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Supply Side Organising – Linking Three Overlapping Domains

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Abstract

This paper addresses organising issues at the supply side of companies. Recent developments of the business landscape, in terms of specialisation and partnering, have made purchasing and the supply side increasingly significant. Supply side organising includes purchasing arrangements in the buying company, as well as organising in relation to individual suppliers and the entire supplier base. Previous research has focused on intra-organisational issues with scant attention to external conditions. The aim of this study is to identify a set of conceptual building-blocks to serve as guidelines for the analysis of internal and external organising and the interplay between them. Concepts and models rooted in the industrial network model and an extensive single case study are used iteratively to develop the resulting framework for analysis of supply side organising.

Keywords: Purchasing, supply side, organising, networks, relationships interdependencies

1. Introduction

This paper deals with central issues in supply side organising. The supply side of a company concerns its interfaces with suppliers. Significant aspects of these interfaces include the purchasing strategy and buying tactics of the company, as well as the nature of the relationships with suppliers. Supply side organising deals with (i) internal arrangements in the buying company in terms of the organising of the purchasing department and its connections to other internal departments and (ii) external arrangements related to the organising of individual supplier relationships and the whole supplier base. Recent developments of the business landscape in terms of specialisation and partnering have made purchasing and the supply side of companies increasingly significant (see e.g. Andersen & Rask, 2003; Gadde & Håkansson, 2001; Humphreys et al., 2000; Johnson & Leenders, 2004; Johnson & Leenders, 2006; Tassabehji & Moorhouse, 2008; Zheng et al., 2007).

The strategic role of purchasing is emphasised by Ivens et al. (2009a: 852) in the claim that the function has evolved "from a passive, reactive and supportive function to an integrated one that is an active element of the firm's competitive strategy". During this transformation, outsourcing and supplier development have been at the top of the management agenda "while organizational design has received limited attention in supply management" (Trent, 2004: 4). Moreover, Trent states that other supply management topics "may generate more excitement than does organizational design, [but] managers should not overlook the role that an effective design can play in enhancing supply management performance" (ibid.). The ongoing re-orientation of the supply side challenges established principles for the organising of purchasing at the same time as organisational change is a driving force of the transformation. In fact, it is argued that the reorganising of purchasing is "a crucial step in any attempt to enhance performance on the supply side" (Gadde et al., 2010: 197). These authors also state that "for most companies organising represents untapped potential for significant improvements". Organising on the supply side

involves knowledge exchange and communication regarding technical, commercial and administrative information, as well as the handling of physical flows (Gadde et al., 2010).

Traditionally, literature on supply side organising has focused on internal matters. However, specialisation, both internally and externally, calls for increasing attention to integration and coordination across organisational boundaries (e.g. Gadde et al., 2010; Larsson, 1993; van Weele & Rozemeijer, 1996). Owing to the historical emphasis on intra-organisational arrangements in relation to purchasing, most research on organisational developments has concentrated on internal aspects (Andersen & Rask, 2003; Tassabehji & Moorhouse, 2008). There seems to be a consensus regarding the need for new practices to handle the increasingly complex interface between buyers and sellers when it comes to external aspects, or inter-organisational arrangements. Persson and Håkansson (2009: 5), claim that "organizational design has received limited attention in supply chain research", and there is a need to relate intra-organisational and inter-organisational arrangements (see, for example, Cunningham & Homse, 1986; Dubois & Wynstra, 2005; Gadde et al., 2010; Persson & Håkansson, 2009). Many authors emphasise that the ways in which purchasing is organised internally impact on how the company is able or unable to interact with suppliers successfully and vice versa.

2. Aim and outline of the paper

This paper addresses central issues related to supply side organising. The aim is to identify a set of conceptual cornerstones to serve as guidelines for analysing both intra- and inter-organisational matters, as well as the interplay between them. The theoretical framework evolves in interaction between existing concepts and models from the literature and an extensive single case study.

We begin with a review of the literature on supply side organising, where three organising domains are identified. The main conclusion is that there is a need for a holistic perspective on the interplay between these domains. The industrial network

model is then used to analyse supply side organising with concepts related to the three layers of activities, resources and actors. After that follows an account of the methodology applied and the empirical information from the case study. The final sections are devoted to the iterative development of the three conceptual cornerstones.

3. Supply side organising: Three overlapping domains

Most literature on organisational design applies an ‘inside-out’ perspective on purchasing (Persson & Håkansson, 2009). This approach focuses on internal resources and activities and how to organise purchasing in relation to them. According to the inside-out perspective the buying firm is perceived as being independently able to make decisions regarding its internal organising. However, companies have become increasingly reliant on supplier skills and capabilities and other resources beyond their organisational boundaries. Therefore, buying firms need to take the perspective of suppliers into consideration today, even in the development of their intra-organisational arrangements. Supplementing the inside-out view with an outside-in perspective is even more important when it comes to inter-organisational arrangements, since buying companies are increasingly involved in efforts to organise their relationships with individual suppliers and in structuring the whole supplier base (Gadde et al., 2010). The viewpoints of suppliers must be taken into account with regard to their potential reactions to various organising initiatives, as well as their own organising efforts. According to Holmen and Pedersen (2010), every supplier can affect a buyer’s attempts to reorganise a relationship by intensifying, weakening, or even ending relationships to support its own interests. Since each supplier has to relate to numerous other counterparties, the organising of the supply side cannot be determined solely with regard to internal factors at the buying company. Therefore, it is crucial that the inside-out perspective of organising is supplemented with an outside-in view.

With this background, the starting point of the paper is that supply side organising involves several interlinked perspectives. This is in line with Gadde et al. (2010), who describe organising on the supply side as concerning how to coordinate technical, social and organisational matters internally and with regard to individual supplier relationships. The issues in these two dimensions must also take into consideration the embeddedness of each individual supplier relationship in the wider supplier base. This means that supply side organising involves three overlapping domains (Figure 1).

These three domains cannot be viewed separately since what

is ongoing in one domain is always related to what is ongoing in the others. There is continuous interplay among the three perspectives on organising. The remainder of the literature review deals with previous research in each of these three domains, as well as the interplay between them.

3.1. Intra-organisational arrangements

As mentioned above, most of the literature on supply side organising addresses intra-organisational arrangements, or what is commonly referred to as the organising of purchasing. In this context, organisational design is referred to as “the process of assessing and selecting the structure and formal system of communication, division of labour, coordination, control, authority and responsibility required to achieve an organization’s goals” (Trent, 2004: 4). The literature distinguishes between the role of the purchasing department and the purchasing function. The purchasing department consists of the people in the buying company directly involved in purchasing matters. In its activities the purchasing department (P in Figure 2) is in continuous interaction with other departments that influence buying behaviour and therefore are part of the purchasing function, such as production, logistics, and product development. Coordinating the operations of the purchasing department with those of the other departments involved in the purchasing function is a major issue in intra-organisational arrangements.

The organising of the purchasing department with regard to the allocation of the various tasks to purchasing staff can take several forms. The two most common principles are the commodity approach and the capability approach (van Weele, 2005), both of which build on the inward-outward perspective and are based on specialisation – either on the items procured or on the inherent skills and resources of the company. Depending on the features of the purchasing context each of the two logics has its own particular benefits and disadvantages. Therefore, companies usually apply an approach that combines the strengths of both.

When attention is directed to the organising of the purchasing function, the interaction and integration among the various departments come to the fore. The main issues in this respect relates to the position of the purchasing department in the company and its connection to other departments. Purchasing can be either a centralised staff function or it can be decentralised to operational levels. Again, both approaches have their pros and cons and most firms apply a combination of the two, in which the mix changes over time, in terms of increasing or decreasing centralisation. When purchasing is decentralised it is often organised under production or materials management. Increasingly, however,

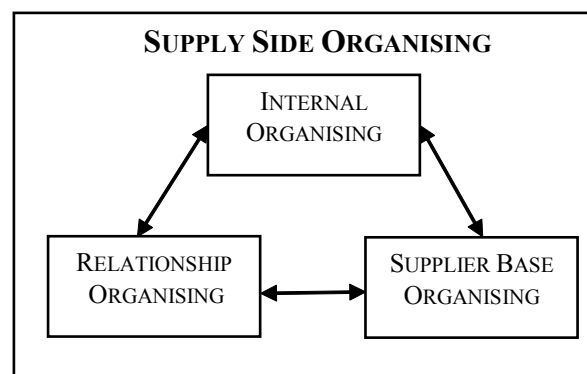


Figure 1: Three overlapping domains of organising

owing to its enhanced strategic importance, purchasing has been made a separate function on the same level as production.

Concerning the connections to other departments involved in the purchasing function, the increasing complexity of the purchasing task calls for extended interaction. Therefore, cross-functional teams, including representatives of the stakeholders of the purchasing function, are common. Establishing such teams tends to reduce potential conflicts between purchasing and engineering and contributes to enhanced performance by putting together buyers and engineers in the whole process from design to order. By working together they jointly decide on the functional specifications and ask suppliers for proposals (Minahan, 1996).

In this way, internal organising can be described as a reflection of the interaction pattern dealing with the coordination of technology, tasks and human components (Trent, 2004). There are also various other aspects related to intra-organisational design of purchasing, including the extent of task specialisation, functional span of control, hierarchical levels, degree of integration, coordination forms, and the organisational status of the purchasing function (see, for example, Rozemeijer & Wynstra, 2005; Trent, 2004; van Weele, 2005). According to these authors, more research is needed on intra-organisational arrangements. Ivens et al. (2009a:853) conclude that “little attention has been given to cross-functional interactions” between the purchasing department and other departments.

