Industrial repositioning from OEM to supplier

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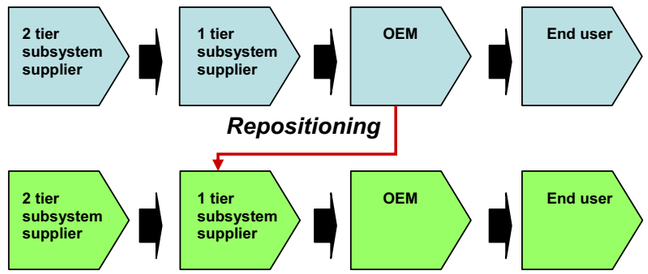

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Industrial repositioning from OEM to supplier

The development of Saab's commercial aircraft business

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Sammanfattning

Denna rapport beskriver och analyserar Saab Aerostructures ompositionering 1997-2008 från slutprodukttillverkare av regionala affärsflygplan (Saab 340 och Saab 2000) till underleverantör av delsystem på nivå 1 under Airbus och Boeing. Denna typ av ompositionering är mycket ovanlig; att ”nedstiga” från slutprodukttillverkare till underleverantör, och samtidigt överge befintlig marknad och produkt och övergå till annan marknad och produkt. Den är intressant för företag och för beslutsfattade inom myndigheter, inte minst eftersom ompositionering diskuteras som en tänkbar framtidsväg för försvarsföretag verksamma i Sverige.

Studiens syfte är att identifiera och förklara centrala faktorer i ett industriföretags ompositionering från slutprodukttillverkare till leverantör av delsystem. Under detta finns två forskningsfrågor: 1. Vilka interna organisatoriska faktorer påverkade ompositioneringsprocessen? 2. Vilka faktorer i den externa omgivningen genererade möjligheter och hinder för ompositioneringsprocessen? Huvudfokus ligger på den interna strategiska processen inom Saab Aerostructures (forskningsfråga 1).

Bakgrunden är att Saab Commercial Aircraft år 1996 hade stora ekonomiska förluster i sin tillverkning av regionala affärsflygplan. Beslut togs om att snabbt avsluta fortsatt tillverkning och utveckling. Efter en period av försök med många olika affärsidéer, bildades Saab Aerostructures 1 januari 1998. Målet var att etablera en stark position som underleverantör av primärstrukturer till Airbus och Boeing på nivå 1, dvs. på högsta systemnivå. Utifrån initiala beställningar på tillverkning av detaljer till Boeing över större åtaganden åt framför allt Airbus och i mindre grad Boeing, har de lyckats med att år 2008 skapa en etablerad position som underleverantör av primärstrukturer till Airbus och Boeing.

Utifrån vår fallstudie ser vi följande *interna faktorer* som avgörande för att lyckas med en ompositionering från OEM till underleverantör:

Tillgång till konkurrenskraftiga interna resurser: Nischteknologier som kan exploateras på den nya marknaden, befintliga kompletterande resurser som industriella produktionsmiljöer, produktions-kompetens;, befintlig personalresurs med tillämpbar kompetens och erfarenhet.

Organisationsförändring: företaget behöver förändra t ex interna rutiner och inställningen till kund för att transformera organisationen från att styra ett industriellt nätverk till att bli en lyhörd och kundinriktad underleverantör. En sådan förändring tar många år och möjliggörs av intensiv interaktion med kund.

Synergier med etablerad verksamhet: Om resurser används för både existerande och ny marknad genereras lärande och skapas kostnadssynergier.

Tydlig strategisk vision: En tydlig och hållbar strategisk vision av den framtida positionen är en viktig förändringsbärare. Visionen måste balansera stabilitet och anpassning till externa förändringar.

Ompositionering påverkas av *externa faktorer* i affärsomgivningen:

Utveckling av leverantörskedjor: Ompositioneringen underlättas om slutprodukttillverkande företag är berett att släppa delar av sin egen verksamhet till underleverantörer. Orsaken är att det skapar ett behov av underleverantörer med teknologisk kompetens som är bredare än de system som de erbjuder marknaden. Detta kan exploateras av det ompositionerande företaget som kan använda sin erfarenhet från rollen som integratör av slutprodukter.

Omstrukturering av underleverantörsstrukturer: Ompositionering underlättas och stöds av avreglering av tidigare nationellt uppbyggda leverantörskedjor, samt av kraftig förändring av efterfrågan (t.ex. teknologi, prestanda, leverantörstyp) som medför behov av nya leverantörer/kompetenser till slutproduktillverkare.

Efterfrågan på strategisk leverantör: Det ompositionerande företaget måste vara intressant som unik strategisk leverantör till tillverkare av slutprodukter, för att motverka utpräglad priskonkurrens. Skälet är bl a den kostnadsstruktur som är ett arv från tiden som slutprodukttillverkare.

Nyckelord: Ompositionering, diversifiering, företagsstrategi, slutprodukttillverkare, flygplanstillverkning, kompetenser, underleverantör, leverantörskedjor, industriellt nätverk

Summary

This report describes and analyses Saab Aerostructures' repositioning during 1997-2008 from original equipment manufacturer (OEM) of regional jets (Saab 340 and Saab 2000) to 1st-tier subsystem supplier under Airbus and Boeing. This type of repositioning is very rare, to "descend" from OEM to supplier, and at the same time abandon present market and product, migrating to a different market and product. It is an issue of interest to both companies and policy-makers. The reason is the current discussion about whether defence companies in Sweden could seek a future as suppliers instead of their current roles as OEMs.

The purpose of the report is to identify and explain critical factors in the repositioning of an industrial company from original equipment manufacturer to subsystem supplier. There are two research questions: 1. Which major organizational factors influenced the repositioning process? 2. Which factors in the external environment generated opportunities and challenges for the repositioning process? The main focus is on the internal strategic process within Saab Aerostructures (research question 1).

Saab Commercial Aircraft had in 1996 huge economic losses in its production of commercial jets. A decision was eventually made to terminate continued production and development. Instead of closing down the industrial plant Saab Aerostructures was formed on January 1, 1998. The vision was to establish a strong position as supplier of so called primary structures to Airbus and Boeing on tier 1, i.e. the highest system level. Starting from initial build-to-print orders to Boeing over larger commitments to mainly Airbus, Saab Aerostructures has in 2008 succeeded in reaching an established position as supplier of primary structures to Airbus and Boeing.

Based on our case study, we see the following internal factors as critical for succeeding with a repositioning from OEM to supplier in a different market:

Access to competitive internal resources: Niche technologies that can be exploited in the new market; existing complementary resources such as production facilities, production know-how, existing personnel pool with adequate competence and experience.

Organizational change: Companies must change e.g. organizational routines and approaches to customers in order to transform from a role of OEM to that of a customer-oriented supplier. Such a change takes many years and is supported by intensive interaction with the customer.

Synergies with established business: If resources are used for both the existing market and the new market, this generates cost and learning synergies.

Clear strategic vision: A clear and robust strategic vision of the future position is an important change carrier. The vision must be balanced between stability and responsiveness to external change.

The repositioning is influenced by external factors in the business environment:

Development of supply chains: The repositioning is enhanced if OEM companies on the new market are focusing more on core competences and thereby invite suppliers to take a larger responsibility for development projects. The reason is that such change creates an advantage for suppliers having technological competences that are broader than the scope of the system they provide. That is, it is change that potentially favours a company with a past as OEM.

Restructuring of supply chain structures: Repositioning is facilitated and supported by political deregulation of nationally organized supply chains, and by fundamental change in demand (e.g. technology, performance, type of supplier).

Strategic supplier: The repositioning firm must be perceived as a unique strategic supplier to OEMs in order to avoid strict competition by price. This is particularly important in light of the cost structure, which is a legacy from the time as end-product producer.

Keywords: Repositioning, diversification, corporate strategy, Original Equipment Manufacturer (OEM), commercial aircraft production, supply chains, competences, industrial network

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Foreword

The defence industry in Sweden has several companies that have long-established positions as end product integrators, or what is often referred to as OEM:s (original equipment manufacturers). An OEM produces the end product that will serve the end user, e.g. a ship, car, aircraft, computer or mobile phone. The OEM combines components, systems and applications from a wide range of suppliers in an underlying, tiered supplier structure.

Swedish defence OEMs' traditional order portfolios have to a large extent been based on orders and R&D assignments from the Swedish defence community. If these intra-Swedish defence orders continue to decrease (as is previously the trend), an issue of strategic importance to both companies and policy makers is whether some parts of the existing defence industry may survive as subsystem suppliers to the global defence industry.

We have in this study analyzed a previous transformation that resembles such a hypothetical repositioning. Our case study is Saab Aerostructures' repositioning 1997 – 2008 from producer of commercial aircraft (Saab 340 and 2000) to first tier supplier under Airbus and Boeing in the commercial aircraft industry.

We would like to express our sincere thanks to the respondents at Saab Aerostructures who so generously contributed with their time for interviews and for follow-up discussion. Thank you!

We would also like to thank our reviewer, Erik Bjurström, for valuable comments and suggestions. Finally, we would also like to thank Henrik Agndal at the Stockholm School of Economics for his input on theory regarding the purchasing transformation of Airbus' and Boeing's supplier networks.

The study has been conducted in 2008 within the FOI FIND Programme. FIND has since 1990 studied defence industry transformation processes and corporate strategies in Western Europe and the US for the Swedish Ministry of Defence.

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1 Introduction

As Saab Commercial Aircraft was struggling for survival in the late 1990s the company's management decided to start up a new business. The idea was to build on existing resources in order to develop a new position in the industry, as supplier to Boeing and Airbus.

Ten years later, this business unit, Saab Aerostructures, had reached an annual revenue of 1,5 billion SEK and gained a leading position as 1st-tier system supplier[1]. This is a unique example of industrial repositioning in industrial networks. It is a remarkable story because such industrial repositioning is an issue little researched and of major relevance to both managers of industrial companies and policy-makers.

This case study is conducted on behalf of the Swedish Ministry of Defence, which held an interest in the consequences of industrial repositioning for a company's technology base. The background is the current decline of the Swedish defence equipment market. According to conventional logic, this means that some companies of the defence industry in Sweden have to rely on exports or are likely to face decline.

A third alternative, however, has emerged in the debate. It is being debated in industry and among policy-makers whether some parts of the existing defence industry may survive as subsystem suppliers to the global defence industry. This is an issue perceived as relevant from the perspective that: (a) parts of existing defence industry competences are of vital national interest and (b) the politicized market for defence equipment offers limited opportunities for end-products. The background is that the defence industry in Sweden largely consists of companies producing end-products[2].

Therefore, a central issue is how a company specialized in end-products can reposition in the industrial landscape in order to gain a role of leading subsystem supplier.

The specific purpose is:

> *to identify and explain critical factors in the repositioning of an industrial company from original equipment manufacturer to subsystem supplier.*

[1] This study was conducted before Saab Aerostructures encountered the combined effect of delayed orders from customers and declining world economy.

[2] End-products refer to equipment that is produced by a company in the top of an industrial hierarchy (e.g. Clark and Fujimoto, 1991; Karlsson, 2003). In the literature such products are called OEM-products, referring to the company as Original Equipment Manufacturer (OEM). Common examples of end-products are cars, aircrafts and mobile telephones. In the defence industry end-products are e.g. tanks, submarines, fighters and missiles.

In order to accomplish this purpose we will address the following research questions:

- Which major organizational factors influenced the repositioning process?
- Which factors in the external environment generated opportunities and challenges for the repositioning process?

The main focus of the report is on how Saab Aerostructures managed the repositioning process by strategic, internal decisions. The repositioning process was at the same time a continuous response and accommodation to changes in the external environment; therefore these external factors are analysed as well. The actual establishment of Saab Aerostructures in its new position, and the industrial hierarchy, network and supply chain which come with that position, is thus where the focal company's strategic intentions meet with the marketplace.

1.1 Disposition

In order to define the specific scope of this report Chapter 2 develops a definition of the addressed industrial change process. Based on the purpose and in order to find answers to these questions, we have conducted a case study and also gathered data from secondary sources. The issues of gathering and processing data are discussed more in detail in Chapter 3. The results of the empirical investigation are presented in Chapters 4 and 5. Chapters 6 and 7 present the analysis of the empirical findings. Chapter 8 generates the main conclusions and discusses implications of the results for companies and policy-makers.

2 Definitions and theoretical perspectives

The following chapter elaborates a theoretical definition of, and perspectives on, the type of industrial change that this study addresses. First, it develops a definition of the phenomena of interest. Thereafter, it discusses perspectives of the position that the company gained through the studied industrial change.

2.1 Industrial repositioning

The present study addresses the change in the position of a company in its competitive environment. In order to analyse this change it is useful to construct a terminology. Therefore, the following borrows from existing literature concerned with similar changes of companies.

In particular, we find the view of diversification developed by Ansoff (1965) useful. A number of theoretical concepts describe change processes similar to the one that is described in this report.[3] We will use the concept of diversification as our point of departure because it captures much of the change in industrial position that we address.

The perspective developed by Ansoff (1965) assumes that the company competes through its mix of product and market. These two dimensions of change are complementary and highly relevant for understanding the scope of the present study.

The following figure illustrates the basic product-market combinations.

[3] See e.g. *'Diversification'* (Ansoff, 1965; Chandler, 1966, Porter, 1987 and many more); *'strategic change'* (Quinn, 1978; Hamel & Prahalad, 1994); *'internal corporate venturing'* (Burgelman, 1983); *'turnaround strategies'* (Hambrick & Schecter, 1983); *'corporate restructuring'* (Hoskisson & Johnson, 1992); *'corporate portfolio restructuring'* (Bowman & Singh, 1993); *'corporate transformation'* (Blumenthal & Haspeslagh, 1994); *'corporate refocusing'* (Johnson, 1996); *'explorative learning'* (March, 2001); *'portfolio repositioning'* (Byerly, Lamont & Keasler, 2003); *'business portfolio restructuring'* (Byerly, Lamont & Keasler, 2003); *'redeployment of corporate resources'* (Anand, 2004); *'strategic transformation'* (Pearce & Robbins, 2007); *'organizational restructuring'* (Pearce & Robbins, 2007); and *'strategic repositioning'* (Bers, 2008; Dittrich, Duysters & de Man, 2007).

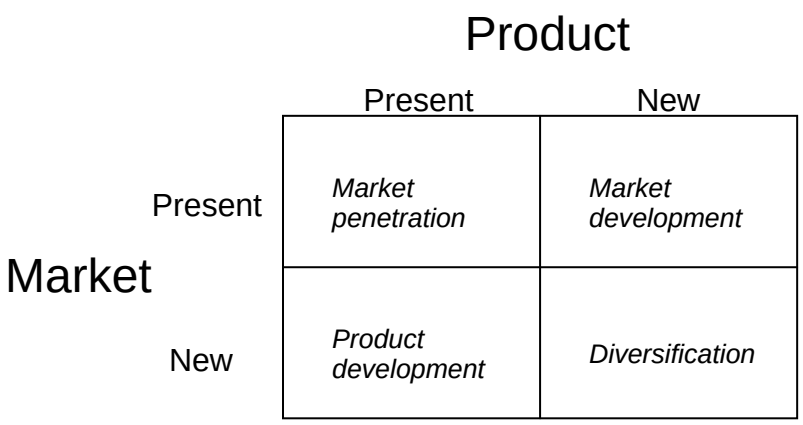


Figure 1.1: Growth strategies (Ansoff, 1965)

The product dimension refers to the kind of offerings the company produces. The market dimension concerns the scope of the external environment where the company seeks to sell its product offerings. Market penetration refers to a focus on growth within the company's existing product-market mix. Ansoff (1965) makes a clear distinction between diversification as expansion and diversification as a new business. Diversification as expansion is seen as a change in market or product position. Diversification to a new business means that a company chooses to move into a new product-market position. A major difference between the two types of diversification is that the latter implies few if any synergies between the existing and the new business.

The choice to diversify is often driven by realization that the company's current position is insufficient for meeting the overall objectives of the business – e.g. growth and/or profit rates. The choice to diversify may also be driven by foreseen opportunities to gain higher profits from a new business, even though the existing line of business is generating acceptable performance levels. A third reason for choosing diversification emerges in a situation where a company has more cash than needed for investments in its existing business (Ansoff, 1965).

The effects of diversification have received considerable interest in the literature on strategic management. The discussion on effects is closely related to the different types of diversification. The discussion largely refers to the important distinction already developed by Ansoff (1965) between related and unrelated diversification. Related diversification concerns a strategic move largely building on the company's existing resources or market presence. Unrelated diversification refers to a situation where the company moves outside the scope of its existing business.

