Merriam, 1994; Yin, 1989). The primary data in this case study is mainly participant observation and interviews. In order to follow the development process I have participated at every meeting observing and taking notes. The development process has been followed from the beginning and until the final point of the project, the opening of the Copenhagen store. In total the entire project lasted for about 1½ years.

Following a process in real time like in this case the possibility to make follow-up interviews were given. In order to give the participants some time to digest the information they has gotten I waited for about two weeks after each meeting and then made a telephone interview with at least one representative of each firm. In the interviews wanted to investigate what the participants thought about the process as such and about the topics dealt with in particular. One objective was to find evidence of business development. To do that I confronted the respondents with questions that was dealt with at the meeting and questions investigating what changes that have occurred within the participating firms organisations. The follow up interviews was carried out according to the table below.

Table 2 Follow up interviews for the Norrgavel KrAft group case

| Date | Note | Respondent |
|--------|--------------------------|---|
| 011107 | Follow-up meetings No1-3 | Lisbet Bessfelt, Ateljén i Anderslöv |
| 011107 | | Bengt Nilsson, Torsten Nilsson Snickeri |
| 011108 | | Bengt Henrysson, Lammhults Snickeri |
| 011108 | | Barbara Hosak, Kateha |
| 011108 | | Styrbjörn Ström, Stol och Fåtölj |
| 011109 | | Anki Bohlin, Växbo Lin |
| 011109 | | Bo Hemström, Norrgavel |
| 020321 | Follow-up meeting No 4 | Anki Bohlin, Växbo Lin |
| 020321 | | Styrbjörn Ström, Stol och Fåtölj |
| 020321 | | Bengt Henrysson, Lammhults Snickeri |
| 020321 | | Bengt Nilsson, Torsten Nilsson Snickeri |
| 020321 | | Lisbet Bessfelt, Ateljén i Anderslöv |
| 020323 | | Bo Hemström, Norrgavel |
| 020323 | | Barbara Hosak, Kateha |
| 020611 | Follow-up meeting No 5-6 | Lisbet Bessfelt, Ateljén i Anderslöv |
| 020611 | | Bengt Henrysson, Lammhults Snickeri |
| 020611 | | Barbara Hosak, Kateha |
| 020612 | | Ronny Nilsson, Torsten Nilsson Snickeri |
| 020612 | | Lars-Åke Åkerlund, Växbo Lin |
| 020612 | | Styrbjörn Ström, Stol och Fåtölj |
| 020704 | Follow-up meeting No 7 | Ronny Nilsson, Torsten Nilsson Snickeri |
| 020704 | | Barbara Hosak, Kateha |
| 020704 | | Bengt Henrysson, Lammhults Snickeri |
| 020707 | | Lisbet Bessfelt, Ateljén i Anderslöv |
| 020708 | | Bo Hemström, Norrgavel |
| 020708 | | Styrbjörn Ström, Stol och Fåtölj |

Also the use of secondary data sources has been as valuable source for this case. The secondary data sources used in the Norrgavel KrAft case are:

- annual reports
- homepages
- brochures
- educational material
- KrAft material

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By the use of these sources and the advantage to be able to follow these cases in real time and being able to confront the participants I strive to make a thorough description of the development process as it emerges.

Essay 4 – Supplier Development of SMEs – a case study

This essay is based on a supply chain with Andrénverken AB in Smålandsstenar as the focal actor. Andrénverken is a medium sized firm with 48 employees and is active in the metal components industry. One of their main customers is Tetra Pak to which Andrénverken is a system supplier.

The sampling procedure for this case has been made in two stages:

1. Criteria selection of a supply chain to study, i.e. the Tetra Pak Andrénverken chain
2. A snowball sample of respondents in the supply chain

1. The first step was to select the Tetra Pak Andrénverken supply chain for the study. Also this selection is based on the previously described pre-understanding. My reasons for selecting this case are the following.

First of all, also in this case we have a locomotive, Tetra Pak, that have taken an interesting development initiative for their suppliers and restructured their supply base and the supply chain. Tetra Pak has also spent a lot of resources in this process and funded a lot of the development activities. One aim of this development is that the participating firms should develop dynamic capabilities and the ability to develop their suppliers in turn making this a project with the supply chain as the ultimate scope.

Secondly the Tetra Pak supply chain consists mainly of SMEs that as stated before have limited resources for their development.

The last reason is access. I knew that Tetra Pak had restructured and developed their supply base and I had contacts with one of their suppliers, Andrénverken, since before and when I made contact discussing research possibilities they were positive. Mainly (according to the CEO) because they knew and trusted me since before which has helped me to get access for this research.

The next step was to identify respondents in the chain. The first respondents, representing Andrénverken and Tetra Pak, were made with the help of a snowball sample, i.e. a non probability sample (Lekvall & Wahlbin, 1993).

Some key persons were easily identified such as the CEO and the purchasing manager of Andrénverken. These persons then guided me to other respondents that they thought were important for the supply chain and the development process. For this research seven people have been interviewed. In all sixteen interviews have been carried out.

Yin (1989) divides interviews into three categories: 1) open-ended interviews, 2) focused interviews, and 3) structured interviews. I have used focused interviews, ranging from half an hour to two hours in length, combining open ended questions about the companies networks with more structured questions. During most of the interviews a tape-recorder was used and transcripts have been sent to all respondents.

Further, observations have been a part of this study as I have visited several production facilities during the research process as well as Tetra Paks supplier forum and the Elmia Subcontractor fair.

Finally the use of secondary data has also been an important part of my study. Secondary data that sources studied for this case study are:

- annual reports
- homepages
- trade fair journal
- articles in purchasing magazines about the Tetra Pak education project
- brochures
- internal material such as quality manuals
- educational programs material
- a video describing the change of production organisation in the firms (recorded at the focal actor), Flödesorganisation.
- A book written by Jan Persson (Persson, 2002) about the development of suppliers

This case is mainly based on interviews about developments that have occurred and changes that have been implemented. This means that this case differ from the KrAft-Norrgavel case where I was able to follow the development process “live”.

Trustworthiness

To discuss validity and reliability is as important for case studies as for more positivistic research (Merriam, 1994), since those issues will influence the trustworthiness of the study. It is also necessary to have a discussion about the

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overall quality of the study (Gummesson, 2000). The reliability measure however, is more applicable as a quality measure for quantitative studies than for case studies since one cannot expect two researchers to come up with the exact same interpretation of a case. In the following different types of validity measures are discussed in respect to my research.

A distinction often done when talking about validity is that between internal and external validity. Internal validity is a measure on how well the result of the study and reality fits. In order to secure internal validity researcher can use different strategies of which triangulation is the perhaps most important (Merriam, 1994). In this research several sources of information and methods are used.

External validity is the extent to which results of one investigation can be applicable to other situations than the one investigated, i.e. if the results can be generalised and if so for which population (Merriam, 1994). In my analysis I will distinguish between case specific results and results that are general to a population at large. This is particularly important when discussing a wide topic as supplier development since all supplier development projects are somewhat unique making the external validity somewhat limited.

Another validity measure is construct validity. The construct validity of a study is a measure on how well you as a researcher has managed to transfer the measures of the concepts studied (Yin, 1989). Construct validity is obtained through the use of multiple sources of evidence and participant control (Yin, 1989); both practices used in this research

By the use of participant control, triangulation (especially in the KrAft-Norrgravel case), clarification of my pre-understanding and theoretical standpoints I believe that I presented trustworthy results. This could however only be judged by the reader and by giving an extensive description of my research process I believe that I have made it possible for the readers themselves to evaluate the trustworthiness and quality of my work.

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