3.2. Organising individual relationships

With regard to inter-organisational arrangements, literature is scarce. In many cases the prevailing inside-out perspective implies that even when it comes to the organising of relationships, companies take their own situation as the point of departure. It is often the sourcing strategy of the buyer that provides the framework for relationship organising with the choice between single and multiple sourcing and the level of involvement with the counterpart as important determinants. Above, we questioned the inside-out perspective when it comes to internal organising. These problems are, of course, accentuated when dealing with inter-organisational arrangements. For example, relationship involvement is also resource demanding for a supplier and the pros and cons of increasing involvement therefore cannot be analysed only from the perspective of the buyer.

One of the early studies addressing the actual organising

of the interface between buyer and supplier was described in Cunningham and Homse (1986). On the basis of an exploratory study of 49 European buyer-supplier dyads, they identified multiple levels of contact in each relationship and classified the variety found in these contact patterns. The interaction between buyer and supplier was analysed in terms of three dimensions: hierarchical levels of the connections, interaction breadth across various internal functions and the frequency of interpersonal contacts. Three different contact patterns were discerned: marketing and purchasing controlled contact patterns, marketing and purchasing coordinated contact patterns and stratified contact patterns (implying a multilayer contact pattern involving several departments). Each inter-organisational arrangement thus can be characterised in terms of the degrees of control, coordination and stratification. What inter-organisational contact pattern is suitable is claimed to depend on a number of contextual factors, such as the relationship stage, power distribution, economic importance of the other actor as well as product and transaction complexity. Furthermore, it is emphasised that the inter-organisational arrangements are highly dependent on the internal organising of buyer and supplier. One significant conclusion of the study is that a lack of internal coordination needs to be complemented with more interactive external coordination and vice versa.

Corsten and Felde (2005) explored the benefits of supplier collaboration and found positive effects for the buyer both in terms of innovation capability and financial results. In order to attain these positive outcomes the supplier relationships “need governance modes that balance control and relational elements” (ibid. pg 445). Ivens et al. (2009b) extended this discussion further arguing for key account management in relation to individual suppliers in the same way as has been developed with regard to customers. These relationships should “take an interaction approach to the management of exchange with important external actors”, thus contrasting conventional discrete approaches focussing on single transactions (ibid. p. 516).

The benefits associated with these recommendations are illustrated in a study by Bocconcelli and Håkansson (2008) showing the importance of connecting intra- and inter-organisational arrangements. Their study deals with a major supply side re-orientation undertaken by the motorcycle manufacturer Ducati. The company experienced severe problems with profitability and could not resolve these through internal improvements only. Reduction in the numbers of suppliers and massive mobilisation of the resources and capabilities

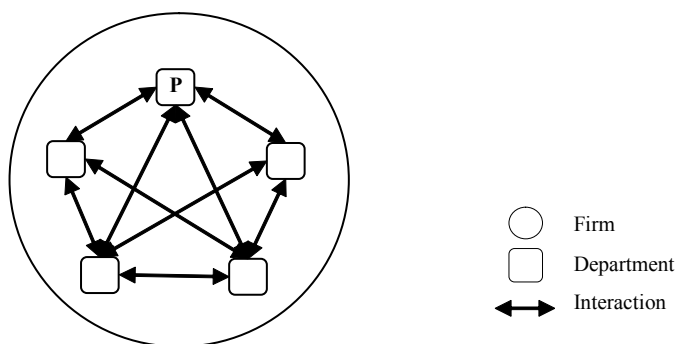


Figure 2: Internal organising, involving the purchasing department and the purchasing function

of those remaining enabled reconfiguration of the design and manufacturing of the motorcycle. Achieving these effects in collaboration with suppliers required the establishment of cross-corporate teams, as well as internal re-organising in Ducati. The case shows the significant benefits that can be attained through the couplings between a buying company's internal and external organising. Figure 3 illustrates the connection between internal organising and external organising in relation to an individual supplier. The internal organising and interaction in the buying firm (Figure 2) is now supplemented with interfaces to the supplier. This interaction, and the associated contact patterns, involves various departments and people in the two firms.

3.3. Supplier base organising

The choice between single and multiple sourcing also impacts on the size of the supplier base of the company. For most companies, enhanced attention to single sourcing has resulted in considerable reduction in the numbers of suppliers. The need of increasing involvement with suppliers makes it necessary to limit the size of the supplier base. Another reason for shrinking supplier bases is that companies are increasingly involved in system sourcing (Trent & Monczka, 1998). System sourcing implies that instead of buying five components from five suppliers, a company appoints one of them (or another company) to assemble these components into a system. In this way the buying company reduces the number of direct supplier relationships and introduces a 'tier'-structure where suppliers are organised in hierarchical levels. The system supplier, typically introduced in the automotive industry some thirty years ago, is often made responsible not only for manufacturing and assembly, but also for product development. Physical delivery is also in the hands of the system supplier, often carried out on a 'just-in-time' basis. Purchasing consolidation is another approach that contributes to reduced supplier bases. Consolidation is a powerful approach to reducing indirect costs on the supply side. The main driver of indirect costs is the number of purchasing transactions, which tends to lead to huge administrative expenditures. This is particularly typical for low-value items such as MRO-goods (items used for maintenance, repair and operations). In such

contexts a buying firm may reduce purchasing costs substantially by cooperating closely with a few counterparties that are also made responsible for supplying products manufactured by other firms. Dubois (2003) shows the significant benefits of this type of consolidation for a buyer of MRO-goods.

The organising of the entire supplier base is partly covered in the literature on supply chains and supply networks. This literature deals with organising dimensions such as the creation of supply networks, their maintenance and development over time, and design features including the size of the supplier base, the number of hierarchical tiers, the choice of single versus multiple sourcing and hybrid forms of purchasing (e.g. Gadde et al., 2010; Holmen & Pedersen, 2010; Mills et al., 2004).

However, most organising literature on supply network design seems to focus on the organising initiatives carried out by dominant firms that can manage and organise their supplier bases autonomously. These firms are exemplified by Nike, Benetton and Toyota. Holmen et al. (2003) point out that organising the supplier base is much more difficult in industries where buying firms are less dominant, such as the construction industry. Furthermore, the literature seems to focus on large-scale manufacturing companies. To illustrate, Dubois and Fredriksson (2008) discuss triadic sourcing, a hybrid approach that combines single and multiple sourcing. Since triadic sourcing requires substantial volumes, this strategy cannot be applied by small-scale buyers. Moreover, all supply networks display continuous tension in several respects, for example in the striving to balance homogeneity and heterogeneity, in the struggle for simultaneous stability and dynamics, and the parallel existence of collaboration and competition (Larsson, 1993). The potential consequences of these ongoing processes call for a more nuanced approach to supplier base organising. This view is supported by Andersen and Rask (2003) in the claim for research on the contextual variety in supply chain management. Contextual factors include the distribution of power between buyer and suppliers, the pace of technological change, the potential tensions between commercial and technical features, the complexity of what is purchased, as well as the adaptations made between the various business partners.

Figure 4 is an illustration of central issues in supplier base organising. The first step in this process concerns the organising

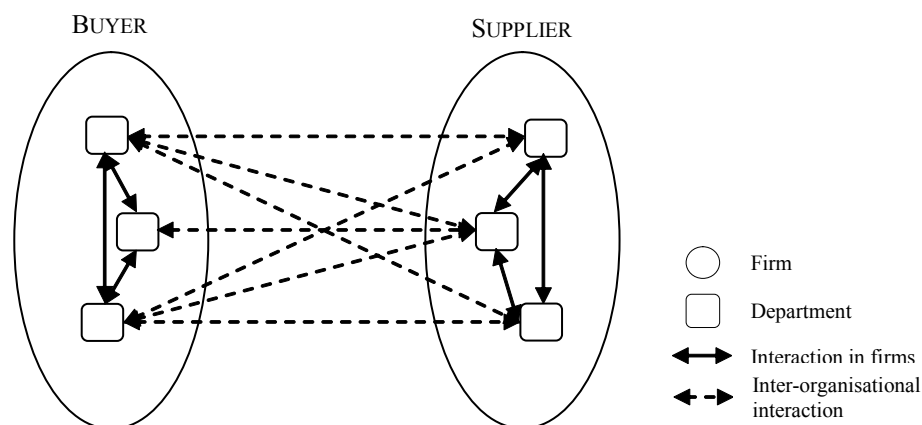


Figure 3: Organising of an individual supplier relationship

of individual relationships discussed above, regarding the buying firm's relationships with suppliers A, B and C, respectively. The second step is to identify appropriate mechanisms for joint cooperation with the three suppliers, thus putting the emphasis on the combined efforts in the three relationships: X-A, X-B and X-C. The third step is to encourage cooperation among the three suppliers in order to improve their joint performance. These attempts involve interaction in relationships A-B, B-C and A-C, with regard to their business with X. Finally the buying firm may sometimes try to impact on, and support, the relationships between the direct suppliers (A, B, C) and the three vendors D, E and F situated on the next supply tier. In these efforts to organise the whole supplier base it is necessary to apply an outside-in perspective.

3.4. The interplay between the organising domains

There seems to be important potential contributions from organising in all three domains identified above. However, the main concern of this paper is that these dimensions have been treated more or less in isolation in the purchasing literature. To date holistic perspectives including all three organising domains are scarce, although there are a number of attempts to approach supply side organising that adopt a wider perspective. These contributions differ in terms of their level of detail, but most of the studies revolve around theoretical ideas and inspirations, rather than practically applicable frameworks.

Dubois and Wynstra (2005) provide a framework that connects internal and external features with regard to supply side organising. The internal dimension characterises the relationship between purchasing and other internal departments in terms of whether purchasing (i) is dominant, (ii) is following decisions made elsewhere, or (iii) if decisions are made cross-functionally. The external dimension outlines whether the buying company is playing the market, whether supply is standardised with preferred supplier lists, and if there are ongoing mutual adjustments among buyer and supplier. Furthermore, the nine options resulting from a combination of these internal and external dimensions are related to the degree of purchasing maturity in the company. This framework thus combines intra-

organisational and inter-organisational arrangements and also relates organising to contextual factors through the purchasing maturity model. The Dubois-Wynstra framework thus represents an example of the interplay between internal organising and supplier base organising.