According to research by e.g. Rumlet (1982) diversification into a business related to the existing business generally generates higher returns than so-called unrelated diversification. One major reason why moving to a related product-market position is more favourable is because the company largely can build on its existing competences (ibid.).

A further explanation is that managing a largely diversified business is difficult because of the different market and product logics (Prahalad and Bettis, 1986). The underlying reason is that managers often are influenced by the dominant logics of one business and thereby it is difficult to effectively combine different businesses.

With 'diversification' often goes the assumption that the diversifying company still stays in the initial market with its existing product, and also that the company has several other business areas. By engaging in several business areas, it achieves a mix of businesses (a business portfolio) which will spread its risks (Markowitz, 1952, 1959; Porter, 1987).

We have identified three closely allied concepts in the literature that relate to Saab Aerostructures' repositioning:

- *diversification* (Ansoff, 1965, Chandler; 1969, Porter; 1987 and many more)
- *portfolio repositioning* (Byerly et al., 2003): the redefinition and recreation of the core business and the reconfiguration of assets around a newly defined core.
- *explorative strategies/explorative learning* (March, 2001; Chesbrough, 2003; Dittrich et al., 2007): the experimentation with new alternatives and the exploration of a new technological field.

We consider Ansoff's (1965) discussion regarding diversification to be the most useful to the issue that we address. Therefore, the term 'diversification' constitutes the point of departure for our terminology, although it needs to be modified in order to reflect the empirical phenomena treated in this report.

This study focuses on a situation where a company reaches a point where its position in the market weakens and the low or even negative profit level forces it to take a drastic decision to exit the market. This kind of situation does not fit in with the implicit assumption of the theoretical concept of diversification. That is, the company does not create a widened business portfolio. Instead, we focus on a situation where the company exits the existing business in Ansoff's (1965) upper left box and moves directly to the lower right box: a new market with a new product. Specifically, the type of diversification we address concerns a company that changes its product-market position from end-product manufacturer to a new position as subsystem supplier.

Since the type of diversification addressed here means that the company moves to a new position and at the same time abandons the existing one, we choose to

call it repositioning. There is one distinctive difference between repositioning and Ansoff's (1965) definition of 'diversification': that the case company abandons the initial market and product and moves to a new product-market position, in a related technology compared to the initial technology. Thus, repositioning refers to a situation where the company essentially is reborn in another role – i.e. in our case as a subsystem manufacturer. Therefore, we will focus on the concept of repositioning for describing the change process at Saab Aerostructures.

Having developed a definition of the phenomena of interest, the following extends the theoretical platform guiding this study by discussing different perspectives on repositioning.

2.2 Perspectives on repositioning

This section elaborates on the type of diversification that here is called repositioning from the perspective of theories on industrial network and value-chain position. The following discusses in brief the concept of industrial networks and how it can be used in order to conceptually understand repositioning. Thereafter, the discussion relates repositioning to the concept of an industrial system as a value chain.

The research on industrial networks takes the perspective of an industrial system as a hierarchy of roles that corresponds to different product-system levels. The concept of industrial networks as a hierarchy is illustrated in the following figure:

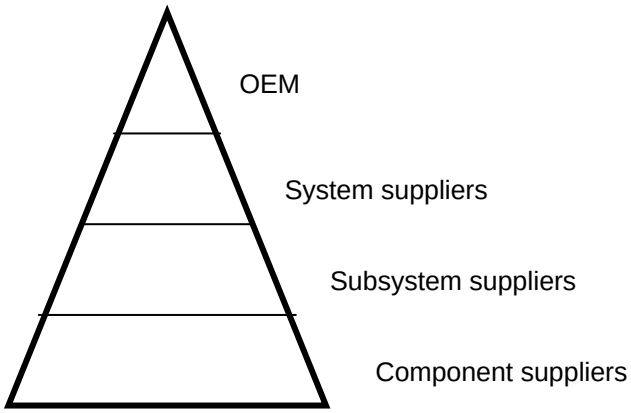


Figure 1.2: Conceptualization of industrial hierarchies (Karlsson, 2003)

The figure illustrates the industrial network as a hierarchy of companies with different roles. Essentially, it reflects the division of work between the different companies in the production of complex products. The top tier level is held by the OEMs, e.g. companies that produce aircrafts and cars. Below the OEM, there will be a level of specialized system suppliers. These will be differentiated between different systems needed for the end-product. Below this tier, there will be a level of increasingly specialized subsystem suppliers. Finally, there will be a wide diversity of component suppliers on the bottom of this industrial hierarchy (Clark and Fujimoto, 1991; Prahalad & Hamel, 1990; Karlsson, 2003; Sköld, 2008).

During most of the 20th century OEM companies strove to integrate different functions and activities in the value chain, in order to control the value chain to a great extent. Over time, the hierarchy has evolved into establishing more and more specialized and designated roles with large numbers of companies in industrial hierarchies. This change makes it relevant to use the term ‘industrial network’ in order to capture the heterogeneity of actors involved in the development and manufacturing of complex products.

The division of work between companies in industrial networks can be analysed from the perspective of the type of technology that they focus on. At the top of the industrial network hierarchy the OEM is specialized in horizontal technologies. Horizontal technologies are constituted by employing broad knowledge areas associated with product functions, such as a car's safety system. This can also be described as knowledge about systems integration (Brunsoni, 2001). A large share of the system-integration competence concerns combining specialized technologies developed by suppliers. A term for capturing the types of specialized technologies developed in the supply chain of the OEM company is 'vertical technologies'. Vertical technologies are different in one essential respect: focusing on specific and narrow technology areas, often following technology disciplines as frequently expressed in research areas – for example in departments in universities of technology. They are developed in fields of engineering such as mechanical engineering, electrical engineering, chemical engineering, electronics engineering, and biotechnology engineering (Karlsson, 2003). Examples of vertical technologies are brakes, fuel injection systems and audio equipment for cars.

The present study is concerned with a rather unusual change in the structure of an industrial network. It addresses a situation where an OEM company repositions to a role of specialized supplier of subsystems. This means that the company leaves a role primarily specialized in horizontal technologies and builds on a new position specialized in vertical technology.

The choice to reposition a company from OEM to subsystem supplier is spectacular, considering that much research emphasizes that companies strive to integrate forward in their industrial value chain (e.g. Normann, 2001; Söderström, 2004). Thus, the common pattern in many industries is that companies strive to gain a position closer to the end customer (Sköld, 2008). The underlying logic is that the profit margins are expected to be higher at the front end of the value chain. Conversely, companies at the low end of the tiered industrial hierarchy experience higher competition and generally lower margins.

This view is based on an expectation that production and capital flows follow a sequential course of events where end-products are gradually developed and produced by different companies (Porter, 1985). Another reason why companies strive for a position closer to the end producer is the opportunity to differentiate themselves from other companies by offering more integrated products and services. Thereby they make it more difficult for customers to switch to other suppliers. An additional advantage is that companies farther downstream in the value chain have more strategic autonomy and control over their future (Söderström, 2004).

From the perspective of this discussion, the repositioning of Saab's commercial aerospace business can be illustrated as below:

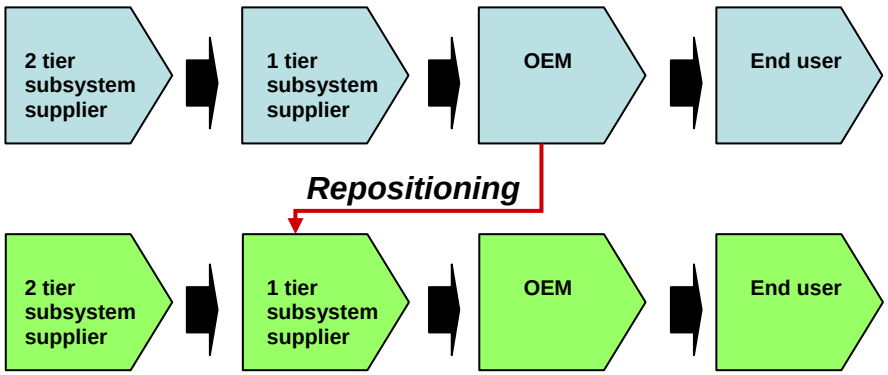


Figure 1.3: Repositioning in an industrial value chain

The figure illustrates the repositioning of a company, such as Saab's commercial aircraft business, from a position as end-product manufacturer to a position as first-tier subsystem supplier in another value chain. The company not only changes role in an industrial network, but partly moves to a new network, with new customers and suppliers. This process of change is the scope of the present report. The theoretical perspectives used for this analysis are developed in the following sections.

2.3 Theoretical perspectives for the analysis

Under this heading we will first present theoretically based internal factors that we see as central for understanding and explaining Saab Aerostructures' repositioning. Thereafter, we discuss theoretically based external factors that we believe add to the understanding and explaining of Saab Aerostructures' repositioning

2.3.1 Internal factors influencing industrial repositioning

The following discusses three different areas of research that we perceive as relevant for the analysis of internal factors influencing the repositioning of OEM companies. Together the different theoretical areas provide us with lenses useful for the identification and explanation of internal factors influencing industrial repositioning. We do not claim that these different areas are the only relevant ones. However, they represent fields of research that we, based on our experience

and the characteristics of the issue studied, judge to be useful for accomplishing the purpose of this report.

The discussion of theories regarding the influence of internal factors on industrial repositioning is conducted as follows. The first part discusses the making of strategy, the second part focuses on the role of different organizational structures, and the third part addresses the role of company resources.

2.3.2 Perspectives on the making of strategy for industrial change

Changing the position of a company from OEM to subsystem supplier is a radical strategic move. How do managers reach the decision to reposition, and is the path towards a new position a result of forethought, or does it emerge with time? Presumably, the answers to these questions vary between different cases, but for the analysis of this study it is valuable to outline different perspectives on strategic change.

A dichotomy in the strategic management debate is the view of strategy as a rational design and the contrasting view which argues that strategy is emergent. The following elaborates on the core arguments of these two perspectives in order to construct a basis for analysing the role of management strategy in the repositioning of Saab Aerostructures.

Strategy as rational design implies that top management can make "grand" decisions about the direction of the company which subsequently are implemented (e.g. Ansoff, 1980) – i.e. strategy is precisely formulated. The basic task of senior management is to find a fit between the external environment's opportunities and threats and the internal organization's strengths and weaknesses. Based on the analysis of the external-internal fit a strategy is formulated. It is important that the strategy formulation is simple in order to be communicated to the organization.

The usefulness of this approach to strategy has found support in the literature. For instance, results from a study by Hart and Banbury (1994) show a clear relationship between what they call strategy-making and performance. They conclude that "*strategy-making processes are significant predictors of firm performance"*.

According to the contrasting view, reality is too complex for meaningful rational designs – hence strategy is a formation of different events. For example, Hedberg et al. (1976) argue that *"Predicting an organization's future well enough to control it reliably requires greater analytic capability than designers, or any other people, possess."* Mintzberg has in several publications (1989; 1990; 1998) developed a view of strategy as a formation process. He concluded that strategy is created through the interplay between the organization and its environment; it

is path-dependent on the organization's past, and explicit formulation of strategy may not always be wise.

Based on the brief review of strategy perspectives here, it can be assumed that repositioning from OEM to subsystem supplier may take place as a well-planned change, or else more or less step-by-step without a clear direction. This report is interested in investigating the role of strategy-making for the repositioning. Strategy-making is believed to be one central explanatory factor for how the change process is accomplished. It can e.g. be assumed that the different approaches to strategy-making have implications for how the company changes its organizational structures and how it allocates and exploits its resources during the repositioning.

2.3.3 Different types of organizational structures

The following addresses different types of organizational structures. An organization can be viewed and analysed as constituted by different structures, which create relatively stable frameworks for activities. It is assumed that the structures of an organization – past and present – create conditions through which the organization conducts the studied type of industrial repositioning.

This view takes its point of departure in that of Löwstedt (1995), who argued that organizational structures can be differentiated into four dimensions: formal, physical, thought and action structures. The coexistence of these different structural factors illustrates the complexity of any organization, not least a manufacturing company. It is possible to make different interpretations of what constitutes these structural factors. The following borrows from several authors in order to conceptualize definitions useful for this report (e.g. Daft and Weick, 1984; Hellgren and Löwstedt, 1997; Normann, 2001).

- Formal structures are defined as formal roles, plans and charts, which often are decided by managers.
- Physical structures are here referred to as the organization's equipment, machinery and buildings.
- Thought structures and action structures are seen as two aspects of an organization's cognitive maps. Cognitive maps concern how the organization perceives itself and the external environment, and how it decides to act in different situations.

A classical aspect concerning formal structures, which has implications for the issue of repositioning, is the dichotomy between differentiation and integration. Differentiation of activities is necessary in order to enable actors to specialize in a limited number of work tasks. But in order to efficiently accomplish a whole task such as the manufacturing of a car or building a house, specialized tasks must be co-ordinated. For instance, Sheremata (2000) argues that in order to

conduct efficient product development, organizations need both centrifugal forces that enhance collective action and centripetal forces enhancing creativity. According to the formal structural perspective, organizations are systems with different tasks being performed within differentiated subsystems. Integration mechanisms are used in order to create linkages between the different subsystems (Galbraith, 1973). The repositioning of a company means that the number of tasks performed is likely to be reduced. In that sense the differentiation structure will change. If integration is accomplished, change can be expected to reflect potential changes in e.g. the sequence of activities within the company.

Physical organizational structures have received considerable attention for their influence on communication patterns. Allen (1977) showed, for instance, that a physical distance of more than 35 metres between people drastically reduces their communication. Lindkvist (2001) showed that knowledge transfer is inhibited by physical separation between product development projects. The physical structure of an assembly line is one example with direct implications for production performance of an organization. The kind of repositioning addressed here is expected to require change of the physical structure used for manufacturing. The main reason is that the production outcome changes from end-products comprised of integrated subsystems to subsystems themselves.

The thought and action structures of an organization function as an interpretative filter that is shared among its members (Prahalad and Bettis, 1986). In an organization, as Daft and Weick (1984) argued, assumptions about the environment and the internal organization's self-image influence patterns in how a company acts. This obviously has implications for how people in a company experience and act during an organizational change process, such as repositioning. It can be assumed that repositioning from OEM to subsystem supplier can generate considerable friction between the company's established self-image and new role. Hence, the established thought and action structures need to change in order to manage the repositioning. However, as Hedberg (1981) argued, cognitive structures are difficult to change. The reason is that they represent e.g. core values and beliefs that the organization at large shares (Lyles and Schwenks, 1992). How fast the organization manages to reorient depends on the strength of resisting cognitive structures (Åhlström, 1995). It can for example be assumed that an organization with a long history is likely to try to defend what it has, e.g. a position as OEM. Hence it is not likely to be particularly open for external cognitive maps concerning e.g. routines, quality philosophy and language. On the other hand, a fairly new organization or an organization with an influential and new management may be expected to be more likely to have an open attitude to the external environment.

The discussion here suggests that a repositioning of a company from OEM to subsystem supplier is likely to involve a change of several structural dimensions. How the organization changes its structures has direct implications for how it

will act in the new role. One dilemma is that the requirements of the new role are difficult to predict. Thereby, the organization can be expected to experience a long period of continuous change within all its structures.

2.3.4 The role of company resources

This study emphasizes, as mentioned, the perspective of the industrial technology system as constituted by two types of technologies: horizontal technologies and vertical technologies (Karlsson, 2003). These two types can be seen as resources. Of interest here is how the resources of a company may influence and change during the repositioning from OEM to subsystem supplier.

To begin with, Wernerfelt (1984) argues that the source of competitive advantage is the company's internal resources. Building a strong competitive position means creating or acquiring resources that are unique. Barney (1986) extends the resource-based view and argues that it is not individual resources which are sources of sustainable advantage, but combinations of resources. The resource-based view e.g. of Barney (1991) assumes that resources are perfectly transferable between organizations. A range of authors (e.g. Kogut and Zander, 1992; Spender, 1996) have argued that knowledge is largely tacit and socially embedded within companies, and is therefore difficult and costly to transfer. The difficulty of knowledge transfer is thereby a source of competitive advantage.

According to research, companies build competitive advantage through creative combination of knowledge resources (Barney, 1986; Kogut and Zander, 1992). The ability to judge knowledge resources' combinatory potential is of course a matter of degree of creativity and imagination. If we assume that companies learn over time how to combine their resources, it can be expected that major decisions, regarding e.g. how to act from a new market position, emerge over time. As managers learn more about customers' production processes and resources, they begin to imagine new ways to combine their internal resources in order to meet market requirements. Daft and Weick (1984) use the term 'enacting' to describe the process through which an organization gradually constructs its environment and thereby its own role. Hence, understanding how to use the company's resources in a new market position can be expected to emerge over time through a combination of what Pettigrew (1990) calls a *"mixture of forethought and intention, chance, opportunism and environmental preparedness."*

This discussion suggests that the resources of an organization and their combinatory potential are critical for the development of a competitive new industrial position. It can thus be expected, as Sköld (2008) argued, that a company which chooses to reposition is likely to exploit its existing resources in the new market position. The discussion here also indicates that it may be necessary over time to adapt existing resources to the market requirements. There

is obviously a risk associated with such a learning process – that the transformation process of existing resources is more demanding and costly than expected. This implies that it is reasonable to believe that the company perceives the market opportunities for existing resources as fairly strong when the decision is made to reposition.

2.4 External factors influencing industrial repositioning

Under this heading we discuss central external factors for explaining Saab Aerostructures' repositioning. These external factors aim to define and explain the central change factors in Saab Aerostructures' environment. The new industrial environment has experienced substantial change during the time period of our study, 1997–2008. Saab Aerostructures has continuously had to adjust its strategy and internal change factors as a response to change in the business environment.

In the description of the external factors, we will focus on:

- supply chain transformation
- changes in actor relations and industrial conditions

The change of the buyers' (Airbus & Boeing) behaviour is presented in Chapter 5. 'Supply chain developments' and 'institutional conditions' will be discussed and defined theoretically in the following section.

2.4.1 Supply chain transformation

Many large OEM companies have in the last decade been concentrating around their core competence. They have divested parts of the company and/or outsourced production to a supporting supplier structure. In the OEM company, the combination of competences gives the company a capability of coordinating the entire outcome of the structure (Axelsson et al., 2005).

This change is related to the fact that purchasing has become a more strategically important function in industrial production. From being considered a clerical function, it is now seen as a major strategic function and tool. Companies with a complex supplier structure have to decide upon three critical strategic choices: to make or buy, the nature of the relationship with the supplier, and what supplier base structure they want to have (Gadde & Håkansson, 1994).

According to the 'Kraljic matrix' an OEM with advanced purchasing strategies typifies its suppliers, based on how crucial they are for the company's performance. The OEM will allocate more resources for developing relationships with strategic suppliers (which supply strategic products). The OEM may rely on

the supplier for solving certain problems or for integrating systems. A supplier that has acquired such responsibilities will be more difficult to replace, and can probably also enjoy higher profit margins. In contrast, routine products will attract much less focus, and be acquired in a more competitive manner. The focus of such relationships is largely to reduce costs. This overall approach; '*sourcing'*, relates to developing the most appropriate supplier strategy for a certain commodity or product category: number of suppliers, type of relationship and type of contract (Axelsson et al. 2005; van Weele, 2005).

Globalized value chains steered by global sourcing decisions increase inter-dependence between companies at different stages in each value chain. The value chains are continuously being adjusted and perfected in order to improve the timing between different inputs. The supplier becomes more dependent on the OEM and on the demand shocks or disturbances that may affect the OEM. The 'Bullwhip Effect' in value chains is a logistic phenomenon named after the way the amplitude of a whip's swing increases down its length; i.e. the suppliers further down the industrial hierarchy risk being more severely affected by demand fluctuations (Handfield & McCormack, 2008; Zsisidin & Ritchie, 2008).

One aspect that influences the development of supply chain relationships is management of risk. The responsibility for developing e.g. a new, large commercial aircraft brings with it tremendous risks. In order to decrease their own risk, the OEMs in the industrial pyramid will create agreements with subcontractors on the 1st tier regarding shares of the overall development responsibility. These subcontractors will in their turn outsource and share the risks, and the responsibility that they have engaged in, with subcontractors further down the pecking order of the industrial hierarchy. For all such new relationships that are established, there will be an incentive to secure the development or financial risk through contracts. Such risks may be *technical* (will the supplier provide a solution at a sufficient technical level?), *commercial* (related to the uncertainty regarding price and cost), contractual (has the contract sufficiently specified the performance that is expected from the supplier?) or *performance* (can the supplier perform the task that it is hired to do? Does it have sufficient capacity and flexibility?) (van Weele, 2005).

2.4.2 Changes in actor relations and industrial conditions

The type of repositioning company studied in this report has to force itself into an already established supplier structure. It can be presumed that the more mature and specialized the market, the more difficult it will be to establish a new position. It can be expected that this will demand considerable management support and financial strength in order to survive the first period, which probably will generate losses. The established supplier in the industry will probably react with different strategic moves in order to reject the new competitor. It can be assumed that if the entered value chain level is in a stage of fundamental change

or under creation (i.e. less established and less stable), the repositioning company will have considerably better opportunities to establish itself. In order for a company to gain a position in an established supplier structure, there must be some kind of opening up of the present structure (Axelsson et al., 2005).

A company's closest and most formative environment can be described as an 'organizational field'. A company is dependent on other actors in the organizational field. There is a dependence on receiving resources from certain actors in the field – a 'resource dependence' (Lawrence & Lorsch, 1967; Meyer & Rowan, 1977). Meyer (2007) describes an organizational field as a field of actors that is characterized by a single predominant order or logic, or by multiple and potentially competing institutional ones. A complementary perspective is to view the external environment as an industrial network, which is the term used in this report.

One way to address the interdependences between actors in an industrial network is as institutionalised relationships. An institution is "an established order comprising rule bound and standardised behaviour" (Scott, 2001). If an industry has had stable conditions for a long time, it will show an increasingly institutionalized behaviour. That is, the relationships between actors follow roughly the same patterns, and hence there is a fairly high level of stability within the industrial network. When conditions for the institution change dramatically, the companies will react to these changes and strategically reorient themselves in ways that will change the conditions of the industry and the market. We can speak of industry formation processes (Van de Ven and Garud, 1989; Aldrich, 1999; Scott, 2001). Such change normally occurs on several levels of the institutionalized relationships (Scott, 2001). Today, such a change process can be seen in many globalized industries, e.g. in the aerospace industry.

The occurrence of such institutional change can explain why market opportunities emerged for Saab Aerostructures. A term that captures this is 'deinstitutionalization' at the level of the OEM. Deinstitutionalization is defined by Oliver (1992) as 'the process by which the legitimacy of an established or institutional practice erodes or discontinues'.

As the operations among companies in an industrial network become routinized and their behaviour becomes institutionalised, resource allocation and power structures will be stabilized. The force of habit, history and tradition within the organization creates value congruence and shared interpretations among the members of the industrial network, which are likely to make them highly resistant to change (Berger & Luckmann, 1967; Tolbert & Zucker, 1983; Oliver, 1992). If the OEM company decides to fundamentally change its supply structure, it may have to 'deinstitutionalize' its own relationships with the industrial network. To the extent that such change also involves changes in the roles between the OEM company and its strategic supplier, it requires change in values and power structures that have become obvious and implicitly infused into

organizational routines. Such a transformation will offer serious strategic challenges for management (Oliver, 1992; Scott, 2001; Dacin & Dacin, 2007). One reason is the potential resistance to change among established suppliers in the industry – that is, what can be described as institutional inertia at the level of the industrial network (Granovetter, 1985; North, 1999; Lawrence, 2008). For a company wishing to reposition into an existing supply chain structure, its chances of success are likely to strongly reflect the extent to which such deinstitutionalization takes place.

This chapter has outlined the theoretical perspectives that are used in order to enable this study. The following chapter will discuss how the study underlying this report was accomplished.

3 Method

This chapter will in brief describe how this study was accomplished. It clarifies the major choices and methodological techniques used in order to accomplish the purpose of the study.

The background for this study was a direct request from the Swedish Ministry of Defence regarding what may happen to a company that transforms from OEM to subsystem provider. We began by conceptually developing categories of what we perceived as being important issues for understanding such a repositioning of a company. A researcher from the Stockholm School of Economics partnered with us and generated valuable hypotheses regarding consequences of shift to a lower position in an industrial network (Sköld, 2008). The combination of these different approaches contributed to our definition of both the kind of company that we should investigate and the kind of issues that we should address.

To begin with, we defined the relevant population as major subsystem suppliers that previously held a position of OEM. Since we primarily were interested in the repositioning of defence companies, we constrained the relevant population to that sector. However, we believe that many of the factors influencing repositioning within the defence sector are similar to those in other industries. The geographical scope of the population was Europe, for the practical reason of travelling time. The sample of choice should be one company within the population. As mentioned in the previous chapter, to our knowledge the kind of repositioning studied here is very unusual. Based on our previous knowledge from studies of the international defence and aerospace industry, we identified three potentially interesting companies. One company was located in the Netherlands and two in Sweden. The initial scanning showed that one of the companies in Sweden did not fully meet the criteria of the population, because it never had a complete capacity as OEM. Its products on higher system levels were produced under licence, and whether they were OEM products was also debatable. Both of the remaining cases were interesting. However, we had more knowledge about the Swedish case, which reduced the uncertainty of selecting it. After initial contacts with managers from the company it became clear that the case was very promising and we would receive good access to data. This was also a better case for reasons of travel. Hence our report came to be based on the repositioning of Saab Aerostructures.

In order to gain in-depth knowledge about the case, our choice was to collect data primarily through face-to-face interviews at Saab Aerostructures in Linköping. We have also had follow-up conversations by telephone. In addition, a data feedback seminar was used to validate the data with representatives of the company. Furthermore, we have studied other analyses of Saab Aerostructures, the commercial aircraft business, and Aerostructures' competitive environment. Finally, we have searched on the Internet for e.g. new articles regarding the

development of the international aerospace industry in general and Saab in particular.

The face-to-face interviews were structured by a question sheet. We sometimes departed from these questions when unforeseen questions arose, or if the communication simply drifted in a new direction that to the respondents was seen as important for understanding their competitive conditions, strategy or other aspects.

The respondents were in senior management positions at Aerostructures. They participated in the interviews because they had extensive experience of the repositioning. Most of them had been working in high management positions at Aerostructures all through the period from 1996 until 2008. In total we conducted ten interviews.

We believe that the most appropriate method was face-to-face interviews in order to achieve sufficient richness in the data collection. Furthermore, possible misunderstandings of our questions could be clarified or avoided. We noticed that there were some minor details on setbacks or problems that came up during discussions, issues downplayed by some respondents. Such issues are mentioned in the text. Our overall impression is that most respondents had similar views on the development of the company. To some extent we thought that there was a tendency to downplay negative events. In order to check their importance we talked to people who had followed the development of Saab Aerostructures from the inside and from external positions. They did not see these negative issues as being of major importance for the repositioning process. Moreover, our personal impressions from the face-to-face interviews strongly suggest that the respondents' views are reliable.[4] Therefore, we think it is reasonable to believe that the accuracy of our interview data is high.

Using different sources and types of gathering data enables triangulation, which enhances validation of case studies (Yin, 1994). This process was closely associated with analysis of our data. The validation process began after the interviews when we structured the interview protocols under the headings of the questionnaire. In these headings we coded the different statements regarding the strategic process over the studied time period. The statements that were cited by the most respondents were defined as the most important. These statements, together with the others, were validated in a data feedback workshop. The latter was used to present our findings and validate our understanding of the studied change process, as well as to gain additional and complementary data. Furthermore, in order to further extent our validation we have compared our data

[4] We should add that we do not distrust our respondents in any way. In a section about methodology, a researcher must reflect upon and question himself regarding whether the interpretation of data from qualitative methodology offers a plausible conclusion. There is an element of interpretation which may distort data. See e.g. Alvesson & Sköldberg (1994).

with Holtström's (2004) analysis of the same repositioning (from another angle, and during a shorter period of time). The findings presented by him supported our observations.

From our deepening insights we derived interpretations, and reflected upon our understanding and explanation for the studied repositioning. In order to stabilize our analysis and come up with a plausible and credible report, we have questioned each other's writings and conclusions. Since there is little written on this particular repositioning and it is not a well-defined theoretical phenomenon, we have had to define our own 'analytical universe' wherein we discuss our data (see Chapter 2.3). In sum, this report is a result of our interpretation. Hence, to what extent are the results presented in the report likely to be generalizable to other similar cases?

The results from the analysis are also compared with existing theories in order to enhance generalizability (Eisenhardt, 1989). This means that if theories can support the findings, it is more likely that the results are valid for other situations than the studied ones alone. We do not claim that our analysis and conclusions are applicable to all similar cases of repositioning. Yet it is plausible that we have identified factors which are of importance for understanding the repositioning of companies from OEM to first-tier supplier. However, we suspect that the importance of different factors is likely to vary between different cases.

4 Case: Saab Aerostructures' repositioning in an industrial network

The following introduces the case of the repositioning of Saab's commercial aerospace business. *First*, this chapter addresses the establishment of Saab Aerostructures after the choice to liquidate Saab Commercial Aircraft. *Second*, it describes critical events during the development of Saab Aerostructures between 1997 and 2008. *Third*, focus turns to the present situation of the company. *Fourth*, the main factors that have made the development of Saab Aerostructures possible are presented. *Finally*, the description addresses the major challenges of the repositioning.

In the supply chains for large commercial aircraft, there has long been a rough division between three parts that represent one third each of the value of the final aircraft: *system*, *structure* and *engine* (propulsion). Saab Aerostructures mainly operates in the 'structure' third, but aims to be awarded aspects of the 'system' third.

4.1 The establishment of Saab Aerostructures

Saab Commercial Aircraft first developed the Saab 340 together with Fairchild Aircraft (U.S.). This plane first flew in 1983 and Saab sold a total of 459. Fairchild left the joint project in 1985. The 340 is a small commercial, turboprop aircraft, seating 39 passengers.

After that, Saab developed the Saab 2000 together with Casa from Spain. Its maiden flight took place in 1988 and Saab delivered 64 examples. The Saab 2000 takes 50 passengers, and is also turboprop.

In 1997–1998, Saab Commercial Aircraft suffered major losses. The company was losing millions of SEK every month. The basic reason for the financial difficulties was that the Saab 2000 was sold in low numbers. Three external factors are identified as major causes of that situation:

1. Harsh competition on the market for regional aircraft[5] between seven companies. There was at that time overcapacity in the industry. The consequence was falling prices. In fact, the price per plane was below the cost for components.
2. Saab had calculated with soaring fuel prices – but these did not come about and thereby the interest in the relatively fuel-efficient Saab 2000 never took off.
3. After a plane accident in Canada in 1994[6] passengers were reluctant to travel on planes with turboprop engines. Hence, airlines hesitated to purchase such planes.
4. The market introduction of the Saab 2000 was delayed one year because of difficulties in meeting product performance requirements.

The company's management in the face of this situation saw no future for a position as manufacturer of commercial aircrafts in its niche. A critical issue was thus what choice they had – to exit or to reposition.

The choice to close down the commercial aircraft business was made in 1998. It meant that the production of Saab 2000 was terminated. The planes that were not sold were transferred to a separate part of the Saab Group (Saab Aircraft Leasing). These aircraft are still operated through leasing arrangements with airlines around the world.

There was at this stage also an embryonic activity of supplying components, and a minor business unit called Collaborative Programmes that supported the creation of Saab Aerostructures. Saab management saw a growing business potential in this position as supplier to Airbus and Boeing.

In this situation, the Saab Group management made the strategic choice to reposition. This decision was based upon suggestions from the remaining management of Saab Commercial Aircraft. It was a complex situation and uncertainty about the future was high. Thus the choice to reposition was made on the basis of several strategic and emotional considerations. The following lists the major reasons identified by this case study.

First, the company possessed equipment and industrial facilities (assets) which it had to either divest or use in an alternative market.

[5] A regional aircraft (or regional jet) is a small aircraft designed to fly between 35 and 100 passengers from point to point on short-haul flights. This class of aircraft is typically flown by the regional airline divisions of the larger international airlines, although they perform cargo duty and even transport troops for defence forces. http://en.wikipedia.org/wiki/Regional_jet

[6] http://rgl.faa.gov/Regulatory_and_Guidance_Library/rgAD.nsf/0/7480cb41add5d295862569820070097b!OpenDocument This was with a French Aérospatiale Model ATR-72. The accident occurred in October 1994 (Halloween) on a flight from Indianapolis to Chicago. See also http://en.wikipedia.org/wiki/American_Eagle_Flight_4184.

Second, the company had many highly specialized and competent individuals who were facing unemployment. This was a key resource that was considered too valuable to lose. Instead it was thought reasonable that many of them could make an important contribution in a new business unit.