An example of the interplay between internal organising and the organising of individual relationships is provided by Araujo et al. (1999). In their study four types of relationship organising were identified on the basis of the features of buyer-supplier interfaces, with special emphasis on the ways in which the resources of buyer and supplier are related. The four interfaces are referred to as standardised, specified, translation and interactive. The study shows that each type of interface leads to a particular type of interaction pattern, which in turn impacts on the productivity and innovativity of the buying firm. The organising of the particular relationship is also shown to have clear implications for the internal organising.

Finally, Persson and Håkansson (2009) approach supply side organising from the perspective of technological interdependencies and illustrate the interplay between intra-organisational arrangements and contextual characteristics. The authors suggest three different types of organisational design characteristics: coordination by standardisation, coordination by plan and coordination by mutual adjustment. These three coordination forms apply to different types of technical interdependencies that place an increasing burden on the need for communication and decision-making.

This overview of previous research on supply side organising shows that there is a considerable amount of literature dealing with these issues. However, the studies tend to focus on one or two of the three domains of supply side organising. Since the three domains are interdependent there is a need for studies of the linkages among the three overlapping domains. Such studies must take the organisational context into consideration and thus call for a holistic framework. This claim is supported by Ivens et al. (2009a: 855) who conclude that "a holistic perspective on intra- and inter-organizational challenges is required", while most academic research "seems to focus on specific narrower aspects and dimensions". By drawing on some of the above-mentioned theoretical ideas and sources of inspiration, this study

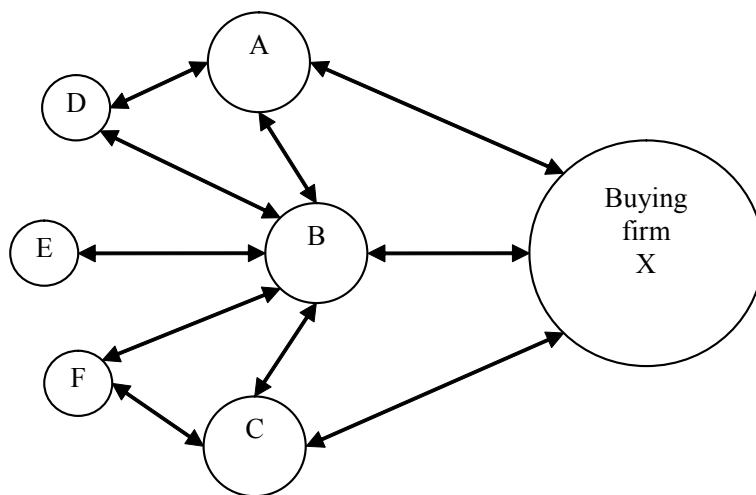


Figure 4: Supplier base organising.

can contribute to the literature on supply side organising.

4. Supply side organising and the industrial network model

The literature review illustrates the importance of the context in which organising takes place. Hence, when analysing the linkages between the three organising domains, a frame of reference is needed that allows for exploration of the essential conditions for supply side organising. The industrial network model (Håkansson et al., 2009) provides such a theoretical basis by emphasising the interplay among connected relationships embedded in a business network. The industrial network model, with its three layers of activities, resources and actors, has also been successfully applied to the field of purchasing in several cases. For example, Gadde et al. (2010) claim that purchasing is concerned with the linking of activities, integration of resources and connection of actors across company boundaries. Hence, activities, resources and actors have to be organised, implying that the issues related to supply side organising can be explored in terms of these three network layers. Efficient configuration of activities is based on synchronisation of interdependent operations undertaken across company borders. Resource development relies on the continuous combining and recombining of resources – internal and external to the buying company. Finally, activity configuring and resource development are dependent on the positioning of actors and the bonds and connections among them. In all these situations purchasing and the supply side constitute the interface between the buying company and its suppliers. In the section below, central organising issues in relation to the three network layers are discussed. For a deeper account of the characteristics of activities, resources and actors as well as the underlying assumptions governing the industrial network model, see Håkansson et al. (2009).

4.1. Purchasing and the activity layer

Activities are central when products are developed, produced and delivered and when information is exchanged. While all activities are important in themselves, the main feature of activities is their inherent interdependence (Håkansson et al., 2009; Håkansson & Snehota, 1995). An activity configuration denotes all activities that are involved in the formation of a particular end result. Any individual activity is simultaneously part of several activity configurations and therefore fulfils several purposes. This multiplicity of activity features imposes tensions for the design and development of each single activity. A common means of handling the interdependence is to adjust activities in relation to each other. Adjustments occur in relation to individual activities, as well as to the links between them. Activity adjustments undertaken in response to some particular interdependence will create other interdependences.

Two concepts are particularly useful for analysing activity interdependencies: similarity and complementarity. According to Richardson (1972), activities are similar when they exploit the same resource (such as a piece of machining equipment) or capability (for example, a skilled work force) for their undertaking. Enhanced similarity among activities follows from standardisation of operations, resulting in improved economies of scale. However, the striving towards increasing similarity needs to be viewed in light of the simultaneous need for differentiation. Differentiation emphasises the uniqueness and distinct features of an activity. Differentiation supports customer-specific solutions

and diversity, which are important features in many types of activity configurations (Håkansson et al., 2009). Regarding complementarity, Richardson (1972) explains that activities are complementary when they have to be undertaken in a specific order, such as the cutting and bending of a piece of sheet metal before assembly and painting. Operational characteristics such as customisation, just-in-time deliveries and build-to-order production reinforce complementarity. Once a customer-specific activity is conducted, the following activities are determined and activities become closely complementary (Richardson, 1972). Close complementarity reduces the similarity of activities and thus must be considered in light of the need for cost efficiency and standardisation. Altogether, managing the simultaneous need for standardisation and differentiation within and between activities is a critical issue in activity configuring.

Purchasing plays a crucial role in the configuration of activity arrangements owing to the fact that interdependencies stretch across the boundaries of firms. Owing to the increasing extent of outsourcing, the need to coordinate boundary-spanning activity links jointly with other actors has become more and more important (Gadde et al., 2010; Håkansson et al., 2009). In every buyer-supplier relationship, activity interdependencies require companies to synchronise their operations. This synchronisation may refer to administrative operations, product development activities, manufacturing or logistics. The nature of the synchronisation depends on several characteristics, such as the type of manufacturing operations, the need for customised products and deliveries as well as information systems and administrative procedures. Furthermore, the synchronisation stretches beyond the focal buyer-supplier relationship owing to indirect interdependencies between the buyer and the customers, sub-suppliers and other actors. Issues related to activity configuration and reconfiguration therefore are crucial tasks to be handled at the supply side.

Organising is important in the efforts of companies to design and configure their activities. Activities cannot configure or refine themselves, but require the involvement of actors. Since activity interdependencies cross organisational boundaries, the purchasing function is critical to the outcome of these attempts (Gadde et al., 2010). In other words, purchasing must be organised in order to link internal and external activities. Considering the complexity of activity linking, this organising must serve several purposes. First, the purchasing function must be organised in order to be able to identify critical internal activities, the most important activities in relation to individual suppliers and the wider supplier base, and the interdependencies among them. Second, the purchasing function must be organised so it can coordinate the most important activity interdependences in physical flows, such as production and distribution, and information flows. Owing to the inherent complexity and dynamics of activity patterns, there will never be the best way to organise in order to fulfil the objectives related to the activity layer. In some situations, efficient purchasing implies large scale supply of standardised items without specific adjustments to internal operations. In other circumstances, supply processes may require individualisation in relation to internal operations. All in all, the supply side characteristics are extremely varied in these respects. Naturally, the organising of the purchasing function must differ depending on these various circumstances.

4.2. Purchasing and the resource layer

Any company requires multitudes of resources in order to carry

out its activities. Some of these resources are physical, such as the products manufactured and exchanged and the equipment and infrastructure used. Other resources are intangible, including for example competences and skills. A central characteristic of resources is that a single resource is passive and without value. Instead, "it is the way that a resource interacts with other resources that define the nature of that resource and have the potential to generate economic value" (Håkansson et al., 2009: 65). This condition is referred to as the heterogeneity of resources and builds on the thinking of Penrose (1959). One particular consequence of resource heterogeneity is that there are endless opportunities concerning the potential combining and recombining of various resources. The heterogeneity of resources implies that the features of any resource are constantly evolving through its interaction with other resources. Owing to the multiplicity of resources, there are simultaneous pressures for change and stability as certain ongoing developments are perceived positive for some resources, while they impose negative consequences for others (Håkansson et al., 2009).

No company can possess all the resources it needs. A dominant aspect of business in networks in general and especially with regard to purchasing, is the fact that every company makes use of resources based in other companies (Håkansson et al., 2009). Boundary-spanning resource utilisation highlights the multiplicity of resources since what constitutes beneficial resource combining in one particular relationship differs from what is advantageous in relation to other actors. Similarly, resource developments outside a focal business relationship may imply that the value of a resource exploited in the relationship is affected. Furthermore, every resource features a double-faced nature in terms of the 'use context' and the 'produce context' (Håkansson & Waluszewski, 2002). On the one hand, the resource springs from a producing context where it is developed and manufactured. On the other, it is used in another context including the buyer and its customers. Several authors claim that a critical issue in any resource combining is the task of connecting the use side with the produce side (see e.g. Dosi et al., 1988; Harrison & Waluszewski, 2008; Håkansson & Snehota, 1995; Lundvall, 1988; Tidd et al., 1997). The main problem with resource combining in the bridging of the two contexts is the fact that what is efficient and effective in the produce context is not always feasible for the use context, and vice versa. For example, large-scale operations favouring economies of scale on the produce side constrain the opportunities for customisation and individualisation on the use side (Gadde et al., 2010).