Third, the company had technical competence about aircraft structures and composite materials which was rather unique and valuable. Hence the company's senior management did not want to lose that.

Fourth, the aggregate technical competence was deemed crucial for the future of the programme to produce the Gripen fighter plane. The future of production and development of the Gripen especially required "a critical mass" of competence about structures.

Fifth, managers on different levels in the company were emotionally reluctant to phase out all resources. In fact, there were also costs associated with divestment of the industrial facilities and the equipment. It was seen as more motivating to set out to accomplish something new with the existing resources.

Sixth, there was a clear market opportunity in sight. 94% of the commercial aircraft industry was controlled by two companies: Airbus and Boeing. It was considered plausible that if Saab could only get a small share of the supply market to these companies, this would compensate for a fair amount of the business lost. Aerostructures also perceived that the domestically defined supplier structures had started to open up and come under competitive pressure, thereby allowing new suppliers. Furthermore, the profit levels were experienced as too low in their present segment.

The presentation here has focused on the situation leading to the decision to reposition. The following outlines the critical events during the establishment and expansion of Saab Aerostructures.

There was a transitional period when Saab Aerostructures also tried to offer its structural competence in such diverse markets as wind power stations, trucks, trains, and roofs for large buildings. These attempts proved unsuccessful, however, and a concentration on aerospace structural components resulted.

4.2 The development of Saab Aerostructures – from 1997 to 2008

The following will describe important issues in the studied period, between 1997 and 2008, of Saab Aerostructures' repositioning. Thus it will not address the recent challenges facing the company because its customers struggle with delayed projects and declining world market.

4.2.1 Steps in the development of Saab Aerostructures

Year	Event	Comment
1996	"Build to print" orders from Boeing	Saab Commercial Aircraft had received commitments to supply certain structural components; this was a role that was outside their business idea. The background was the capacity of a small unit within the company to produce component details. The process of finding new customers for that capacity began in 1994.
1997	The business unit *Collaborative Programmes* was established January 1.	Collaborative Programmes was created in order to manage some minor collaborative commitments as supplier that remained from Saab Commercial Aircraft.
1997	Decision to cancel the production of Saab 2000 and exit the role of manufacturer of commercial planes	The decision was made since the senior management saw no realistic increase in the demand for Saab 2000. It was time-critical and necessary to stop the big losses.
1997	MoU concerning 5% of Airbus 3XX production – "risk-taking partner" (Holtström, 2004)	During 1997–2001 Aerostructures did concept studies for A3XX. In 2000 the agreement was rewritten in order for Aerostructures to produce wing beams for A380.
1998	Achieved the first large commercial order – A340	Discussion with Airbus had begun in 1997.
2000	Conditional loan from the Ministry of Industry in order to be able to develop and produce wing beams for A380	Started to repay the loan in 2003 (now repaid in total).
2003	Integration of "Structure" capability between non-defence and defence	This meant e.g. that Aerostructures took over the responsibility for the Gripen fore fuselage.
2005	Introduction of Lean started	A continuous process aiming for improved efficiency of the organization's operations – it is driven by clear cost reduction objectives.
2006	Delays for A380	1-year delay in production start of A380 due to bad design of cabling system.
2008	Integration of marketing departments at Aerosystems and Aerostructures	The purpose is to create a sufficient body for larger projects and to create a foundation for utilizing Saab's entire breadth of competences related to aerospace in order to create forward integration.
2008	Delivery problems at Boeing with B787. Simultaneously Aerostructures missed out on a large order for A350.	Creates a short time decrease in Saab Aerostructures' cash flow because orders are delayed.

Table 4:1: Critical incidents in the development of Sabb Aerostructures

4.3 Saab Aerostructures today

This section presents Saab Aerostructures today: key facts about the company, the main external change factors, and an overview of its competitors. Hence, the following focuses on important aspects of the current situation, some 10 years after the decision to reposition.

4.3.1 Key facts about Saab Aerostructures

Saab Aerostructures is a business unit within the Saab Group. It is part of the Saab Group's *Aviation* segment. Compared to the other parts of the segment, Saab Aerostructures is much more exposed to and focused on the commercial aerospace market.

The following presents key data about the organization of Saab Aerostructures in 2008.

Number of employees	Approximately 1200
Annual revenue	1.5 billion SEK (of which approximately 600 million are from the commercial business). The calculated figure was 1 billion, but this was not achieved because of delayed orders from Airbus and Boeing.
Annual growth	Approximately 30% over the time period
Major current projects	A340 A400M (doors) A380 B787 (door system) NH90 helicopter, fore fuselage Robot 15
Order backlog	6.5 billion SEK + the Gripen[7]

Table 4.2: Saab Aerostructures in 2008

Present business balance of Aerostructures. The growth has been entirely organic.

[7] All transactions and results regarding the Gripen system are consolidated on a corporate level. Hence there are no public data available regarding the Gripen on a business unit level.

1997	2008
90 % military. 95 % Saab Group, 5 % external	70/30 mil-civ (the relationship would have been 50/50 if the orders from Airbus and Boeing had not been delayed)

Table 4.3: Saab Aerostructures business balance

The aim is to reach a turnover of about 3 billion SEK/year.

4.3.2 External change factors

We will now assess the external change factors which were instrumental in Saab Aerostructures' repositioning, and which have been identified in the case study.

Increase of outsourcing

Saab Aerostructures is currently developing a global network of suppliers. This means that the company increasingly outsources labour-intensive parts of the manufacturing process to suppliers in countries like South Africa and India. The choice of suppliers is highly influenced by the export of the Gripen and by the countries preferred by the customers – i.e. Airbus and Boeing. Hence, the company is about to establish a global supply chain. The new suppliers are expected to increasingly play an active role and not merely produce based on blueprint. This development brings about the challenge of learning how to operate a global network.

The increase of collaborations with other companies is driven by cost pressures. The main reason is that the two major customers, Airbus and Boeing, are struggling with financial challenges and thus putting pressure on their suppliers to reduce prices. The consequence is that in order to remain a competitive supplier, Saab's cost structure needs to adapt to these demands. The company does not have the cost structure within its internal operations that enables it to meet these cost demands. Hence, it needs increasingly to outsource production to low-cost suppliers.

Changes in the industry structure

The commercial aerospace industry is currently going through a process of restructuring. This development is largely driven by the difficulties facing Boeing and Airbus, and by the increasing requirements of fuel-efficient and environment-friendly aircrafts. The restructuring takes place both among Saab Aerostructures' competitors on tier 1 in the industrial hierarchy and among suppliers on lower tier levels.

One manager at Saab Aerostructures made the following comment:

> *"Saab Aerostructures' competitors are becoming larger and fewer because of consolidation. Therefore, Saab needs to develop its niche, among the seven to ten competitors."*

Regarding the consolidation in the supply chain, one manager said:

> *"There is a consolidation on the level under Saab – among these companies there is a pressure to move up in the industrial hierarchy."*

The following table presents some data about Saab Aerostructures' major competitors. Added to this, Aerostructures foresees highly increased production volumes going to China, India and other nations in Asia, with favourable factor costs and with domestic airlines acquiring aircraft from Airbus and Boeing.

Competitors	History
Spirit Aerosystems (US)	Spirit is a conglomerate of various aerospace production sites that have been divested from Boeing and other aircraft producers in the US. Spirit also has plants in Scotland and England. In the legacy of Spirit lie companies like Spearman, Wichita, Boeing and Rockwell. The Boeing Company's Wichita Division was acquired in 2005 by Onex and renamed Spirit Aerosystems. In 2006, Spirit acquired the BAE Systems Aerostructures business unit.
GKN (UK)	GKN has plants in UK, US, Australia, Germany, France and Thailand. GKN acquired the Airbus UK manufacturing sites in 2008.
Stork Fokker (NL)	Fokker used to produce its own aircraft, and was for a time the world's largest aircraft manufacturer. It has plants in the Netherlands and in Romania. Stork also used to produce its own aircraft, but became a supplier to Fokker. Stork acquired Fokker in 1996.
Alenia Aeronautica (Ita)	Alenia is a subsidiary of Finmeccanica. Aeronautica produces aeronautical systems and structures to e.g. Tornado, Eurofighter, Airbus and Boeing. Aeronautica has sites in Italy, US, Canada, Russia, France, Wales, Greece, Turkey and Switzerland.
EADS/Casa (Spa)	Casa (Construcciones Aeronáuticas SA) was founded in 1923. It produces its own aircraft and has work share production in Eurofighter and through several projects through Airbus. It is since 2000 a part of EADS.
Latécoère Groupe (Fra)	Latécoère initially produced flying boat planes, and made the biggest ones ever built. Based in Toulouse, Latécoère has plants in France, Brazil, Czech Republic, Tunisia, Germany and Spain.
Vought Aircraft Industries Inc. (US)	Vought was founded in 1917 and from 1922 built its own aircraft, primarily military. It no longer produces its own aircraft and is now solely an aerospace supplier. The last Vought aircraft produced was the A7 Corsair. Vought has plants only in the US.
Fuji Heavy Industries (Jap)	All three Japanese companies have attained large production assignments for Boeing. In a setup orchestrated by the Japanese government, they are risk-sharing partners, making 35% of Boeing's latest aircraft, the 787 (*Dreamliner*).[89] They also have numerous other supplier positions with Airbus, Boeing and regional jet producers. Fuji has plants in Japan and several other nations, but which plants are engaged in aerospace is unclear. It has in its legacy Nakajima Aircraft, and Fuji has licence-produced several aircraft. It also develops UAVs for Japan's defence. Kawasaki was founded in 1878, starting with ocean-going ships. Started with aircraft in 1918. Unclear which plants are engaged in aerospace. Mitsubishi makes its own regional jets. It primarily makes wings as a supplier to Airbus and Boeing.[10]
Kawasaki Heavy Industries (Jap)	
Mitsubishi Heavy Industries (Jap)	
Aerolia (Fra)[11]	Created as a divestment from Airbus January 1, 2009. Specialized in nose fuselage subassemblies. Owned by EADS. 2200 employees.
Premium AEROTEC (Ger)	Created as a divestment from Airbus January 1, 2009. Specialized in "large and small, complex contoured aerospace assemblies, jigs and tools". Owned by EADS. 6000 employees.

Table 4.4: Saab Aerostructures' main competitors[12]

[8] According to interviews, the Japanese producers have not competed with Aerostructures in bidding to Boeing; their production share is a politically designed commitment. They do however perform a sizeable share of the production of primary structures for Airbus and Boeing.

[9] Newhouse, 2007.

[10] Very limited information on the Mitsubishi homepage, http://www.mhi.co.jp/en/products/defense_index.html.

[11] Aerolia as well as Premium AEROTEC are, according to interviews, for sale from EADS, so they are in a semi-divested stage in early 2009.

Enhanced integrative role

The current situation is also characterized by a trend where the customers demand that suppliers like Saab should take a greater responsibility for product development. This is driven by the wish to distribute risks and costs to other companies.

Saab Aerostructures also strives towards taking a greater role as system integrator. That is, the company's management wishes to add more value in its customer projects by complementing structures with system integration. The underlying reason is that the company needs to add more advanced technology to its products in order to charge the prices necessary given its cost structure. The strategic idea is that more responsibility for the customers' products may help to differentiate Saab Aerostructures from competitors. Thus, Saab Aerostructures chooses to differentiate from the competitors with unique offerings more than price – simply because the company thereby uses its current strengths. Saab Aerostructures wants to position itself as "*tier 1+ supplier*", i.e. to be seen by the customers as distinguished from several competitors by its broader systemic and integrative ability.

One manager at Saab Aerostructures made the following comment:

> *"We have an edge on the system side. That is, due to the legacy of end-product manufacturer and experiences from the Gripen programme, the company is capable of taking larger responsibility as integrator of the customers' products. One example is the current integration of doors for the 747 with different subsystems."*

Therefore, the company is currently working towards strengthening Aerosystems for potential future projects as supplier with more responsibility for integration. In order to develop the integrative capacity, there is an ongoing process within Saab Aerostructures to enhance the synergies between commercial and military production and the competences at Saab Aerosystems.

One of the first moves in that direction was the transfer within the Saab Group of structures and manufacturing for large parts of the Gripen production from Saab Aerosystems to Aerostructures in 2003. In 2008, the collaboration between Aerostructures and Aerosystems was expanded through a fusion of their marketing departments.

'Green' technology challenges

The commercial aerospace industry is currently facing technology pressure because of the climate change debate. This means that there is a need for new innovations that can contribute to enhanced fuel efficiency.

[12] Most of this information is gathered from the companies' web pages and from related web searches.

Therefore, Saab Aerostructures is currently participating in EU technology programmes in order to position the company for the next technology breakthroughs and the next generation of aircraft. For instance, there are discussions about new types of engines – which have implications for the structures of wings. According to one manager, this development has implications for Aerostructures' niche as manufacturer of structures for e.g. wings.

> *"A new generation of aircraft may have propeller engines. To Saab that could mean a new demand for our capability of integrating engines on wings."*

Hence, the change of technology requirements is also a factor increasing the requirements of the company's system integration capability.

Current market set-backs

The last few years have seen several major technological setbacks for Airbus and Boeing. The effect has been delayed production of both A380 and B787. This has meant that planned orders to suppliers like Saab Aerostructures have been postponed a year and more. Therefore, there is currently a reduction of revenue forecasts.

One of the managers at Saab Aerostructures explained the current situation in the following way:

> *"Now, they (Airbus and Boeing) are forcing technology and organizational development in greater leaps. An increasingly large share of the development of new products takes place outside these large companies – for example, the wings for the 787 are developed and manufactured in Japan and doors are produced in Sweden (by Saab). It is, however, difficult to manage the global product and production system, which causes delays. The reason is a lack of integration capability and knowledge – because the companies have engaged in too large technological and organizational leaps."*

4.4 The repositioning process

The scope of this section is to describe the key factors that enabled the repositioning of Saab Aerostructures. We have also identified a number of internally shaped drivers that have been instrumental in the change process. Hence, this section focuses on important explanations for how the company managed to gain its present position on the market.

4.4.1 System integration competence as competitive advantage

Compared to competitors, Saab Aerostructures had more competence about system integration. The reason is the experience from Saab's commercial aircraft programmes and the Gripen programme.

This system integration competence is, among people at Saab Aerostructures, seen as one advantage because it contributed to the understanding of the customers' major challenges. It also meant that engineers from Saab could generate new and creative solutions regarding integration of structures, which the customer had not considered. One of the respondents of the present study made the following statement:

> *"We had experience from Saab 340, 2000 and the Gripen. It contributed to system thinking and we were thereby able to better understand the customer. For example, we gave suggestions to Airbus regarding how they could use our solution for the A340's rudder."*

This system integration competence is currently maintained and potentially enhanced due to the work with development of the next generation of the Gripen. In that sense, the company manages to continuously use the combination of competence on structures and integration as a competitive advantage. Competitors like Fokker, which has a similar background, are losing their system integration advantage according to people working at Saab.

4.4.2 Management commitment

It was described by respondents that the management on all levels – from the major owner Investor to the board, CEO and business unit managers – were highly engaged in and supported the repositioning. This was experienced as very important, both as a motivational factor and as a key for leading the repositioning. This commitment and support was also felt over a long period of time, which was important for sticking to the vision for the transformation.

One respondent made the following comment:

> *"The management team talked a lot about the major issues. There was a consensus about which companies we should work with and how they should act in order to reduce costs."*

This functioning of the management was described as a key factor for creating the common image of the path the company should pursue. People believed that the close collaboration between the members of the management team was an important reason for the development of the high management capacity.

It was also seen as important that the CEO of Saab Aerostructures frequently spent time talking to people about the progress of the company. This contributed to putting a focus on the finances of the company and created a sense among people that their daily work had an impact on the results.

4.4.3 Government conditional loan

Saab Aerostructures received a conditional loan in 2000 from the Swedish government in order to finance the development for the A380. According to several respondents, this loan was important for helping Aerostructures through a critical phase. Thanks to the loan, they were able to take on a development commitment for an Airbus project. The loan has been repaid.

4.4.4 The Gripen programme as a basis

One key enabling factor behind the development of technological competences within Saab Aerostructures is the work tasks performed for the production of the Gripen. A common view among respondents is that the Gripen programme has been a competence generator for Saab Aerostructures. The work packages for the Gripen have meant working in the front line of technology, which has enhanced the level of competence within the company. This has been critical for accomplishing the commercial projects. The commercial project, on the other hand, has also contributed to sustaining critical competences for the Gripen programme. One respondent described this reciprocal relationship in the following way:

> *"Competence development has been integrated with the manufacturing of the Gripen – military and commercial projects have supported one another. It would have been difficult to keep a critical volume of certain competences without the commercial projects. Having both military and commercial projects helps to accommodate between ups and downs in two segments."*

The Gripen programme is also described as vital since it has generated work and thereby cash flow necessary for maintaining a body of competence within Aerostructures. It is commonly recognized within Saab Aerostructures that without the Gripen as a source of income the repositioning on the commercial market would not have been possible.

4.4.5 Recruitment of highly skilled individuals from the closed business

The development of Saab Aerostructures is largely described as a result of the access to competent engineers. This was possible because key, hand-picked individuals from the Commercial Aircraft business were invited to work at Saab

Aerostructures when the business unit was established in 1997/98. In total some 300 individuals were transferred to Aerostructures.

4.4.6 Exploiting niche competences

Facing the choice of repositioning or liquidating the business, Saab Aerostructures made the choice to exploit niche competences. This meant that the company focused on areas of technology where it had in-depth knowledge and where its high cost structure was not too much of a drawback.

The choice was not, however, made once and for all. Instead the exploitation of key technology areas emerged as the company learned what the market was interested in. During this process some areas where the company believed it had a competitive edge eventually were given less priority because the market did not take off. For instance, the company had previously specialized in laminate gluing technology for fitting the different parts of the aircraft. This was seen as better than the traditional riveting technology. However, customers were not interested in Saab's solution. Aerostructures admit that they held on to this 'pet technology' for too long, which demanded some resources.

The niche competences that emerged as the core of Saab Aerostructures business were:

- Construction
- Structural integrity[13]
- Production/process technology
- Production capacity

A factor that appears to have been a positive factor is the fact that, at the point in time when the production of commercial aircraft was closed down, there was a highly elaborated mix of sophisticated industrial plants at Saab's Linköping facilities. There were buildings and equipment already in place for much of the work performed in order to meet project requirements.

4.4.7 Clear strategic objectives

From the start in 1997 the management of Saab Aerostructures formulated a strategic vision. The aim was to point at a direction for the efforts made in order to create a viable business.

[13] Structural integrity concerns the ability of an aerospace construction to safely withstand the loads to which it is subjected. Common design criteria for construction of aerospace structural systems concern allowing some but low mechanical flexibility; durability; and low weight; these criteria have to be met without compromising structural integrity. Another term for structural integrity could be 'material strength'.

One of the managers involved in the repositioning said:

> *"We had a clear vision at the early start, to become the most respected supplier of primary structures to Airbus and Boeing."*

The basic idea was to become one of the 25-30 companies on tier level 1 with an annual profit level between 10 and 20%. One reason for the choice to establish the company on a high tier level in the industrial hierarchy was that the potential margins were higher than on the lower levels. The company had a cost structure which was a legacy from previous programmes as end-product manufacturer, and which would make it more or less impossible to operate on lower tier levels. A high tier-level position would also enable the company to gain some advantages from its system integration capability.

As Aerostructures describes its initial entry into the supplier structures under Airbus and Boeing, it had to work its way up the pyramid of tiered levels. First it had to take unsophisticated production orders that were not profitable, far below the aggregate competence and capability of (what was to become) Aerostructures.

In addition, respondents emphasized the importance of having had a clear and stable business idea consistent with the strategic vision. It is experienced that this created stability within the company.

Furthermore, there was a shared understanding within the company that the production of the Gripen would come to an end – sooner or later depending on exports. This created a commitment to pursuing the strategic objectives of gaining a new position as supplier to Airbus and Boeing.

4.4.8 Revenge

The termination of production of commercial aircrafts was regarded as a 'traumatic experience' by many individuals. For many of those people who found a new position at Saab Aerostructures, there was a strong desire for revenge after the divestment of Saab Commercial Aircraft.

The employees knew what they could accomplish with their skills. Hence, they wished to show both colleagues within other parts of Saab and the external business community what they could achieve. Several respondents mentioned that they were motivated by showing a sceptical internal and external environment that they were going to succeed with this transformation.

4.5 Challenges during the repositioning

This section will present challenges that Saab Aerostructures has faced during the repositioning, until 2008. It describes factors that have been recognized as

difficulties. The order in which they are presented does not indicate any valuation of the strength and importance of the challenges. They are categories of issues that have been identified through the interviews with people working at Saab Aerostructures.

4.5.1 Establishing the role of supplier

The transformation from the role of OEM to that of a supplier of subsystems was in many ways difficult. A number of challenges were mentioned: it changed the self-image of the organization, and one had to learn to understand and listen to customers' requirements, as well as to develop a competitive cost-structure. The following presents these and other challenges that the company had to deal with during the repositioning.

During the first years it was difficult to accept that the customer's price was the right price. One respondent said:

> *"We soon realized that we were too expensive. It was necessary to meet the customer's target price. In order to accomplish this we had to analyse how we utilized each part of our operations – e.g. development, machines and assembly."*

However, despite this insight it was experienced as difficult for people to adapt to a design-to-cost logic. This was related to another challenge: to learn to really listen to and accept the customer's product and process requirements. One manager at Saab Aerostructures made the following comment:

> *"Engineers from Saab pushed and argued for their own ideas instead of listening to the customer's requirements."*

There was also a tendency among engineers to patronize representatives of the customer. It was described that people from Saab thought that the customers did not really understand. However, gradually the insight emerged that the customers in fact were competent and they only had different perspectives than the engineers from Saab. It was experienced that this insight contributed to a discussion within the company on how they could change in order to become more sensitive to the customers' arguments.

It was experienced as difficult to accept that the company no longer had a product of its own. The end-product used to be central for the image of the organization. This change meant that a new identity had to be created – which took time.

In practice, this change was expressed in the ways the operations of the company changed. The repositioning meant a shift in the focus of the company's operations, from technology to business. It required that the company developed a business model which was synchronised with the major customers. It also meant

that the production operations had to adopt new routines in order to meet the customers' different certification requirements.

One senior manager made the following comment:

> *"Our whole operations system had to adapt to Airbus and Boeing operations. This included quality systems, certification and evaluation of material."*

There was also a journey to learn how to combine and capitalize on the legacy competences in the role of subsystem supplier. The experience is that it was rather difficult to transfer existing competences to a new market. It took much more time than expected. And it would not have been possible without the cash flow from the Gripen programme.

4.5.2 The different logics of military and commercial projects

One challenge was to manage the difference between military and commercial product and production logics. The main reason was the differences in perspectives and requirements of quality between military and commercial projects. For instance, commercial projects operated at a higher tempo than military ones. There was also a much stronger focus on cost-efficiency in projects having commercial customers. Military projects are more stable, have smaller batches and are technologically more complex. These differences lead to some painful clashes between the two lines of operations.

4.5.3 Meeting efficiency requirements

The company had to learn to work continuously with improvements of efficiency. In the beginning this was a difficult process. The reason was the undisputed self-image of the company as being cost-efficient.

This need for improved cost-efficiency became apparent when they initially failed to meet a target price[14]. As a response to the requirements of efficiency improvements, there is now an internal focus on implementing the "lean" philosophy in the company's different operations – although this was hard to begin implementing.

There is also a focus on trying to enhance the suppliers' efficiency. One respondent expressed this focus on both the company's and the suppliers' efficiency:

[14] Target price: a pre-defined price for a product to be developed. The price is agreed upon in a contract.

> *"We are continuously trying to reduce costs. Internal improvements are crucial but we are more and more outsourcing production to our suppliers. Thereby their efficiency becomes increasingly important to us."*

This means that the company currently is working with implementing "lean" among its suppliers. For example, it strives to create a timely flow of input of components from suppliers that is integrated with the internal production.

4.5.4 Access to capital

Access to financial resources has been a critical issue, for several reasons. On the cost side, one reason is that it is very costly to develop new products and there may be many years between investments and return. Hence, there has been a challenge to finance the development of the technology necessary for accomplishing the commercial projects.

The company also has limited capacity to handle fluctuations in orders because of accounting rules. The reason is that without having a product it is not possible to make discounted cash flows. Hence, losses and profits must be booked in the given year. This means that unexpected delays in a customer's order strikes hard at the finances of Saab Aerostructures. This is, for instance, a current problem due to the delayed A380 and B787.

5 Impact of the strategies of the end producer duopoly – Airbus and Boeing

It is apparent that the industrial development and supplier structure of large commercial jet aircraft is steered and designed by the two dominant producers: Airbus and Boeing. For this part of the report we have not interviewed representatives of these companies. We have discussed their strategies with the respondents at Saab Aerostructures, and we have studied other published analyses of Airbus' and Boeing's strategies, as well as Airbus' and Boeing's home pages. Thus, we may describe *how* the two acted, but cannot be as certain regarding *why* they acted as they did. At the same time, they do not have identical strategies; the two companies differ in background and composition.

However, we will broadly comment upon and analyse the strategies of these dominant companies, what challenges and strategic opportunities this has offered and offers for companies like Saab Aerostructures. , and what the consequences are for the industrial hierarchy.

5.1 The production of large commercial aircraft in the 1960s – 1980s[15]

In the 1960s, there were numerous producers of large commercial aircraft (LCA): Boeing, McDonnell Douglas, Lockheed (US), Fokker (NL) and a diverse group of other, smaller European producers.

Airbus was created in the late 1960s, through a gradually deepening process including Sud Aviation, Breguet and Nord (Fra), ArbeitsGemeinschaft Airbus (W Ger) and Hawker Siddeley (UK). Airbus Industrie was formally created in 1970. Later in the 1970s Aérospatiale (Fra), British Aerospace (UK) and Casa (Spa) acquired parts of Airbus, forming a larger conglomerate.

Lockheed and McDonnell Douglas (a result of a merger of McDonnell and Douglas in 1967) underperformed and gradually lost their position compared to Boeing. Lockheed withdrew from the LCA business in 1984. Fokker ended its LCA production in 1996. Boeing merged with McDonnell Douglas in 1997,

[15] Information found on www.wikipedia.org, other Internet sources and Newhouse, (2007): Boeing versus Airbus.

creating The Boeing Company. The international competitors in LCA were thereby down to two: Airbus and Boeing.[16]

5.2 Development of Airbus and Boeing during Saab Aerostructures' existence

Airbus and Boeing have been involved in two separate but parallel developments. Firstly, they have chosen to focus on their core competences. Secondly, they have initiated, steered and encouraged a far-reaching supply base restructuring/development. The latter development supports the first.

From mainly secondary sources, we can describe the strategic behaviour of Airbus & Boeing as having changed in the following ways:

The *supplier structures have been spread over the world* in order to gain the advantages of lower production costs. This development is also guided by offset/counter-trade considerations; e.g. if a 3rd-world nation acquires twenty planes, it will commonly demand that the production be partly located in this nation according to some bilateral agreement. A further interesting condition in this respect is that Airbus and Boeing have had the dominant share of their production in the US or in the Airbus nations, whereas Boeing's US sales and Airbus' sales in Western Europe of commercial aircraft are much less than half of total turnover. The rest of the sales are outside this area – generally requiring counter-production setups, meaning that a large share of the production must be outsourced to those nations. Thus, there is considerable potential for further reallocation of production to nations outside the US and the Airbus nations[17]. Airbus and Boeing also allocate production in strategically interesting nations in order to improve their chances of winning specific orders in that nation. Airbus will in 2009 open its own production plant for the A320 in Tianjin, China.

[16] The Soviet Union/Russia & Ukraine have always had LCA producers in the companies Iljusjin, Tupolev and Antonov, but these companies have seldom competed directly with our focal companies.

[17] Airbus is a politically constructed company which unites the main parts of the commercial aircraft production in the UK, France, Germany and Spain. Airbus is a subsidiary of EADS (the European Aeronautical, Defence and Space company).

The companies divested parts of their companies that focus on production of systems and components. New companies have emerged and thereby the competitive situation has changed on the 1st and 2nd tiers of the industrial hierarchy. Airbus and Boeing, by divesting certain facilities and assets, have concentrated on their core competences.

There has been a shift away from nationally defined and politically created supplier structures. Since the 1990s, there has been a gradual deregulation of the supplier structures under Airbus and Boeing. The supplier structures were mainly domestic, political constructions. These supplier structures have been opened and experienced open competition, which has led to fundamental globalization of the supplier structures.

Airbus and Boeing are actively spreading risk (technological, commercial and political) to the lower tiers of the industrial hierarchy. Companies below that receive large production batches aim to spread and share risk further to their suppliers.

In more recent years, Airbus & Boeing also strive to *find strategically important suppliers to whom they can outsource integration responsibility*. It is in the interest of Aerostructures to receive such enhanced responsibility since it cannot compete on low cost, and that it has integration and end-product capability in the company. We call this a desire to become a tier 1^{+} supplier.

In January 2009, Airbus completed its "Aerostructures strategy". The main purpose of this strategy was "the divestment of non-core activities and sites in order to establish a network of strong suppliers" so that "Airbus can focus on our core business, being an aircraft architect and integrator". In the preceding months, Airbus divested several sites in France, Germany and the UK[18]. Airbus has formulated a "Power8" change programme and restructuring plan. (www.airbus.com)

According to interviews at Saab Aerostructures, the company had expected the market for Large Commercial Aircraft to be an oligopoly; and in oligopolies the dominant firms are expected (according to economic theory) to maintain high prices and high profit margins. However, it perceived that the airlines have been and are able to entice Airbus and Boeing into promising difficult leaps in technology and performance, thereby taking high risks. This has led to lower profit margins for Airbus and Boeing, which then offer still narrower margins farther down in the industrial network. Airbus and Boeing consequently vary in interaction with the suppliers – between competition and cooperation, between sharp competitive pressure and partnership.

[18] The divested UK site in Filton was acquired by GKN. The divested French sites in Meaulte and St. Nazaire formed the new EADS-owned company Aerolia. The divested German sites in Nordenham, Varel and Augsburg formed the new EADS-owned company Premium AEROTEC.

The main change factors concerning the impact of Airbus and Boeing during Saab Aerostructures' existence are listed in the following table:

Globalization of supplier structures	This is driven by generic strivings for improving efficiency, lowering cost, shortening lead times etc. It is also driven by incentives and demands to meet offset and counter-trade demands.
Deregulation of national supplier structures	This has opened up global competition and has also awarded Airbus and Boeing considerably more strategic manoeuvrability.
Focusing on core competences	Airbus and Boeing have divested non-core facilities and concentrate on their role of OEM.
Outsourcing of risk	The outsourcing of risk from Airbus and Boeing affects the supplier base and the competitive environment between them, and reverberates further downward in the industrial hierarchy.
Strategic suppliers are awarded integration responsibility	Suppliers with integration capabilities must thereby position themselves vis-à-vis their competitors in order to make this a competitive advantage.

Table 5.1: The main change factors concerning the impact of Airbus and Boeing on Saab Aerostructures

We will now turn to the analysis of the case study. In Chapter 6 we will focus on how the internal factors inside Saab Aerostructures influenced the repositioning. In Chapter 7 we will focus on the influence of the external factors.

6 The influence of internal organizational factors on Saab Aerostructures' repositioning

In this chapter focus turns to explanations for the journey described in Chapter 4. The discussion will concern specific organizational factors that appear to be crucial for explaining the development of Saab Aerostructures as a leading first-tier supplier. The point of departure for the analysis is the specific purpose of the present study:

> *to identify and explain critical factors in the repositioning of an industrial company from original equipment manufacturer to subsystem supplier.*

Factors within Saab Aerostructures that can explain the repositioning are addressed here, and the following Chapter 7 will focus on important external factors.

In order to put the internal organizational factors in context, this chapter will first elaborate on the repositioning process at large. Thereafter, the analysis revolves around four areas which we identify as critical enablers of the repositioning.

This chapter has the following outline.

- Specific characteristics of the repositioning
- Access to competitive resources
- Changing the organization
- Synergies with established business
- Clear strategic vision

The factors discussed in the following obviously reflect our interpretations of the data we presented in Chapter 4. We believe that the results provide valuable explanations. However, we do not claim that the results are exhaustive. They reflect the issues that this study has addressed and our interpretation of the data received.

The analysis has been accomplished in the following way. The process of identifying factors and developing explanations has been guided by the analytical framework developed in Chapter 2. Based on the theoretical framework, we began the analysis by listing empirical observations and searched for patterns between them. This was very much an iterative process where different patterns emerged, were rejected and changed. As we began to find more robust categorizations, theories were added in order to stretch the analysis further and create plausible explanations.

6.1 The specific characteristics of the repositioning

This section recapitulates the major events and unique features of the studied repositioning. It addresses the background for the decision to reposition. It discusses relationships and resource conditions shaping the preconditions for the change process. Hence, this section aims to elaborate on important background conditions for the factors identified as important explanations of the repositioning.