Since purchasing represents the interface between the internal and external resources of a company, one important task is to utilise the resources of the supplier base in the best possible way, considering the specific interdependencies in the prevailing context. In exploiting these resources, through combining and recombining, the main objective of supply side organising is to connect the use side with the produce side. Considering the complexity of resource combining, the organising of purchasing must serve several purposes. First, the purchasing function must be organised so it can analyse and assess resources and resource interfaces continually, both inside and outside the company. Second, the purchasing function must be organised in order to handle and manage the resource interdependencies that are identified. This requires playing an active role in influencing the development of resource interfaces, either by responding to external attempts to change or through internally driven initiatives. The actions should take into account both historical conditions and anticipation of future developments.

Third, the organising of purchasing and the supply side requires organisational resources. Activity reconfiguring and resource recombining mostly concern physical resources and efforts to improve performance through technological changes. History shows that organisational resources are crucial to these processes since technological change and organisational change tend to go hand in hand, each requiring the other (Piore, 1992). The complex interplay between the two is illustrated by an example where a particular organisational change "induced the technical change, which in turn required further organisational innovation to realise the potential of the new technology" (North, 1981: 38). Owing to the multiplicity and heterogeneity inherent in resource combining, there is no one best way to organise the supply side. These arrangements should take their starting point in the particular resource interdependencies of each specific situation, as well as considering the differences between the use and produce contexts in this supply side setting.

4.3. Purchasing and the actor layer

Actors are involved in configuring activities and combining resources. This layer features actors on various levels. In many situations the company as a whole is considered to be the relevant actor. Sometimes, however, part of the company, such as a business unit or division, may be perceived as the real actor. In other cases individuals are perceived the relevant actors. There is thus no clear-cut definition of what is an actor in the network.

No actor is a self-contained, autonomous, unit with clear boundaries identified through the ownership border. Instead, its features are determined by its connections to other actors and its behaviour in relation to these business partners. These connections are formed through exchange in business relationships, which tends to be of a long-term nature (Dubois et al., 2003; Gadde & Mattsson, 1987; Håkansson, 1982). The interaction processes in the relationships provide actors with identities and positions in business networks (Håkansson et al., 2009). Organising is a key aspect of interaction and positioning, both within and across actor boundaries. As stated by Ivens et al. (2009a), effective supply management is dependent on interaction in the conscious efforts to better utilise the capabilities and skills of business partners. The outcome of interaction is strongly dependent on the buying company's organising of its supplier base and how this is mirrored in the internal organising (Gadde et al., 2010: 34). Moreover, firms increasingly realise the need to support each other in these collaborative efforts (Gadde et al., 2010). The establishment of cross-corporate teams is one means of achieving such effects. For these teams to function effectively it is vital that buyer and supplier, both involve people with adequate skills and capabilities. Furthermore, these people need to have an appropriate status within their own organisations to be able to exploit the potential residing in teamwork with suppliers.

In any organising effort on the supply side it is crucial to consider that organisational structures in a company take account not only of purchasing, but of the whole company. For example, Johnson and Leenders (2001) studied major modifications of the organising of the supply function of large companies and found that most changes were results of reorganisation of the overall corporation. This finding contrasts "conventional wisdom that the chief purchasing officer has a great deal of flexibility in matters of organizational design" (Johnson & Leenders, 2001: 4). In other words, purchasing needs to understand how performance on the supply side can be enhanced, irrespective of the overall corporate strategy (Gadde et al., 2010).

Ivens et al. (2009b) claim that the initial organising task for the buyer is to assess which external actors control the resources required. Once this is done the central issue in organising is “to determine what kind of relationship can allow for the ‘best’ combination of resources” (ibid. p. 517). This analysis is based on the level of relationship involvement, where a distinction can be made between high and low involvement (Ford et al., 2003). High-involvement relationships are characterised by considerable relationship substance in terms of activity links, resource ties and actor bonds. Other relationships score low on relationship substance, thus representing typical low-involvement connections. High-involvement relationships are often accompanied by a single-sourcing purchasing strategy, while multiple sourcing tends to result in low-involvement approaches – commonly identified as arm’s-length relationships.

High-involvement relationships take time to develop, because they follow investment logic. Initially, substantial costs are required since the adaptations tend to come early, while the benefits of close relationships only appear over time. Gaining the benefits from adaptations thus call for a long-term orientation. Moreover, once adaptations have been made, both buyer and supplier identify benefits through maintaining the relationship, which leads to further business exchange over time.

In summary, in a business world where interaction is important, issues related to organising come to the fore. Organising is a most significant means of taking advantage of specific potentials for improvements with regard to resources, activities and actors. The analysis of purchasing from an industrial network perspective raises several significant features and issues in the three layers to be scrutinised in an empirical study.

5. Methodology

We claim above that the issues dealt with in this paper call for a holistic approach when it comes to the framing of the research problem. This conclusion also has methodological consequences and favours a case study approach. A case study “investigates a contemporary phenomenon in its real-life context” (Yin, 1984: 25). This approach is recommended for studies of complex systems and events that are unique and where broad conceptual frameworks are used (Normann, 1976). Eisenhardt (1989: 534) provides another argument for this methodology in the claim that “the case study is a research strategy which focuses on understanding the dynamics within single settings”. Qualitative case studies are frequently used by industrial network researchers (Dubois & Araujo, 2004), because they enable analysis of problems in settings with unclear boundaries (Yin, 1984, Halinen & Törnroos, 2005).

Within the case study framing we rely on the principles of systematic combining (Dubois & Gadde, 2002). Systematic combining is a non-linear, path dependent process based on a continuous exchange and interplay between theory and reality. Systematic combining is expressed as “a process where theoretical framework, empirical fieldwork and case analysis evolve simultaneously and it is particularly useful for development of new theories” (Dubois & Gadde, 2002: 554). In this process, data and theory are successively adapted to fit with each other by going back and forth between theoretical framework, empirical observations and analysis. This means that what is found in the empirical world might call for refinement of the framework, which requires additional theory. In the same way the modified framework may call for additional information

about the empirical world. This study took its point of departure in previous research on purchasing organising and the industrial network model. Concepts and models from these streams of research were used in the empirical study. The information from the data collection led to several revisions of the framework, which in turn induced a second round of data collection from which the resulting framework at the end of the paper evolved.

This research is based on a single case study design. The case study design allows for context-specific findings, as well as analysis of interdependencies in several dimensions and across organisational boundaries. These features are appropriate, considering the nature of purchasing organising. In fact, Johnson and Leenders (2006) request more case based research in order to acquire a deeper understanding of the organising of supply in general. The case study design has been recommended in similar circumstances by Halinen and Törnroos (2005) and others.

This case focuses on the purchasing activities of a manufacturing company referred to as Signal Solutions. At the time of the study, Signal Solutions was facing severe challenges in relation to their supply side and there were many ongoing organising initiatives. Studying a company involved in change was preferable, as linkages between organising domains become visible as they are subject to tension, while they may be more difficult to identify in stable situations. Moreover, the company operates with a highly technical offering involving many complex purchases. These conditions were favourable for the study as more interdependencies were anticipated than in cases of less complicated supply sides. In addition, the case enabled the study of real-time organising as opposed to exploring past events. Moreover, previous contacts with the company facilitated good support and access to information. For these reasons, the Signal Solutions case was judged as highly suitable for the study. It is important to emphasise that the selection of another case would undoubtedly have resulted in different outcomes. When the principles of systematic combining are applied, the boundaries of the study evolve during the course of the process. Therefore, the actual relevance of a case cannot be known beforehand (Dubois & Araujo, 2007). In this study, the intention to select a case characterised by technology intensive purchasing activities has influenced the framing of the study as well as the findings.

The case was studied from a network perspective. Data was collected from the focal buyer, three suppliers and three customers. In the interviews with these actors the scope was extended to the surrounding business network. Although these ‘outsiders’ were not interviewed, second tier suppliers were found to play major roles in the sourcing arrangements.

To cover the supply side, three vendors were selected: High Tech Structures, Secure Communication and Communication Platforms (see Figure 5). The relationships with these firms constitute three embedded cases. All three suppliers deliver systems that are part of Signal Solutions’ offering. Secure Communication supply two systems, while the other vendors supply one each. These systems are included in various combinations in the four product platforms of Signal Solutions (A, B C and D). It is important to emphasise that the suppliers and systems are not a result of convenience sampling. On the contrary, some of the companies were very difficult to access. The three suppliers and four systems were selected on the basis of interviews at the focal buyer, as they appeared to be most relevant for the organising issues. These systems and suppliers were either most frequently mentioned during interviews or seemed to best illustrate the conditions governing the company’s purchasing activities and organising initiatives. The three

embedded cases hence cover the most important findings of the study. It should also be mentioned that additional suppliers and systems were considered and initially included in the study but were later rejected because they were considered less relevant or added few new perspectives or dimensions.

The three customers were included in the study only to enrich the understanding of the external business environment of Signal Solutions. They contributed information concerning general demand characteristics and working procedures, including the degree of customisation and roles and responsibilities between customer and Signal Solutions throughout the product development process and project fulfilment. Although the offerings of Signal Solutions were discussed during the data collection, customers were not asked about the specific relationships in the study.