The case of Saab Aerostructures, the move from being an OEM into becoming a 1st-tier system supplier to the end producers of the largest commercial aircraft, may seem like a move between related industrial positions. However, Aerostructures had to establish a position in a new industrial hierarchy in which it held no position.

In its business area *Collaborative programmes* Saab had obtained in 1996 some orders from Boeing for components built-to-print. This business was seen by Saab AB, however, as peripheral and outside the long-term strategic scope and priorities of Saab AB[19]. Saab Aerostructures as a separate business unit was established on January 1, 1998.[20] Thus, the transformation from autonomous aircraft producer to specialized system supplier was not a drastic leap from one day to the next; there had emerged unplanned strategic opportunities which served as catalysts and enablers for the transition period.

Furthermore, Saab AB, seen as the entire company, presently has a broad and diversified portfolio of business and technology areas. According to the interviews, Saab Aerostructures has had a strategic journey which sets it apart from the rest of Saab AB. *Firstly*, it is operating in a civilian, highly competitive business environment – whereas most of Saab operates in the military market, which has much more government influence and regulation. *Secondly*, Aerostructures has transformed itself into a supplier to the dominant civil aircraft producers, whereas most of Saab AB's other business units produce their own products directly to the end user: e.g. fighters, missiles and communication systems. According to several respondents in interviews, Aerostructures was strategically quite separate from the rest of Saab in the beginning, and there was also a general scepticism towards its endeavour to become a more anonymous 1st-tier supplier in an industrial value chain.

According to interviews at Aerostructures, Saab AB was very clear about exiting the role of producer of its own aircraft. However, the outcome of transforming and integrating the remaining competences into a supplier in a different industrial

[19] According to interviews.
[20] For a more exact and detailed chronological sequence, see the previous case description.

network (as a supplier to Airbus and Boeing) was not at first a clear-cut strategic objective of Saab AB. For some, the initial build-to-print orders to Boeing were seen as the first step in a process of closing down the civil aircraft business area. British Aerospace (now BAE Systems) acquired 35% of Saab AB in 1998. It had recently divested business units in civil aerospace, and was quite sceptical about a continued presence in that business area. Within the remaining commercial aircraft business, a group of managers were committed to accomplish something positive with existing resources. This group of people, with the support of Saab's senior management, set out to establish a new role as subsystem provider. The following sections discuss factors that explain how this change was made possible.

6.2 Access to competitive resources

The case presented in Chapter 4 clearly indicates that Saab Aerostructures was established with resources that had been developed during the commercial aircraft programmes and the Gripen programme. Hence, there was a solid basis of industrial know-how that constituted the backbone of the new business unit. In brief, the key resource areas identified and their roles for the repositioning are:

- Subsystem technologies, such as knowledge about aircraft structures, composite technology, bonding of laminate structures and structural integrity, which were exploited on the new market.
- System integration competence, generated from the end-product programmes, differentiated the company from competitors.
- Hand-picked competent and motivated individuals constituted a source of experience and attitude crucial for tackling the new role of supplier.
- Existing production process know-how and facilities gave the industrial base necessary for starting up production.

How can the role of these competitive resources be explained?

The observations clearly show that Saab Aerostructures had a range of internal resources that it could exploit and combine in order to begin accomplishing the repositioning. This important role of complementary resources is consistent with the view expressed by e.g. Barney (1991) that companies gain competitive advantage through combinations of resources. Each resource may be more or less a commodity that also other companies can offer. But by combining different resources the company can construct a resource base that is unique and difficult to imitate and potentially generates a high value in the eyes of customers.

This combination of resources at Saab Aerostructures also indicates a specific management capability (Kogut and Zander, 1992). It is a kind of capability that resembles the type of knowledge which, Spender (1996) argued, is largely tacit within individuals and embedded in the organization's routines – that is, the way

in which the company accomplishes work tasks that make the development and production of products possible. It can be argued that this kind of capability is an additional type of resource, which is crucial for accomplishing the kind of repositioning enabled by Saab Aerostructures.

The technology know-how, the industrial production resources and the management capability together constitute a high-level competence within the company. These building blocks were in place when the journey of repositioning began, but they were developed and enhanced as the company gained experience on the new market.

From this analysis it can be concluded that:

- Repositioning requires subsystem niche technology that can be exploited on a new market.
- It also requires complementary resources such as industrial facilities and production know-how.
- In addition, repositioning requires management knowledge regarding how to combine the resources in order to generate new types of products that meet demand on the market.

6.3 Changing the organization

The following analysis addresses the major organizational obstacles that the company faced during the repositioning and how they were handled. It generates conclusions regarding important issues influencing repositioning in industrial networks.

There were a number of structural factors that inhibited or worked against the repositioning:

- The self-image as an OEM inhibited the repositioning. There was a problem with a general attitude and habit of knowing ‘what was best’ for the customer. This created clashes with customers and internal friction inside Aerostructures.
- It is perceived as difficult to perform commercial and military production within the same company: technology demands and production pace are rather different.
- In military production, companies have their R&D almost entirely financed by the buyers. In commercial production they take financial risks since they will be paid upon delivery of the assembled product.
- There was a fundamental challenge in redirecting the organization to become directly customer-steered: to be receptive to customers’ demands, and to continuously have a high focus on improving efficiency.

The challenges to change work routines and attitudes towards customers are illustrative for the difficulties associated with adapting a company's existing ways of thinking and acting. Several authors have previously discussed how such structures often resist change (e.g. Åhlström, 1995; Söderström, 2004). The established thought and action structures within an organization function as an interpretative filter that is common among its members (Prahalad and Bettis, 1986). It is a factor influencing the construction of identity in the organization. It also has a strong impact on how the external environment is perceived. Hence, when the environment changes, the inertia characterizing thought and action structures may cause the organization to lose "touch" with e.g. customers.

However, this does not mean that thought and action structures are static. Instead, they can be seen as evolving through social construction of shared understanding (Dougherty, 1992). It is a sense-making process, through which the members of the organization gradually renegotiate their collective notion of the world, as it comes across new experiences.

The change that gradually took place within Aerostructures, regarding e.g. more receptive attitudes toward customers and improved ways of working with them, suggests that thought and action structures gradually adapted to the new environment. Similar to Weick's (1979) discussion on the change potential through intensive communication, we this process of change as largely accomplished through extensive interaction with the customers. That is, through the many meetings with the customers, people at Aerostructures gradually began to make sense of the customers' perspectives on e.g. technology requirements.

From this analysis it can be concluded that:

- Repositioning challenges the company's existing thought and action structures. Fundamentally, it means a change in the self-image of the organization.
- It takes time (many years) to reasonably well adapt dominant thought and action structures to the new market environment.
- Change of thought and action structures of the repositioning company is largely accomplished through extensive interaction with the new customers.

6.4 Synergies with established business

This section focuses on the role of synergies with existing business in order to accomplish repositioning from OEM to supplier. It illustrates the crucial role of a stable business platform during the establishment of a new business unit.

- The Gripen production has been a stable source of cash flow and it has been a continuous technology generator.

Saab Aerostructures has from the beginning in 1998 produced the front part (fore fuselage) of the Gripen aircraft. The amount of work on the Gripen programme

has changed through the years, but it has always generated 50% of the revenue. This share will gradually decline as Saab's production of the Gripen is reduced. As a competence generator, the new demands of structures for e.g. the new generation of Gripen currently being developed have played an important role. This is not least because they generate knowledge on the "end-product level", which is a valuable complement to the niche competences used in commercial projects. It is seen as a competitive advantage to be able to understand not only the product being produced in a commercial project, but also its function and integration with the whole aircraft system. Maintaining and developing such knowledge is strongly dependent on work related to the Gripen programme.

The strong relationship between the production of the Gripen and the development of Saab Aerostructures' repositioning can be understood as a good example of exploitation of industrial synergies. Sköld (2007) discussed operational-level synergies as sharing activities between different organizations. In this case, production processes and technology have been used for different types of products within one organization. Thereby, the company has generated what in the literature are called economies of scope (e.g. Chandler, 1990).

As mentioned, the creation of synergies was crucial for accomplishing the repositioning. It is also reasonable to believe that the synergies have been critical for maintaining and developing production capacity and technological competence necessary for the production of the Gripen. The reason is that without the commercial deals, the volumes of the business might have been unsustainable.

The role of the Gripen as competence generator for the commercial projects can be understood in terms of horizontal technologies regarding an end-product's requirements, and of how functionality strengthens the competence in vertical technologies such as structures. This role of the relationship between horizontal and vertical technologies for the repositioning of a company needs further research. However, it certainly indicates that an OEM which chooses to reposition as a supplier strengthens the competitiveness of its vertical niche technologies with knowledge about their integration and function in the larger product system.

Based on the analysis it can be concluded that:

- Synergy between technologies used on both the established and the new market strongly contributes to enabling of repositioning. The reason is that it generates a combination of learning between the two segments and a critical production volume.
- The application of vertical technologies (subsystem knowledge) in new market products is enhanced by the horizontal technology generated from the established market (the Gripen production of a whole system).

6.5 Clear strategic vision

This section focuses on the role of the strategic vision formulated by the management of Saab Aerostructures at an early stage. First, this section summarizes the specific observations regarding the strategic visions, and thereafter they are discussed with the help of existing theory.

Observations:

- A strategic vision of the company's future product-market position was established at the early start – a future position (to become a leading 1st-tier supplier to Airbus and Boeing).
- The strategic vision was communicated and kept alive – which created stability in the direction of the company.
- The strategic vision has had to be pragmatically adjusted to external change factors (see Chapter 7), but the core vision has withstood those tests.

The strategic vision can be described as an *intended* strategy, i.e. a development route that is formulated beforehand. Under the influence of the impact of the business environment and other strategic experiences, there have been elements of an *emergent* strategy which, together with the *deliberate* strategy (what is actually implemented of the intended strategy), has formed the actual *realized* strategy (e.g. Mintzberg and Waters, 1985).

In Aerostructures' case, important elements of the emergent strategy are the occasions when it has received unforeseen production slots[21] in Airbus and Boeing programmes. Aerostructures therefore had to adjust its technology strategies and aim for creating new synergies and identify new suppliers. It also repeatedly came to recognize that there were other competences inside Saab Aerosystems or Saab AB which it could exploit.

However important these factors, it is clear that the intended strategy is similar to the strategy realized. How can this be explained? It is reasonable to believe that the strategic vision influenced the repositioning largely through its impact on the day-to-day work by people on operational levels. As Gioia and Chittipeddi (1991) argued, employees on lower organizational levels try to make sense of senior managers' visions and actions. Managers' active commitment to the strategic vision became a symbol of the organization's repositioning. Thus, managers sending clear signals of the importance of e.g. developing a more listening attitude toward customers helped to change the behaviour of the organization in the direction of a new market position. It can thus be claimed that the combination of the qualities of the strategic vision and how it was used in the

[21] Aerostructures strove to become best in certain technologies, e.g. wing fronts. When it received the responsibility for a door in an Airbus program, this forced Aerostructures to partly reposition its internal technology and competence strategy.

daily work explains much of the relatively straight direction of the repositioning realized.

Based on the analysis it can be concluded that:

- A clear strategic vision of a future market position as tier 1 supplier to Airbus and Boeing generated a common direction for the everyday work among both managers and employees.
- Although external factors have moderated the direction of the repositioning, the intended strategy was by and large the same strategy realized some ten years later. The realization of the intended strategy was largely a result of managers being able to embody the strategic intent in the daily work. This contributed to enhancing motivation for, and sense-making of, the repositioning among employees.

In Chapter 6 we have analysed the influence of internal factors on the studied repositioning. The repositioning has also clearly been influenced and steered by the impact of the external factors in the market environment. Therefore, in the next chapter we will focus on the external factors.

7 The influence of external factors on Saab Aerostructures' repositioning

In this chapter the focus turns to how the journey described in Chapter 4 can be understood in relation to factors in the external environment that generated opportunities and challenges for the repositioning process.

The point of departure for the analysis is the second research question of the present study:

> *Which factors in the external environment generated opportunities and challenges for the repositioning process?*

Thus the analysis addresses factors in Saab Aerostructures' most influential environment that can explain, or increase the understanding of, the repositioning.

In Chapter 2 there was a discussion of theoretical perspectives for understanding how external factors and the environment may influence a repositioning such as that of Saab Aerostructures. This chapter analyses changes in Airbus' and Boeing's strategies as described in Chapter 5. There are also other external shifts that were discussed in Chapter 4, the case study.

The repositioning of Aerostructures is obviously influenced by the development of its business environment. It must react upon and adapt to the changing conditions and the challenges and opportunities that arise as it shifts, through repositioning, from one competitive environment to another.

We will analyse the repositioning with the help of the theory about external factors in Chapter 2. The analysis of the data regarding the development of the commercial aerospace industry has identified the following external factors as important for understanding the repositioning of Saab Aerostructures, although we do not claim that this is an exhaustive list.

- *Supply chain transformation*: The supply chains and the industrial networks under Airbus and Boeing have experienced a number of changes regarding e.g. sourcing, core competences and risk-sharing, which have altered the conditions for Saab Aerostructures during its repositioning.
- *Restructuring and consolidation*: The supply base has consolidated on different tiers and between tiers in order to exploit changing competitive conditions, and political deregulation has released previously domestic structures.
- *Institutional response*: The focal repositioning company's institutional conditions and the industrial institutional conditions are transformed – this demands deinstitutionalization of the company and the industrial network.

These three phases are related to how they influence the type of repositioning that we discuss.

7.1 Supply chain transformation

The case study indicates that the development of Saab Aerostructures was supported by market opportunities. These opportunities emerged as a result of supply chain decisions made by Airbus and Boeing. It can be argued that Airbus and Boeing moved in a direction that created space for Saab Aerostructures' entry as supplier. Based on available data presented in Chapter 5, and with the help of theory on strategic purchasing (*sourcing*), the following will elaborate on changes in the market that influenced the repositioning studied.

Sourcing has become a much more strategic instrument for OEMs, supply chains are being perfected, and the OEMs and the suppliers are increasingly getting more specialized roles (Axelsson et al. 2005; van Weele, 2005). Airbus and Boeing have developed and fine-tuned their relations to suppliers, and focused their own role in the industrial network. Activities that used to be inside Airbus and Boeing, or inside their national industry, are now performed outside the OEMs in global networks. Parallel to Airbus' and Boeing's focus on core competences, strategic suppliers are awarded development roles in the OEM-orchestrated supply chains.

As a result of this development, risk-sharing has become a driver of companies' roles in the transforming supply chains, as suppliers achieve specialized roles in the industrial network (Zsisidin and Ritchie, 2008; Handfield and McCormack, 2008). Airbus and Boeing are deliberately influencing and steering their suppliers towards accepting more risk. This has become a decisive competitive screening factor when Airbus and Boeing set competing suppliers against each other that strive to become suppliers to Airbus and Boeing development programs.

Aerostructures, in different Airbus and Boeing selection programmes, has put in bids for a certain product area, and received an order based upon another part of the aircraft (e.g. doors instead of wings). Thus, Aerostructures has received unexpected market outcomes, yet always involving roughly the same technology. One manager at Aerostructures pictured this as showing that there are different entrances to the highway for each LCA program. At different time slots there will be an opportunity to become accepted as supplier. If you do not qualify for one entrance, there will be others later on – but with less advanced development responsibilities.

These changes in the supply chain management of Airbus and Boeing have generated opportunities for Saab Aerostructures to enter the new market. The following will discuss factors that have generated these market opportunities.

7.2 Restructuring and consolidation of the industrial network

Saab Aerostructures has had to establish a position under OEMs that already had a choice of suppliers which provided them with products that did the job. What kind of conditions in the external environment of Saab Aerostructures can explain why this entry was made possible?

When Saab was struggling with the falling demand of its commercial aircraft, there was change under way at Airbus and Boeing. There had previously been political support for protecting national supplier structures in the "Airbus nations" (France, Germany, Spain, United Kingdom) as well as in the US. Airbus' and Boeing's established supplier structures were opened up by a deregulation of politically constructed, national supplier structures. Airbus and Boeing could select suppliers on more direct competitive criteria and started to question their existing suppliers, whereupon more competitive suppliers from abroad could enter.

A dominant company affects the standards and conditions for the distribution of production resources, development roles, knowledge transfer and development, as well as the interfaces between itself and its suppliers (Sköld, 2008). As the OEMs in the LCA market started to focus on their core competences, this increased pressures for restructuring and consolidating the underlying supplier structure. The OEM divests non-core business units that may emerge as new companies or be acquired by existing suppliers. The shift of roles between OEMs and suppliers creates new competitive conditions, offering new business opportunities and challenges. In aggregate, this has created a general repositioning of companies: some move between tiers, some companies merge or are acquired, and some new ones are created, as OEMs divest non-core competencies.

The long-established national supply chain structures within Airbus procurement in Germany and Spain were, according to interviews at Aerostructures, reluctant to include Saab Aerostructures in their supply chains. In France, however, Saab Aerospatiale was open for inviting a new supplier. Thus, repositioning of a company is facilitated by such supply base liberalization – i.e. buyers that look for alternative suppliers which can fill a role that fits with the emerging demands on a 1st-tier supplier.

The repositioning OEM company must obviously be perceived by its prospective customers as having potential to become a strategic supplier. Otherwise it will mostly compete on price. For Saab Aerostructures, this perception was absolutely necessary because of the structural legacy from its time as OEM. The company would not have been able to survive financially as e.g. 2nd-tier supplier. Therefore, Saab Aerostructures has striven to become a strategic supplier that supplies 'strategic products'. This is expressed in the ambition to differentiate itself from

other system suppliers on tier 1 by adding an extra tacit capability as system integrator – a 'tier 1^{+} supplier'.

Airbus (especially) and Boeing started many new programs for new LCA models during the first years of Saab Aerostructures' presence in its new, aspiring position. The launching of new LCA models became much more frequent. This improved the market opportunities for Saab Aerostructures, although it still had to beat its competitors in achieving orders from Airbus and Boeing.

When companies in a supply chain become interdependent, disturbances at one point quickly spread through the supply chain (Zsisidin & Ritchie, 2008). This kind of effect can be seen within the aerospace industry, and it is one factor that has influenced the repositioning of Saab Aerostructures. At different times there have been substantial shocks to demand for aircraft. This initially hits Airbus and Boeing, but their supplier structures are more severely hit, since the OEMs steer the overall development of the industrial hierarchies – the suppliers have to react to effects of moves on the OEM level. Thus, Saab Aerostructures is more exposed to demand shocks at the OEM as 1^{st}-tier supplier than it was as an OEM itself.

This section has outlined changes in the external environment of Saab Aerostructures that are reasonable explanations for the repositioning analysed by this report. The following takes the analysis one step further by discussing underlying changes in industries which are likely to have influenced the repositioning of Saab Aerostructures.

7.3 Institutional response – established industrial networks' reaction to change

The discussion here has so far focused on factors in the external environment of Saab Aerostructures that can explain the repositioning during the last ten years. This section argues that they can be understood as expressions of change within the institutional structure of companies and their relationships within industrial networks.

As mentioned in Chapter 4, there has been a continuous restructuring and consolidation of suppliers and revision of conditions in Saab Aerostructures' business environment. According to theory (Scott, 2001) the surrounding environment of a company can be understood as its institutional environment. Here, we claim that such institutional conditions influence the competitive opportunities and challenges that a company repositioning into a new market needs to deal with.

The aerospace industry had been relatively stable for a long time. Until the mid-1990s, Boeing was the dominant company shaping the industry. Such stability in

an industry means that roles and behaviour within the industry become increasingly stable and institutionalized. As the institution's conditions change dramatically (as when a national supply chain is deregulated, the focal OEM focuses on its core competence, and the OEM underdog Airbus suddenly has higher sales), companies start to reorient themselves, and this changes the functioning of the industry and the market. There will be a process of industry formation (Van de Ven and Garud, 1989; Aldrich, 1999; Scott, 2001). Previous industrial practices will have to be redefined and deinstitutionalised (Oliver 2008).

The industrial network transforms when OEMs concentrate, and supplier tiers are transformed. Thereby, the entire circulatory system of the industrial network is reformulated. Previous market practices are abandoned, and business relations will be altered. Consequently, there are deinstitutionalizations of established routines within the industrial landscape, as well as within the single company. This will have repercussions on many levels of industry and within the company, which we will return to in Chapter 8. With the repositioning of Saab Aerostructures, parts of it are now acting in a global industrial network where the actions and changes are continuously recreated in a dispersed network.

The analysis here suggests that Saab Aerostructures' repositioning can be seen as being enhanced by market opportunities due to industrial deregulation and restructuring. We have identified that a general and parallel trend, towards sourcing and OEMs focusing on core competences, supported the repositioning. There was thus an industrial transformation that questioned the industry's present supplier positions and welcomed companies in new or redefined roles. Hence, the institutional conditions changed in favour of Saab Aerostructures' repositioning.

In the final chapter, we will present a concluding discussion in relation to the purpose of the study. We will also discuss the interplay between internal and external factors and how they influence repositioning. Finally, we will discuss the main implications for companies and for policy-makers.

8 Concluding discussion

This report addresses an issue of importance to companies as well as to policy-makers. In order to generate knowledge for practical use, the report defined the purpose as follows: *to identify and explain critical factors in the repositioning of an industrial company from original equipment manufacturer to subsystem supplier*.

This chapter will first highlight the key factors that according to this study explain how this transformation was made possible. We believe that these factors also are relevant for understanding the repositioning of other companies. Second, it discusses the main implications for companies; and third, it discusses implications for policy-makers.

8.1 Factors that explain the accomplishment of repositioning

The analysis presented in Chapters 6 and 7 focused on how a company manages repositioning in an industrial network. Based on that analysis, this chapter highlights the chief conclusions regarding the factors identified as critical for the repositioning of a company from OEM to first-tier subsystem supplier. These conclusions are summarized in the following two tables under the headings of *internal* and *external* factors.

The columns to the left in the following tables contain the key factors identified in Chapters 6 and 7 as critical for how such a repositioning can be accomplished. The columns to the right contain explanations concerning the role of the identified factors. These explanations build on the results presented in Chapters 6 and 7. They express what we also believe to be results applicable to other cases than the one we have studied.

Internal factors influencing repositioning	**Explanations**
Competitive internal resources	Access to niche technology that can be exploited on the new market is a key enabler of repositioning from OEM to supplier. Existing and complementary resources such as industrial facilities and production know-how are central for exploitation of niche technology. High-level management capability regarding combination and integration of technologies and market opportunities is a tacit resource that is critical for accomplishing the repositioning.
Change of the internal organization	Existing thought and action structures cause inertia slowing down the repositioning. Repositioning requires change of the self-image of the organization from OEM to supplier, which takes several years. Change of thought and action structures of the repositioning company is enabled through extensive interaction with the new customers.
Synergies with established business	Using resources for both the established and the new business generates both learning and cost-efficiency synergies. Exploitation of vertical technologies (subsystem knowledge) in new market products is enhanced by the access to horizontal technology which is continuously developed.
Strategic vision of a new position	Defining a new and clear strategic vision of the company's future product-market position creates a sense of hope for a new start as the established business is closed down. Keeping the strategic vision alive through extensive internal dialogue creates stability in the direction of the repositioning company. Balancing pragmatically between adjusting the strategic vision to external change factors and keeping the core of the vision is necessary in order to accomplish repositioning.

Table 8.1: Critical internal factors for the repositioning of an industrial company from original equipment manufacturer to subsystem supplier

External factors influencing repositioning	Explanations
Supply chain transformation	Repositioning is supported if the dominant customers impose a shift in, or a reformulation of, the demand for suppliers. The ability of suppliers to take on long-term risk is increasingly becoming a critical competitive factor as the OEMs focus more on their core integrative competence. Market deregulation drives change in the OEM supply chain, which generates market opportunities for the repositioning companies.
Restructuring and consolidation of the industrial network	Repositioning is strongly facilitated by, and may even require, a substantial transformation of the existing supplier structure(s). The repositioning company must be perceived as having potential to become a strategic supplier. Otherwise it will mostly compete on price, which may be difficult due to the cost structure legacy from its time as OEM.
Institutional response – established industrial hierarchies react to change	Established relationships within industrial networks resist change driven by radical reformulation of the market and industrial conditions; the repositioning will therefore experience institutional resistance towards change. Timing with reorganization in the industrial network substantially enhances the chances of successful reposition from OEM to supplier. The reason is that such change of traditional institutional structures and routines creates marketplace vacuum that can be exploited.

Table 8.2: Critical external factors for the repositioning of an industrial company from original equipment manufacturer to subsystem supplier

Looking at these tables it appears clear that, in order to successfully accomplish repositioning, a company needs a combination of supportive internal factors and favourable external conditions. It is not enough to have internal resources and strategic vision. The timing of changes in relationships on the new market is equally important. The following elaborates on the results presented in table 8.1 and 8.2.

During Saab Aerostructures' existence, there has been a concentration of 1st-tier suppliers, at the same time as both 1st- and 2nd-tier companies aim to rise in the industrial hierarchy in order to reach the greater profits and increased autonomy of higher-level companies in the hierarchy. Saab Aerostructures therefore had to adjust its use of the internal change factors so as to exploit its mix of resources in a way that enhanced its competitiveness. For instance, the company has strived to

capitalize on its experience as a producer of military aircraft and to find synergies between its widely ranging competences.

Saab Aerostructures had a difficult challenge to enforce a change in the organization's self-image and way of acting. It had to transform from being an independent OEM acting in one market, into adjusting to a 1st-tier position under a dominant OEM in another (while related) market. Saab Aerostructures had to actively change (Oliver, 1992; Scott, 2001; Dacin & Dacin, 2007) its established performance and technology-oriented behaviour into a time-efficient, customer-value and cost-oriented behaviour. We can compare this to the discussion in Chapter 6 on thought and action structures. If a company has well-established production output, knowledge resources, and placement in the industrial network and hierarchy, all this will create behaviour geared towards protecting its established position and behaviour. A deeply shared strategic understanding will be challenged if the environment changes. The new identity is synthesis of the new strategic vision for the position aspired to and of the demands put upon the company by the new strategic environment.

As pointed out by Holmberg (2003) it is a major challenge associated with establishing a new role in an industrial network. A major reason is that established industrial network does not easily adapt to or embrace market forces that impose an industrial restructuring. The institutional inertia in market and business practices resist change (Lawrence, 2008). The reposition of Saab Aerostructures has required deinstitutionalization in several dimensions. There has been a deinstitutionalization of industrial supply chains and of industrial practices. The company's internal organization, and combination and exploitation of capabilities and resources, have experienced an internal deinstitutionalization in order to establish a new position. Thus, the repositioning from OEM to supplier requires a revision of the company's internal factors functioning as well as change of its external determinants.

8.2 Implications for companies

This study has identified several factors that can explain how repositioning from OEM to first-tier supplier can be accomplished. This section will discuss the practical implications of these results for companies considering repositioning from OEM to first-tier supplier.

Repositioning faces substantial difficulties, and the chances of success are hard to predict in advance. A company that has a history as OEM is likely to have its core competence associated with that role. It can thus be advised that, even though market opportunities look favourable, a company should avoid a repositioning if it has a chance of surviving as OEM. It is also hard to imagine a company preferring repositioning instead of trying to survive as OEM. In that

sense, the kind of repositioning that we study is only a likely and wise alternative for a company having no other option.

But what about a company that is competitive as OEM and has subsystem technology which is believed to be competitive on another market? In that case, the OEM company could consider starting up a new independent business unit with the aim of developing the market potential for its subsystem technology. Important reasons are that a new business within the existing organization is likely to be hampered by resource competition, management attention, and existing ideas about how business is done.

To start the new business as an independent organization is important also in case the role of OEM is abandoned. There are several reasons why this is absolutely necessary. One is that the existing organization's values and routines are likely to cause strong inertia during the repositioning. Existing knowledge and self-image need to change in order to adapt to the requirements of the role of supplier. This is difficult to accomplish within the frames of the established operations. Resources should be directed so as to take orders on the new market – and thus they should not be held back by the difficulties facing the declining OEM business.

The discussion until now has focused on general implications. The following will outline three different types of repositioning that may be possible for defence companies.

- **Leaving the defence industry for a position as subsystem supplier in another industry.** This is hardly a reasonable alternative. It would call for a major change in market logics and requirements of company operations. Hence, the risks and challenges are likely to be very high. This type of repositioning is only a sensible alternative in case the company has a very unique niche technology that has a high-level demand which is confirmed by the market.
- **Repositioning from defence industry OEM to a role of supplier to the international defence industry.** This is not a very likely solution due to the national and politicised character of the defence market. The reason is that political interests tend to favour domestic defence industry. Obviously, this effect is strongest in countries having a large defence industry. A company with unique technology may be able to compete if it clearly can complement the existing supply chain under large international defence companies. It may be easier to find such a niche on the second tier level than on the first tier, since lower tier levels normally face less national prestige. That niche would, for instance, be a possible supply chain relation to large OEM companies which export to countries without a domestic defence industry of any size.

- **Repositioning as part of international collaborations** is a potentially successful alternative. This means a repositioning in the industrial hierarchy, but it does not mean a major change in the market dimension. Hence, in a way, it is a less dramatic repositioning than the other two alternatives outlined. There are several examples of defence companies in Sweden that participate in international defence equipment development collaborations. We refer to bi- or trilateral state agreements. Within the European missile and military aircraft industry, there is a process under way that may lead to division of competences between different companies. The outcome of this process may be that the defence companies which today are OEMs will gradually transform to become subsystem providers. This development is largely driven by political changes in favour of increased international defence industry collaboration. It also requires that the Swedish government participates as one of the procuring countries. Otherwise it is likely to be difficult or even impossible to receive a work-share of any substance in international defence industry collaborations.

8.3 Implications for policy-makers

This study focuses on an issue of importance to Swedish defence industry policy. It is obvious that policy-makers cannot directly influence the internal conditions and decisions of companies concerning whether or not to reposition. Yet factors influencing the repositioning have implications for whether repositioning of defence companies should be supported with policy measures.

For most parts of the defence industry in Sweden, we do not believe that repositioning is likely to be a viable alternative. There are some potential exceptions, such as those outlined above. At large, however, the down-side is too great due to difficulties and risks associated with a change in both market and product position.

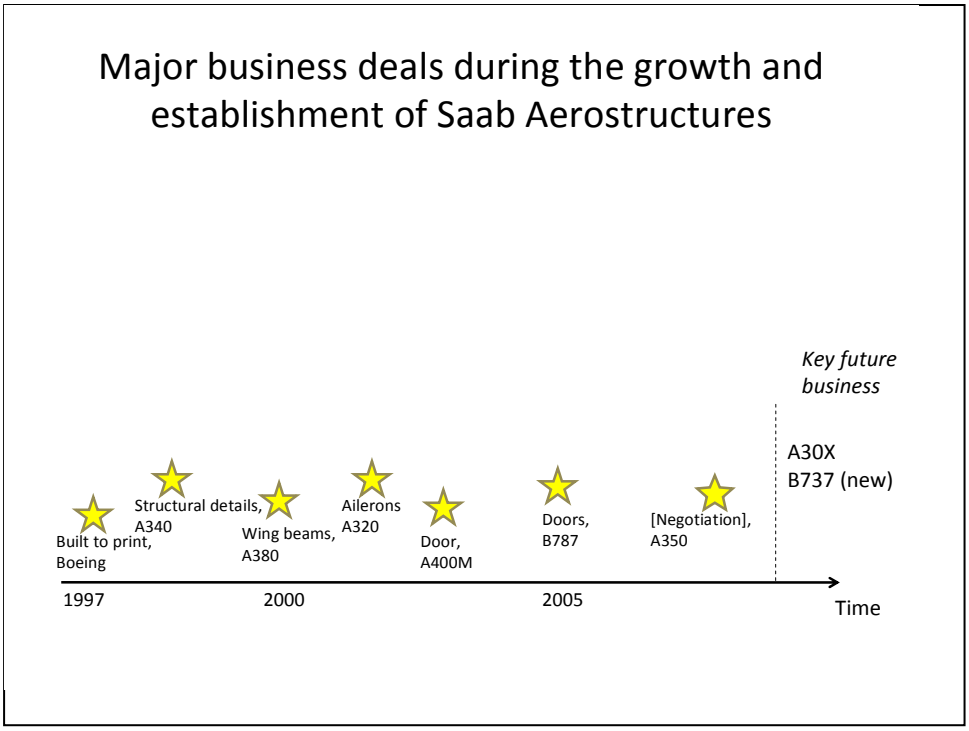
The current policy debate on deregulating the European defence equipment market may lead to improved conditions for competence-based competition. That could create new opportunities for the defence industry in Sweden to reposition, but also for survival as OEMs. However, we are sceptical whether these liberalization initiatives will have any substantial impact. The reason is that national interests and prestige still play a key role in the defence equipment procurement.