The main data collection method was informal semi-structured interviews, distributed among the firms in the study in accordance with Table 1. At Signal Solutions, a large number of interviews were conducted in order to map the internal organising of the purchasing function and the purchasing department, as well as the links between them. Moreover, the internal conditions at Signal Solutions represent the use context, which also required considerable data collection. The positions of interviewees spanned the entire company hierarchy, including a board member at one extreme and operative purchasing staff and engineers at the other. Several company functions are represented: sales, product management, project management, product development and purchasing. The first interview round aimed to cover ‘all’ aspects of the company and its organising, as well as the supply side in general. The second round was more focused on the three selected supplier relationships and the people at Signal Solutions directly or indirectly involved in these relationships. These interviewees included relationship representatives, decision-makers and the people impacted by the relationships.

At the suppliers, the data collection had to be more focused, which was possible owing to the extensive data collection that had already taken place at Signal Solutions. During supplier visits, priority was given to interviewing everyone who was regularly involved in the relationship interface. This typically implied representation from sales, project or program

management and product development or operations (sometimes the internal organisation implied that there was overlap between these responsibilities). In two of the cases, however, the general managers or vice presidents of the business units were also interviewed. In addition, the supplier visits provided opportunities for observation of manufacturing facilities and processes of operations. In one case, the visit included participation in meetings. On the customer side, interviews were limited to the buying side and their key account representations in relation to Signal Solutions. This was judged as sufficient in order to verify or clarify the demand conditions of Signal Solutions.

6. Organising the supply side at Signal Solutions

The empirical case centres round the buying behaviour of Signal Solutions. The organising of the supply of four systems in three supplier relationships is described. These systems to some extent overlap in the product platforms offered by Signal Solutions, as shown in Figure 5.

6.1. Signal Solutions: Internal organising

Signal Solutions, the focal buyer in this case, is a manufacturer specialising in a technology intensive industry. Signal Solutions produces large, complex technical offerings for customers worldwide. The portfolio of offerings includes five basic product platforms for which annual sales volumes are truly low. For three of the platforms, a handful of products are sold each year. For the remaining two, sales are less than annual. Each sale represents large investments for the customer and is characterised by project-like operations, involving lengthy sales cycles and substantial customisation and product development. Each solution offered contains tens of thousands of items and, owing to long supply lead times and adjustments, the total time for development, assembly and delivery is more than one year. Sales cycles are even longer, often ranging over several years and even up to a decade.

Because of the complex technological characteristics of the offerings, it would be impossible for Signal Solutions to manage all product development and production activities in-house. For this reason, many of the sub-systems of the offering

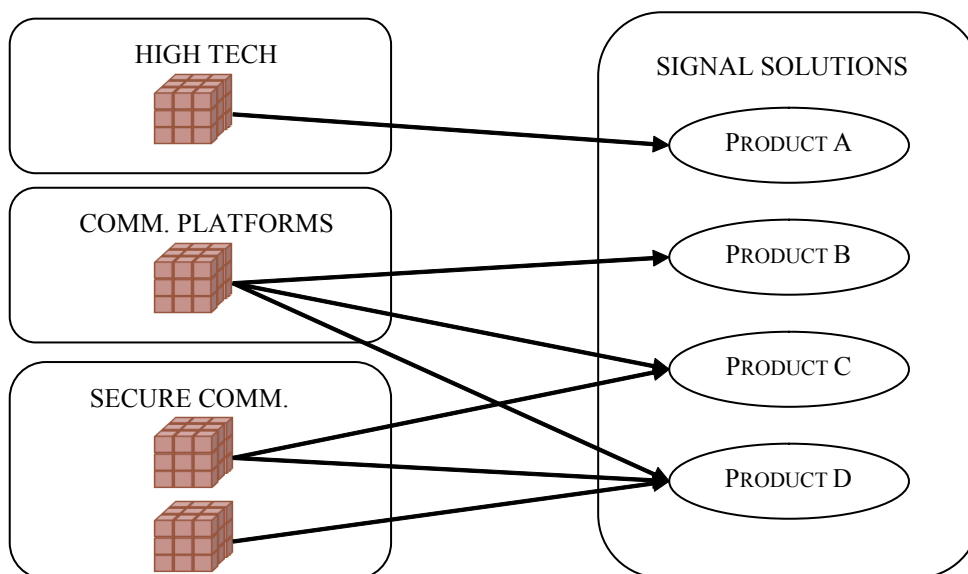


Figure 5: Four systems purchased from three suppliers used in the product platforms

are outsourced to suppliers. However, it must be emphasised that Signal Solutions is a company with a long history of in-house operations and restrictive use of suppliers. Moreover, because of the highly skilled workforce and substantial call for new product development in every customer project, purchasing costs, as portion of total costs, are lower than in other manufacturing industries. Instead, man-hours make up the majority of total costs. This is also the reason why purchasing has been assigned a supporting role in the organisation, while technology and customer requirements have directed operations. The purchasing department has been involved only in the final stage of each customer project in order to execute the purchasing orders, determined by engineers and project managers elsewhere in the organisation. As a result, it is claimed that the strategic development of the purchasing operations has suffered.

Interviewees describe limited coordination across both product platforms and customer projects, as well as a huge supplier base, including several thousand suppliers. Many vendors are used infrequently and there is vast potential for consolidation of purchasing volumes and reduction of the supplier base. Moreover, although many supplier relationships stretch over several decades, purchasing still largely occurs on a case by case basis without long-term commitments or framework agreements. Finally, the buying needs of Signal Solutions do not harmonise with those of other customers of the main suppliers. There are two main issues in this respect. First, Signal Solutions often have deviant requirements in terms of documentation and durability, because of stricter industry standards. Secondly, the component life cycles are typically shorter in other industries, forcing Signal Solutions to frequently manage end-of-life purchases and redesigns, owing to obsolete components. Altogether, the current buying behaviour of Signal Solutions often calls for special treatment and customised purchases. Owing to negligible buying volumes as compared with other customers, these requirements of Signal Solutions are rarely prioritised by suppliers, resulting in escalating costs and long lead times.

Although there is clearly untapped potential in the purchasing operations, the current organisation has constrained the opportunities for improvements so far. In order to consolidate purchasing volumes and adapt the buying behaviour, interviewees asserted that the supply side would have needed to have a more prominent position in the company. A prerequisite for improved buying behaviour is that the conditions on the supply side are allowed to impact on in-house operations. As discussed above, this has hitherto not been prioritised. Over recent decades, however, the business environment of Signal Solutions has developed substantially. At the outset of Signal Solutions' establishment, the company was basically serving one single customer. This customer was interested only in cutting-edge technology and even instructed Signal Solutions not to make design and purchasing

decisions based on cost. Over time, however, Signal Solutions has been increasingly exposed to competition and requirements for cost rationalisation. Furthermore, the company was recently acquired by another corporation, which impacted on purchasing operations. The previous owner of Signal Solutions claimed that they could exploit the buying volumes of other business units in the same group. The new corporate situation offers limited potential in this respect. Altogether, these developments have focused the attention on cost efficiency.

The changes in the business environment have resulted in redirection of the internal operations of Signal Solutions. The formerly project-based organisation is now supposed to become more product-based. Previously, all operations were carried out in individual customer projects, implying that although there are five product platforms, each customer project was executed as a unique product development activity, with little effort devoted to coordinating the technological road map, either within or between the product platforms. In other words, customers were encouraged to request customer specific arrangements and thus product platforms have evolved case by case on the basis of customer funding. In a product-based organisation, the priorities are reversed. Rather than continuing to adapt unconditionally to customer specific requirements, the current idea is that product platforms should be developed in response to general demands. Moreover, product development is to be funded internally rather than being financed by individual customer projects. With this approach, coordination across product platforms in terms of joint product development and purchasing is supported. Naturally, this substantial redirection of the business logic calls for massive reorganising internally. To exemplify: while the sales department and project managers previously occupied prominent positions, it is evident that the attention is now shifting towards product managers and, to some extent, purchasing staff.

The reorganising that has occurred so far at Signal Solutions is not visible in terms of the organisational structure and formal change management procedures. Instead, the process can be characterised as a step-by-step development and a slowly shifting in-house attitude. Successful pilot projects and informal developments through individual initiatives have played key roles in this redirection. Over time, the status of the purchasing function has slowly been enhanced at the same time as less priority is given to individual customer projects. While most of the changes have been informal, it should be emphasised that directives from top management and reallocation of resources have contributed to the development.

The remainder of the empirical section is devoted to a description of three important supplier relationships and the four systems that are purchased from these suppliers, illustrated in Figure 5. As is described below, these systems have various roles in relation to the end products of which they form parts.

Table 1: Companies interviewed and number of interviews.

Firm	Number of interviews
Signal Solutions, first interview round	31
Signal Solutions, second round	46
High Tech Structures	3
Secure Communications	5
Communication Platforms	3
Customer A	1
Customer B	3
Customer C	2

Moreover, Signal Solutions' impact on the systems differ and there is variety in the ways they are handled in terms of organisational principles, both internally and in relation to inter-organisational arrangements. As the case description illustrates, the departments and roles represented in the inter-organisational setting also play key roles for the unfolding of the supplier relationships.

6.2. High Tech Structures: Supplier of the structural frame

The structural frame purchased from High Tech Structure is the single most expensive item purchased by Signal Solutions and constitutes the structural frame of one of its offerings. The structural frame is customer specific and built to order, as are all systems supplied by High Tech Structures. In relation to the offering of Signal Solutions, the structure is peripheral but still very important. On the one hand, the functionality and the core offer reside within the elements inside the structure, rather than in the structure itself. On the other hand, the structure is necessary for assembly of all crucial components. Furthermore, since the structure is single-sourced and customer specific, Signal Solutions is highly dependent on the supplier in order to secure the supply of the structure and thereby to fulfil their own deliveries. Finally, the structural frame, although not core to the offering of Signal Solutions, is a driver of cost. It should also be noted that there are a handful of additional structures supplied by High Tech Structures to Signal Solutions. Although larger in terms of actual volume, they represent only a minority of the total business value in this buyer-supplier relationship.