Given the current market conditions, we believe that repositioning to second or third tier level may be more likely to succeed than to the more politicised first tier level. On these lower levels, competence may open up for minor deals to global defence companies. However, the business volumes in those cases are likely to be so small that it can be questioned whether they should receive e.g. active government export support.

We believe that repositioning to the first tier can be successful in a few niche areas, but it is likely to require that the Swedish government participates as one of the parties acquiring the end-product. Hence, international collaboration is a way to enable repositioning. This is already taking place and is likely to continue e.g. regarding future military aircraft.

The main recommendation to policy-makers is to view repositioning as a potential consequence of industry change that is largely the result of company-specific strategies. It should not be seen as a desired outcome since it is likely to destroy industrial competences in Sweden. Yet it may not be possible to avoid. In cases where there is no alternative because of declining market demand and increasing costs, such as the case within the aircraft industry, the repositioning requires government support. Continuously supporting deregulation of the European defence equipment market should also be given high priority, although we believe that the changes of substantial liberalization are low. Except for these situations, we do not believe that there is a need for specific repositioning polices.

Appendix


Major business deals during the growth and establishment of Saab Aerostructures
Key future business
A30X
B737 (new)
Built to print, Boeing
Structural details, A340
Wing beams, A380
Ailerons A320
Door, A400M
Doors, B787
[Negotiation], A350
1997
2000
2005
Time

References

Aldrich, H. (1999), *Organizations evolving*, SAGE, Thousand Oaks

Allen, T. (1977), *Managing the Flow of technology, technology transfer and the dissemination of technological information within the R&D organization*, MIT Press, Cambridge, Mass.

Alvesson, M. & Sköldberg, K. (1994), *Tolkning & reflektion – Vetenskapsfilosofi och kvalitativ metod*, Studentlitteratur, Lund

Anand, J. (2004), "Redeployment of Corporate Resources: A study of Acquisition Strategies in the US Defense Industries 1978-1996", *Managerial and Decision Economics*, 25: 383-400

Anderson, J., Narus, J. and Narayandas, D. (2009), *Business Market Management – Understandings, Creating and Delivering Value*, Pearson International Edition, , Upper Saddle River

Ansoff, H. I. (1965), *Corporate Strategy*, McGraw-Hill, New York

Ansoff, H. I. (1980), "Strategic Issue Management", *Strategic Management Journal*, Vol. 1, 131.148

Ansoff, H. I. (1991), "Critique of Mintzberg's The Design School: Reconsidering the Basic Premises of Strategic Management", *Strategic Management Journal*, Vol. 1, No. 6, 449-461

Ansoff, Igor (1965) *Corporate strategy: an analytic approach to business policy for growth and expansion*, McGraw-Hill, New York

Axelsson, B., Rozemeijer, F. & Wynstra, F. (2005), *Developing Sourcing Capabilities – Creating strategic change in purchasing and supply* management, Wiley & Sons, Chichester

Badaracco, J. (1991), *The Knowledge Link: How Firms Compete through Strategic Alliances*, Harvard Business School Press, Cambridge

Barney J. (1991), "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, Vol. 17, pp. 99-120

Barney, J. (1986). "Strategic Factor Markets: Expectations, Luck and Business Strategy", *Management Science*, 32(10), 1231-1241

Barney, J. (1991). "Firm Resources and Sustained Competitive Advantage", *Journal of Management*, 17(1), 99-120

Berger, P. & Luckmann, T. (1967), *The Social Construction of Reality*, Doubleday, New York

Bergh, D., Johnson, R. & Dewitt, R-L. (2007), "Restructuring through spin-off or sell-off: Transforming information assymetries into financial gain", *Strategic Management Journal*, 29, 133-148

Bernhardsson, Jonas. 1996. *Tradingguiden*. Rimbo: Bokförlaget Fischer & Co.

Bers, J. (1993) "Toward a strategic-repositioning model for defense and aerospace contractors", Technology Transfer, Winter-Spring 1993, 67-83

Bers, J. (2001), "Strategic Repositioning: Moving into Radically Unfamiliar Markets: The Experience of the Defence Sector", *Management of Engineering and Technology*, PICMET apos;01. Portland International Conference, Volume 1, Issue , Page(s):265 vol.1

Bjelland, O. M. & Wood, C. (2008), "Five ways to transform a business", *Strategy & Leadership*, Vol. 36 NO.3 2008, pp 4-14

Bohlin, H. & Parsi-Boomy, M. (2008), *Hur gick genomförandet från flera egenutvecklade system till ett affärssystem? – En fallstudie på Saab Aerostructures och Aerosystems*, Term paper, Linköping University

Brunsoni, S., Prencipe, A. and Pavitt, K. (2001), "Knowledge specialization, organizational coupling, and the boundaries of the firm: why do firms know more than they make?", Administrative Science Quarterly, Vol. 46, pp. 597-621

Burgelman, R. (1983), "A Process Model of Internal Corporate Venturing in the Diversified Major Firm", *Administrative Science Quarterly*, Vol. 28. No.2 (June 1983), 223-244

Byerly, R., Lamont, B. & Keasler, T. (2003) "Business Portfolio Restructuring, Prior Diversification Posture and Investor Reactions", *Managerial and Decision Economics*, 24: 535-548

Camelo-Ordaz, M.C., Fernandez-Alles, M., Martin-Alcazar, F., Romero-Fernandez, P. & Valle-Cabrera, R. (2004), "Internal diversification strategies and the processes of knowledge creation", *Journal of Knowledge Management*, Vol. 8, Iss. I, pp. 77

Chandler, A. (1966) *Strategy and structure: chapters in the history of industrial enterprise*. Anchor Books New York

Clark K. B., and Fujimoto, T. (1991), *Product Development Performance: Strategy, Organisation, and Management of in the World Auto Industry*, Harvard Business School Press, Boston, MA

Dacin, T. & Dacin, P (2007), ”Traditions as Institutionalized Practice: Implications for De-institutionalization”, Chapter prepared for publication in *SAGE Handbook of Organizational Institutionalism*, Greenwood, R. Oliver, C., Suddaby, R. & Sahlin-Andersson, K (eds.)

Daft L. D., and Weick, K. E. (1984), *Toward a Model of Organizations as Interpretation Systems*, The Academy of Management Review, Vol. 9. pp. 294-295

Dittrich, K., Duysters, G. & de Man, A-P. (2007), “Strategic repositioning by means of alliance networks: the case of IBM”, *Research Policy*, 36 (2007), 1496-1511

Dougherty D. (1992), “A Practice Centred Model of Organizational Renewal through Product Innovation”, *Strategic Management Journal*, Vol. 13, pp. 77-92

Fukui, Y. & Ushijima, T. (2007), “Corporate diversification, performance and restructuring in the largest Japanese manufacturers”, *Journal of the Japanese and International Economies*, 21 (2007) 303-323

Gadde, L-E. & Håkansson, H. (1994), “The changing role of purchasing: reconsidering three strategic issues”, *European Journal of Purchasing and Supply Management* 1(1):27-35

Gereffi, G. and Hamilton, G. (1996), “Commodity Chains and Embedded Networks: The Economic Organization of Global Capitalism”, paper presented at the American Sociological Association, New York

Gioia G. A. och Chittipeddi K. (1991), “Sensemaking and Sensegiving in Strategic Change Initiation”, *Strategic Management Journal*, Vol. 12, pp 433-448

Granovetter, M. (1985), “Economic Action and Social Structure: The Problem of Embeddedness”, *American Journal of Sociology*, Volume 91, Number 3 (November 1985), pp. 481-510

Handfield, R. & McCormack, K. (2008), *Supply Chain Risk Management – Minimizing disruptions in global sourcing*, Auerbach Publications, Boca Raton

Hedberg, B.L.T., Nyström, P.C., & Starbuck, W. (1976). ”Camping on Seesaws: Prescriptions for a Self-Designing Organization”, *Administration Science Quarterly*, 21, 41-6

Holtström, J. (2003) *Suppliers in Mergers and Acquisitions – A study of Relationship Changes and Synergy Realisation*, licentiate thesis, Linköping University

Holtström, J. (2004) *Förändrade leverantörsroller – En studie av förändringsstrategi och -förlopp i två företag, Saab Aerostructures och Volvo Aero Corporation från starkt fokuserad kundbas till mer diversifierad*, NFFP nr 533, LARP III+, Linköping University

Holmberg G. (2003), *On aircraft development: managing complex systems with long life cycles*. Linköping: Linköping University

Hoskisson, R.E. & Johnson, R.A. (1992), "Corporate restructuring and strategic change: the effect of diversification strategy and R&D intensity", *Strategic Management Journal*, 13: 625-634

Jaffee, D. (2001), *Organization Theory – Tension and Change*, McGraw Hill, New York

Jayne, V. (2008), "Business turnaround: Rebooting a retail icon – Rejuvenating Oroton", *New Zealand Management*, Oct 2008, Vol. 55 Issue 9, p. 48-49

Johanson, J. and Mattsson, L-G. (1992), "Network positions and strategic action – an analytical framework", in: Axelsson, B. and Easton, G. (1992), *Industrial Networks – A New View of Reality*, Routledge, London

Johnson, R.A. (1996) "Antecedents and outcomes of corporate refocusing", *Journal of Management*, 22(3):439-483

Karlsson, C. (2003), "The development of industrial networks: Challenges to operations management in an extraprise", *International Journal of Operations & Production Management*, 23(1), 9-30

Kogut B., and Zander U. (1992), "Knowledge of the Company, combinative capabilities, and the replication of technology", *Organizational Science*, Vol. 3, pp. 383-397

Kogut, B., and Zander, U. (1992). "Knowledge of the Firm, Combinative Capabilities, and the Replication of Technology", *Organization Science*, Vol. 3, No. 3, Aug, 383-397

Kotter, J. & Schlesinger, L. (2008), "Choosing Strategies for Change", *Harvard Business Review*, July-August 2008, pp. 130 -139

Kotter, J. (1995), "Leading Change – Why Transformation Efforts Fail", Harvard Business Review, March-April 1995, pp. 59–67

Lawrence, P.R. and Lorsch, J.V. (1967), *Organization and Environment*, Harvard, Cambridge

Lawrence, T. (2008), "Power, Institutions and Organizations", in: R. Greenwood et al. *Handbook of Organizational Institutionalism*, Sage Publications (under print)

Lyles M. A. & Schwenk C. R. (1992), “Top Management, Strategy and Organizational Knowledge Structures”, *Journal of Management Studies*, Vol. 29, pp 155-174

Markowitz, Harry M. (1952), "Portfolio Selection". *Journal of Finance* 7 (1): 77–91

Markowitz, Harry M. (1959), *Portfolio Selection: Efficient Diversification of Investments*. John Wiley & Sons, New Jersey

Mattsson, L.-G. & Hultén, S. (1994), *Företag och marknader i förändring – dynamik i nätverk*, Nerenius & Santérus Förlag, Stockholm

Meyer, J.W. & Rowan, B. (1977), “Institutionalized Organisations: Formal Structure as Myth and Ceremony”, in Powell, W. & DiMaggio, P. (ed.), *The New Institutionalism in Organizational Analysis*, (pp. 41-62) Chicago University press, Chicago

Meyer, R. (2007), “New Sociology of knowledge: Historical legacy and contributions to current debates in institutional research”, in: R. Greenwood et al. *Handbook of Organizational Institutionalism*, Sage Publications (in press)

Mintzberg, H. (1978), “Patterns in Strategy Formulation”, *Management Science*, 24(9), 934-946

Mintzberg, H., Raisinghani, D., & Theoret, A. (1976), “The Structure of “Unstructured” Decision Processes”, *Administrative Science Quarterly*, 21(2), 246-275

Mintzberg, H. and Waters (1985), “Of Strategies, Deliberate and Emergent”, *Strategic Management Journal*, Vol. 6, 257-272

Mishra, A. & Akbar, M. (2007), “Empirical examination of diversification strategies in business groups: Evidence from emerging markets”, *International Journal of Emerging Markets*, Vol. 2, No. 1

Newhouse, J. (2007), *Boeing versus Airbus*, Vintage Books, New York

Normann, R. (2001), *När kartan förändrar affärslandskapet*, Liber Ekonomi, Malmö

North, D. (1999), *Understanding the Process of Economic Change*, Occasional Paper 106, The Institute of Economic Affairs, London

Oliver, C. (1992), “The Antecedents of Deinstitutionalization”, *Organization Studies* 13:563-88

Pearce, J. & Robbins, K. (2007), “Strategic transformation as the essential last step in the process of business turnaround”, *Business Horizons*, 51, 121-130

Pettigrew, A.M. (1990). “Longitudinal Field Research on Change: Theory and Practice”, *Organization Science*, 1(3), 267-292

Pfeffer, J. and Salancik, G. (1978), *The External Control of Organizations: A Resource Dependence Perspective*, Harper and Row, New York

Porter, M. (1987), “From Competitive Advantage to Corporate Strategy”, in: Porter, M., *On competition*, Harvard Business School Press, Cambridge

Porter, M. (1990), “New Global Strategies for Competitive Advantage”, *Planning Review*, May/June 1990, 18

Porter, M.E. (1985), *Competitive Advantage – creating and sustaining superior performance*, Free Press, New York

Prahalad C.K., and Bettis R.A. (1986), “The Dominant Logic: A New Linkage between Diversity and Performance”, *Strategic Management Journal*, Vol. 7, pp. 485-501

Prahalad, C.K. & Hamel, G. (1990), “The Core Competence of the Corporation, *Harvard Business Review*, May-June 1990, pp. 79-91

Quinn, J.B. (1978), “Strategic Change: Logical Incrementalism”, *Sloan Management Review*, Fall 1978, 20

Rumlet, R. P (1982), “Diversification, Strategy and Profitability”, *Strategic Management Journal*, Vol. 3, pp. 359-369

Scott, W. R. (2001), *Institutions and Organizations*, 2nd edition, SAGE Publications, Thousand Oaks

Sköld, M. (2007), *Synergirealisering: Realisering av produktsynergier efter företagssammanslagningar*, EFI, Stockholm

Sköld, M. (2008) *Från slutprodukttillverkare till leverantör: Effekter av förändrade positioner i industriella nätverk*, FIND Programme, FOI, Stockholm

Söderström, J. (2004), *Från produkt till tjänst: utveckling av affärs- och miljöstrategier i produktorienterade företag*, EFI, Stockholm

Spender J.C. (1996a), “Making Knowledge the Basis of a Dynamic Theory of the Firm”, *Strategic Management Journal*, Vol. 17, pp. 45-62

Svensson, G. (2008), “Mutual and Interactive Vulnerability in supply-chain dyads”, *International Journal of Logistics Economics and Globalisation”*, Volume 1 Number 2, p. 123-140

Thompson, J. (1967), *Organizations in Action*, McGraw Hill, New York

Tolbert, P. & Zucker, L. (1983) “Institutional Sources of Change in the Formal Structure of Organizations: The Diffusion of Civil Service Reform, 1880-1935,” *Administrative Science Quarterly*, 28 (1), 22-39

U.S. International Trade Commission (2001), *Competitive Assessment of the U.S. Large Commercial Aircraft Aerostructures Industry*, Investigation Report No. 332-414 (Report ordered by the House Committee on Ways and Means)

Van de Ven, A. and Garud, R. (1988), “A Framework for Understanding the Emergence of New Industries”, in Richard S. Rosenbloom and Robert Burgelman (eds.), *Research on Technological Innovation, Management, and Policy*, Volume 4, JAI Press, Greenwich, Connecticut

Van Weele, A. (2005), *Purchasing & Supply Chain Management – Analysis, Strategy, Planning and Practice*, Thomson Learning, London

Weick, K. E. (1995), *Sensemaking in Organizations*, Sage, Thousand Oaks, CA

Wernerfelt, B. (1984). “The Resource-Based View of the Firm”, *Strategic Management Journal*, 5, 171-180.

Womack, James P., Jones, Daniel T., & Roos, Daniel (1990), *The machine that changed the world: The story of lean production*. New York: Harper Perennial.

www.wikipedia.org

Yin, R. (1994), *Case Study Research – Design and Methods*, Sage, Thousand Oaks

Zsisidin, G. & Ritchie, B (2008), *Supply Chain Risk – A handbook of assessment, management and performance*, Springer

Åhlström P. (1995), “Strukturella Hinder vid Implementering av Lean Production”, in Löwstedt J., *Människan och Strukturerna: organisationsteori för förändring*, Nerenius & Santérus Förlag, Stockholm