Production operations at High Tech Structures are highly resource intensive owing to the specialised machinery required for the production of the structures. The manufacturing facilities have been designed to optimise the production flow, while still allowing for variety in the operations. Typically, each structure follows the same flow, but the specific activities undertaken at each work station vary, depending on the requirements of the particular structure. Supplier representatives state that the structures supplied to Signal Solutions fit in well with their production context. The equipment used and the production

processes applied are identical for all buyers of the components and systems produced by the supplier. Because of these similarities, all customers contribute to improved resource utilisation at the production facilities.

The system supplied by High Tech Structures represents the most long-term commitment of Signal Solutions, since the relationship was established almost 20 years ago. Despite this long-lasting nature, the relationship has been characterised by substantial problems and efforts have recently been made from both sides to end the relationship. The main reason for these problems can be found in the evolution of the customers and suppliers of High Tech Structures. On the customer side, all buyers except Signal Solutions represent regular and rather large volumes, while the demand from Signal Solutions is extremely low and irregular. As described above, Signal Solutions supplies the product of which the structure is part on a less than annual basis. Hence, although the actual production processes of the structure resembles those done for other customers, the inherent stops and goes in the orders from Signal Solution imply substantial extra costs for the supplier. On the supply side of High Tech Structures, problems occur because of the unique material requested for Signal Solutions' structure. While this material was standard at the time of the original design, other manufacturers have upgraded their designs over time, and now Signal Solutions is the only global user of this particular material. High Tech Structures therefore have to coordinate material supply for this specific structure separately. Furthermore, because of the minimal order quantities, the material suppliers of High Tech Structures are becoming increasingly unwilling to supply materials and thus frequently prioritise other customers. Altogether, the main cost drivers of the structure do not stem from actual material cost and assembly time, but from surplus charges related to supply management, inventory management and resource management. Compared with other customers, Signal Solutions' costs are higher and lead times substantially longer and steadily increasing.

The organising of the relationship interface is illustrated in Figure 6. A limited number of people are involved in this interface: totalling four High Tech Structure employees and two Signal Solutions employees. In addition to these regular

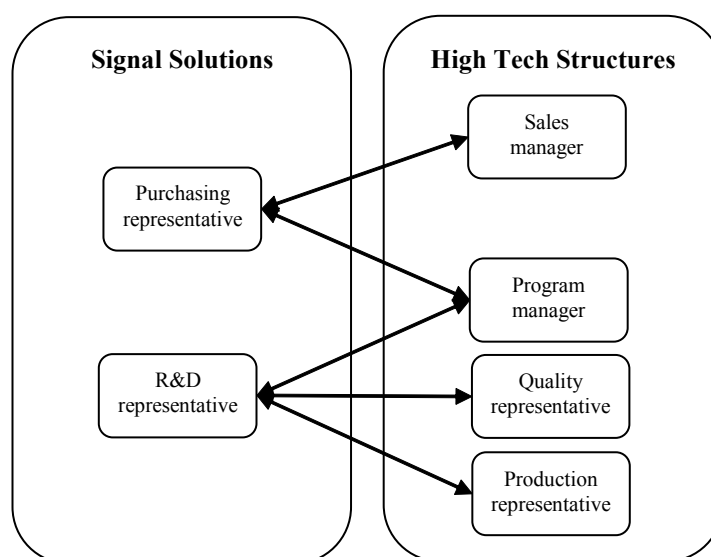


Figure 6: Relationship interface between Signal Solutions and High Tech Structures.

contacts, there are three additional people on the technical side of Signal Solutions and one purchasing representative from High Tech Structures occasionally involved. There is a clear imbalance in the hierarchical status of the representatives of the two companies. From High Tech Structures, the head of operations is involved, while not even departmental heads of Signal Solutions are engaged.

In terms of organising, there are some important points to highlight. First, an internal reorganisation at High Tech Structures resulted in greater visibility of costs in relation to Signal Solutions. Previously, commercial and technical aspects were handled by separate departments, similar to the organisation at Signal Solutions. Consequently, many costs remained hidden. A couple of years ago, High Tech Structures implemented a program management organisation, implying that there is now one single point of contact for technical and commercial matters, and so engineers and sales personnel are working closely together within each product platform. In light of these developments, High Tech Structures has now passed on the previously hidden costs to Signal Solutions, resulting in price escalations of more than one hundred per cent. Signal Solutions on the other hand, has always handled technical and commercial matters separately in their contacts with High Tech Structures. Hence, two people have always represented Signal Solutions in the supplier interface, with only limited coordination between the two. This form of organising has not proven very efficient, considering the substantial interdependencies between technical requirements and commercial terms. The situation is further complicated by the fact that there has been limited continuity in the representation of Signal Solutions. This organisational setup has made Signal Solutions quite unaware of what specifications drive costs, as well as of developments in the business environment. Secondly, owing to the rather narrow relationship interface, additional contacts between the companies are naturally necessary on a need-to-know basis. These conditions result in unofficial representatives interfering at their own initiatives to solve problems or insert authority into

the relationship on behalf of Signal Solutions. These contacts are highly disliked by the formal relationship representatives at Signal Solutions as they feel that this undermines their authority and their coordination abilities.

Having concluded that the situation is not sustainable, there seem to be two ways to overcome current problems. One approach would be to redesign the structural frame to better fit with the requirements of other customers. The other would be to initiate a more regular order flow where Signal Solutions carry the costs and risks until they have secured customer orders. Both these solutions require changes of the current resource management system, as well as a long term attitude towards the composition of the product portfolio. However, the actual organising at Signal Solutions reduces the opportunities to make such drastic changes. The people involved in this supplier interface have limited authority and status in the company. Their only task is to secure the functionality of the system and to negotiate prices and commercial terms, often on a case by case basis. It seems like the present organising not only reduces the visibility of current problems. The historical emphasis on project-based organising combined with the lack of influential representatives in the supplier interface also constrains the opportunities for change.

6.3. Secure Communications: Supplier of electronic devices

Secure Communications supply two electronic devices to Signal Solutions. All operations of this supplier rely more or less on build-to-order production and no items are sold off the shelf. One of the electronic devices is still part of the standardised assortment of Secure Communications, while the other is customer specific and designed for Signal Solutions. The standardised electronic device is similar for all customers but requires certain adaptations on a case by case basis. While the structural frame was considered peripheral to the product offering of Signal Solutions, the electronic devices are much more central and important in relation to customers. In fact,

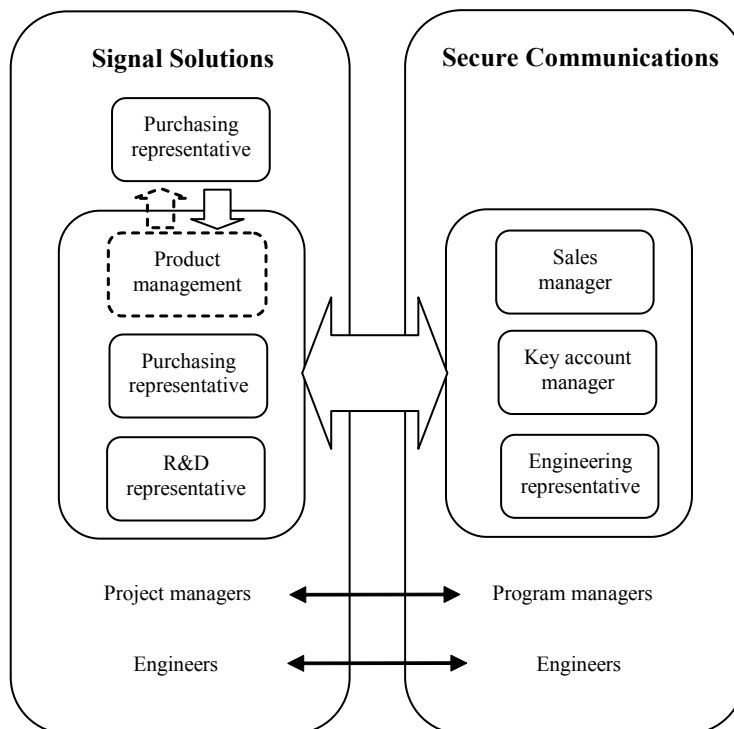


Figure 7: Relationship interface between Signal Solutions and Secure Communications.

although customers are supposed to specify only the functionality in their orders it is not uncommon to specify supplier brands or details that indirectly determine what supplier is selected for the electronic devices. It should also be noted that the standardised electronic device is available in a model that fits another product platform of Signal Solutions. It has been discussed whether Secure Communications should supply this platform as well. However, owing to the very costly adaptations required in adjacent systems, Signal Solutions have so far not gone forward on these ideas.

The operations of Secure Communications are not particularly capital intensive, so securing continuous production is not a main priority in relation to this supplier. Rather, their core competence can be found in the flexibility of the operations that can be adapted to a wide range of industry settings and scales. The offerings include both customer specific developments and standardised in-house designs. The production facilities are dominated by assembly activities designed in cells, ranging from small-scale operations to mass production, depending on customer requirements. There are even opportunities to shift between manual and automated production, depending on the scale of the operations. Considering the relatively small volumes purchased by Signal Solution, this operational environment is perceived as being well suited to their needs.

The business relationship was established less than five years ago with strategic intentions and long term objectives. Secure Communications was assumed to support the development of the future technological capabilities of the buyer, while Signal Solutions would provide access to new markets and share their market intelligence. Furthermore, Signal Solutions clearly communicated a desire to secure supply through more long-term and stable collaboration with a new supplier. Because of these promising business opportunities, the tone of the relationship very quickly moved towards a partnership atmosphere. About a year after initial discussions, the first contract was signed. This contract involved the customer specific electronic device – a design responsibility symbolising the intentions of Secure Communications to become a partner in the development of the future needs of Signal Solutions. At first, Secure Communications hesitated about this project as they anticipated serious design problems. However, after substantial arm-twisting from Signal Solutions, the supplier decided to honour the initial agreement in the expectation of future benefits.

Unfortunately, the relationship has not developed in accordance with the initially promising intentions concerning partnership. First of all, the indicated volumes on which Secure Communications based their price level have been far from realised and consequently there has been virtually no access to new markets or shared market intelligence. Even worse, Signal Solutions are not willing to deviate from any of the commercial terms, despite the fact that Secure Communications have incurred substantial losses owing to design problems and short sales volume. In fact, Signal Solutions has even started to express intentions to expose the long-term agreement to competition, ignoring the fact that Secure Communications need long-term sales volumes in order for the relationship to become profitable. In response to this radical change in the relationship atmosphere, Secure Communications have decided to violate the legal contract. At present, every sale is therefore founded in traditional commercial negotiations, on an order by order basis. In these negotiations, Secure Communications raise prices as much as possible. Owing to customer requirements, Signal Solutions have little choice but to accept the current terms, which are far

from beneficial to them. Describing the relationship as anything but highly infected would be an understatement.

The main reason why this promising relationship soured can be found in the internal organising of Signal Solutions and the associated connections with Secure Communications. Firstly, it should be emphasised that the relationship was established at a time of internal turbulence at Signal Solutions, with supply side reorganising at top of the agenda for the individuals who became involved with Secure Communications. The intention was to increase the status of purchasing operations by allowing supply side concerns to influence internal operations to a larger extent than before. Establishing long-term agreements with fewer suppliers by consolidating sales volumes across product platforms and customer projects was an important step in this direction. It was with these intentions in mind that Secure Communications was approached and the future vision was communicated. Secondly, the people who initially represented Signal Solutions in the discussions belonged to a recently established partner management function in the department responsible for long-term product platform strategies. Naturally, the knowledge and agenda of these people corresponded well to the relationship atmosphere that evolved, as they were assumed to possess both market intelligence and a long-term perspective.

Unfortunately, communication with Secure Communications regarding the organisational change preceded the internal unfolding in Signal Solutions. Over time, the strategic reorientation of purchasing, as well as the reorganisation regressed, as the change initiatives turned out to lack the necessary support and mandate. The partner management group was eventually dissolved and purchasing staff took over as representatives in the contacts with Secure Communication. These purchasing representatives had quite other perspectives and directions regarding how to manage suppliers and supplier relationships. Consequently, Secure Communications suddenly became more of a regular subcontractor than a strategic partner. To confuse matters even more, organisational changes on corporate level simultaneously impacted on the relationship between Signal Solutions and Secure Communications. In the attempt to consolidate purchasing operations across various business units, Secure Communications had been identified as a key supplier, because of ongoing business exchange between other business units of the two corporations. Hence, while the relationship climate between Signal Solutions and Secure Communications was quickly eroding, corporate level directions signalled that it was crucial to maintain a well-functioning relationship. Altogether, depending on the perspective taken on the business relationship, the status of the relationship became far from clear-cut.

The organising of the relationship interface is illustrated in Figure 7. Compared with the relationship with High Tech Structures, more people from Signal Solutions are involved. The relationship steering group is quite similar. However, there are more regular informal connections, including direct contacts between vital departments. It should be emphasised that these connections also are coordinated (or at least encouraged) by the steering group. The figure illustrates the shift in representation on the part of Signal Solutions. Owing to the notably higher status, authority and earlier involvement in internal operational processes of the product management function, the loss of this representation drastically changed the composition and the characteristics of the relationship interface.

6.4. Communication platforms: Supplier of a data processor

The third system, purchased by Signal Solutions is a data processing platform needed to manage the software in the product offerings of the company. Similar to the structural frame, the data processing platform is necessary for the overall functionality, but quite peripheral to the offerings. Customers never dictate the specification of the data processor. It should be mentioned however, that while less costly than the structural frame and less central to the offering than the electronic devices, the data processor has more functional interfaces to adjacent systems than the two other systems. This implies that the data processor represents the most integrated system of the three described in this case. Furthermore, the data processing platform represents the first successful attempt by Signal Solutions to reorganise its supply.

The data processor is part of all product platforms. It used to be designed and assembled in-house. Moreover, similar to all internal operations, the design differed from one product platform to the other and even from one customer project to the other. Furthermore, the electronic components included in the processor represented one of the commodity groups within which Signal Solutions encountered most problems in terms of end-of-life purchases and redesigns because of obsolescence. As one of the change initiatives described above, the data processing platform was identified as an important first attempt to move towards a product-based organisation. It was decided that a modularised data processor should be designed that could be configured to fit with three of the product platforms. This common data processor was to be outsourced to a supplier specialising in the commodity area and thereby better able to handle end-of-life purchases and redesigns. This was the first time Signal Solutions approached a supplier and asked for design of a sustainable and cost efficient system that required them to adapt their internal operations. Apart from designing the first product and project spanning system, substantial adaptations to

adjacent physical and functional interfaces were necessary.

This approach was very unfamiliar to Signal Solutions, since the company was not accustomed to adapting individualised customer projects to predetermined standards, especially not for purchased items. Initially, the internal support for the initiative was low and project managers and engineers were highly sceptical. The project also faced some quality issues and subsequent delays, mainly because of inexperience with these tasks and the dealings with a new supplier. Over time, however, the task force succeeded in designing a modularised data processor together with the supplier. The processor is available in two basic configurations depending on the target product platform. Apart from these two configurations, there are further opportunities to make subsequent modifications to the data processor internally in response to various software requirements, without modifications of adjacent systems. The modularised version also implies new potential on the customer side of Signal Solutions. In pace with product portfolio improvements, Signal Solutions is now able to offer customers upgrading, which was not possible before, since new versions of the data processing platforms were not compatible with previous ones.

The operations of Communication Platforms resemble those of Secure Communications in that they are flexible and not particularly capital intensive. Furthermore, there is both a standardised and a customised assortment, although the standardised assortment is actually off the shelf for Communication Platforms. This is explained by the fact that Communication Platforms offers both standardised components, unit by unit, and customer specific systems assembled from these standardised components. It should be mentioned, however, that these standardised components are actually manufactured by another business unit than Communication Platforms. The data processor supplied to Signal Solutions is a customer-specific system.

The relationship with Communication Platforms started five years ago at about the same time as the one with Secure Communications. Communication Platforms was identified as

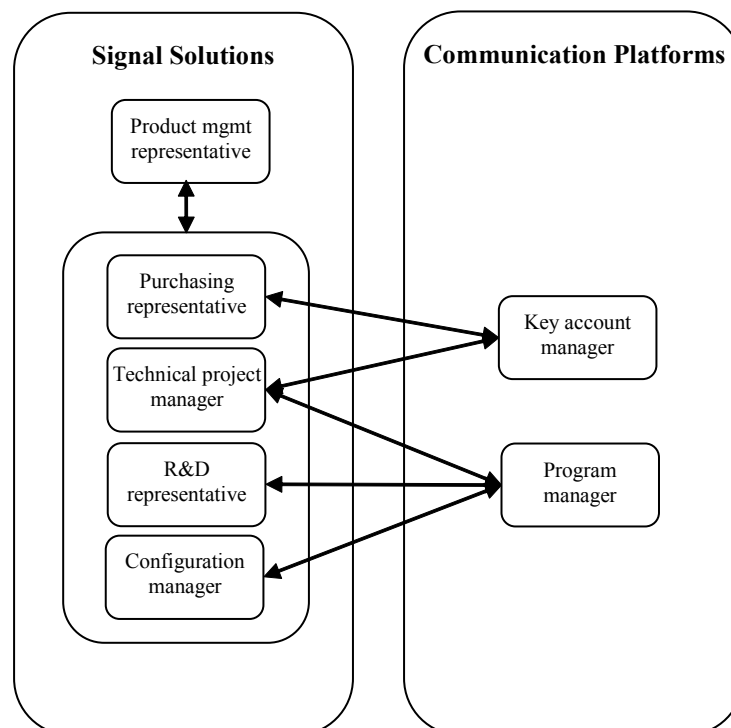


Figure 8: Relationship interface between Signal Solutions and Communication Platforms.

a potential supplier early on, although Signal Solutions went through a thorough tendering process before selecting them. At the time, Communication Platforms was a new acquaintance to Signal Solutions, although there were connections between other parts of the larger corporate groups to which the two belong. Since the long-term agreement for the data processor was signed, Communication Platforms have become the preferred supplier for standardised components within the same category. This applies not only to Signal Solutions but to the corporate group of which they are part. Communication Platforms is the only supplier interviewed that is satisfied with the relation to Signal Solutions. At the time of data collection, the end of the first contract period was approaching. However, both parties expressed optimistic expectations about upcoming discussions, and looked forward to further improving the design of the data processing platform. There seemed to be consensus that the first contract period was an enriching learning period and that the upcoming period would probably be very profitable to both parties.

In terms of organising, Figure 8 illustrates the relationship interface between Signal Solutions and Communication Platforms. There are a number of interesting points to highlight. First, although the total number of people involved is quite similar across all the relationships, the representation of Signal Solutions is the largest in this relationship. Naturally, this results in better coordination internally at Signal Solutions. Second, in terms of functional representation there is surprisingly little differentiation from the other relationships. The interface is limited to connections between product development and program management, as well as between purchasing and sales (key account manager). Furthermore, there were no signs during the interviews that these contact patterns were coordinated in a steering committee. Instead they seemed quite isolated from each other. This contact pattern is very similar to the one with High Tech Structures, making the comparable success of the data processor project rather unexpected.

However, there are several distinguishing characteristics that are not evident in the structural features of the relationship interface. First and foremost, while the relationship with Secure Communications was based on more informal grounds, the data processing platform initiative was formally anchored in the organisation. It originated from the partner management function (which was later dissolved) in product management, but was provided with a sponsor, a budget and a task force. Hence, although the initiators later disappeared, the product management function remained involved as a sponsor and coordinator of the internal task force. Despite the internal turmoil and resistance, the data processor project could continue while the initiative in relation to Secure Communications dissolved. The internal coordination also made communication with the supplier more accurate, causing less confusion on the part of Communication Platforms. Secondly, the formality allowed the data processor to be cost-efficiently designed from scratch and thereby with supplier capabilities as the main priority. This was accomplished through a cross-functional project with multilevel contacts in relation to the supplier (project management to project management, purchasing to sales and engineer to engineer) where the internal prerequisites were reversed. Within certain boundaries, the supply capabilities were allowed to dictate other functional areas instead of these functional areas dictating supply specifications. This profound, cross-functional design stage resulted in a data processing platform that was well adapted both to buyer and supplier conditions, causing less need for cross-

functional and simultaneous contacts in the continuation of the relationship.

In summary, while informal forces were crucial to developments at Signal Solutions in general, the formality and top management support demonstrated in the data processor case was equally important to success. Similar approaches in the other cases described would have made it possible to consolidate designs and thereby purchasing volumes in order to improve supply side operations. While no such initiatives in relation to the structural frame and electronic devices are currently on the agenda, the approach applied to the data processing platform has already spread to other systems.

7. Towards a framework for analysis of supply side organising

The empirical study illustrates the significance of the interplay between internal and external organising that is evident in all three embedded cases. To begin with, the lack of coordination between commercial and technical functions at Signal Solutions caused severe problems in the relationship with High Tech Structures. Also, the changes of purchasing staff in the buyer-supplier interface resulted in limited continuity which further aggravated the problems. In relation to Secure Communications, the internal efforts to improve the position of purchasing at Signal Solutions made the supplier interested in close collaboration. Similarly, it was the internal turbulence in Signal Solutions that later eroded this relationship. Finally, internal organising also played a significant role in the successful development of the relationship with Communication Platforms. This endeavour was the first attempt to change from a project-based to a product-based type of organising. Despite some initial problems, the collaboration between the two developed as planned over time, owing to successful connecting of internal and external organising. Having concluded that there is indeed important links between internal and external organising, it is crucial to analyse the nature of this connection further. Below we identify three building blocks that can be used in order to analyse the nature of the link between the three organising domains.

7.1. The basic building-blocks of the framework

First, the interaction and involvement between buyer and supplier affect, and are affected, by supply side organising. In the case of Secure Communications, a high involvement relationship was a direct result of the internal reorganising efforts at Signal Solutions. Moreover, the dissolution of the partner management organisation in Signal Solutions introduced new personnel with other priorities. This internal reorganising changed the nature of the relationship as the ambitious intention of deep interaction was never realised, despite a highly formal buyer-supplier interface. The high involvement relationship with Communication Platforms was also a result of the internal reorganising of Signal Solutions. However, as compared with the less successful cooperation with Secure Communications, the internal organising was more formal in its nature and was allocated more resources and management support. This was the reason why the relationship continued as planned in spite of the dissolution of the partner management organisation. Finally, the level of interaction and involvement also impacts on organising. The relationship with High Tech Structures was not characterised by high involvement and the relationship was

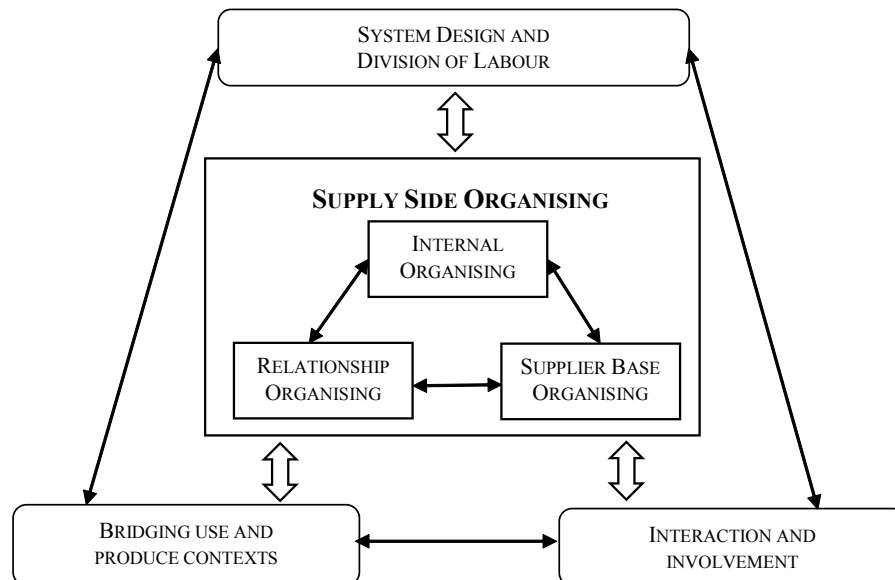


Figure 9: Three cornerstones in the linking of internal and external organising.

organised accordingly. While this limited and fragmented buyer-seller interface served early purposes, it prevented the interaction that was necessary to reveal and solve current problems. The analysis above demonstrates that organising, both internally and at the buyer-supplier interface, significantly affects interaction and involvement in the relationship and vice versa.

A second aspect illuminated in the case study is the criticality of the design of what is purchased. This design can either be determined by the internal conditions of the buyer or take the supplier's conditions as its point of departure. In relation to High Tech Structures, Signal Solutions have stayed with a design that is appropriate with regard to internal conditions, while most other customers have redesigned their systems to better fit with current conditions at High Tech Structures. The result has been escalating prices and lead times. Secure Communication hesitated at first to apply the design suggested by Signal Solutions, but later decided to use it, with fairly negative consequences. The case descriptions suggest that these relationships have not been successful in terms of linking internal and external organising. In the relationship with Communication Platforms the design operations were outsourced to the supplier and the internal operations were adapted to fit these conditions. Initial scepticism on the buyer side about adapting internal operations to standardised products from the supplier successively changed, and this relationship is still well-functioning with regard to the couplings between intra- and inter-organisational arrangements. The conclusion of this paragraph is that the design of the system is both an important determinant and an outcome of the organising of purchasing and the supply side. Moreover, the division of labour between the parties involved is crucial for the outcome of internal and external organising. System design and division of labour thus constitute the second building block of the framework.

Interaction and involvement in combination with system design are crucial means for the bridging of the use context with the produce context. This bridging represents the third cornerstone of the framework. With regard to High Tech Structures the two contexts did not fit well because of the particular design preferred by Signal Solutions. The unique materials and small volumes demanded by the buyer made it difficult to connect the two contexts adequately. Since all other customers exploited the resources of the supplier in other ways, Signal Solutions suffered in terms of economies of scale. In relation to Communication Platforms both design and manufacturing were outsourced.

These conditions made it possible for the supplier to make the best use of its own resources, which benefitted Signal Solutions that had to adapt its internal operations in order to bridge the use and produce contexts. Concerning the relationship with Secure Communications, the conditions in the use and produce contexts were more favourable than in the relationship with High Tech Structures. The underlying reason is that the production facilities of Secure Communications were more flexible and less dependent on large-scale volumes and regularity of orders. Despite these prerequisites, major problems occurred since the organisational arrangements did not fit, mainly because of internal turbulence at Signal Solutions.

There are important interdependencies between the three organising cornerstones. System design and division of labour is affecting and being affected by the need to bridge the use and produce contexts. In the case of Communication Platforms, it was decided to design a modularised data processor from standardised components in order to handle the need for customisation and long product life cycles in the use context with requirements concerning economies of scale and short product life cycles in the produce context. Moreover, the design of the data processor was outsourced to Communication Platforms since the supplier had vast experience in this area, while Signal Solutions had never designed either standardised or modularised products. In comparison, although the use and produce contexts to some extent were similar in the case of High Tech Structures, the structural frame was designed by Signal Solutions. As a result it was difficult for High Tech Structures to make the most of their own operations and capabilities. There is also interplay between interaction and system design. The less successful design and division of labour in relation to High Tech Structures and the structural frame provide a useful example. The reason the current design is not very cost-efficient is that Signal Solutions lack the necessary competence and insight regarding structural material. However, it is not possible to outsource the design to High Tech Structures as they lack knowledge of signal transmission. In order to improve the design, intensive interaction between the parties is needed. Currently, such interaction is not possible owing to the characteristics of internal organising and relationship interface. In comparison, the close interaction with Communication Platforms has made it possible to specify the system in collaboration and then outsource design to the supplier.

In relation to Secure Communications, the division of labour was decided with intensive interaction in mind. Hence, while Secure Communications were not comfortable with the design, they accepted it in the anticipation that a high involvement relationship would provide future benefits. When the interaction between the parties changed, so did the way in which Secure Communications managed the division of labour. The type of interaction required depends on the characteristics of the use and produce contexts. On the one hand, in relation to High Tech Structures, it was difficult for both buyer and supplier to identify the root causes of the escalating costs in relation to the structural frame. The limited interaction made it difficult to track the consequences of the highly customised design and infrequent production of the structural frame. On the other hand, the identification of vast differences between the use and produce contexts was the reason for approaching Communication Platforms and organising a high involvement relationship.

The above analysis results in a preliminary framework consisting of three main building blocks to be used for the analysis of the links between the three supply side organising domains (Figure 9). Supply side organising affects and is affected by the design of the system, the use and produce contexts, and the degree of interaction and involvement between buyer and supplier. In this analysis it has also been shown that it is important to consider the interplay among the three. In the remaining part of the paper the most important aspects of each building block are discussed in order to provide a more detailed framing of supply side organising.

7.2. System design and division of labour

For the further analysis of this building block we return to concepts related to the activity layer of the industrial network model, and particularly the notion of activity configurations. An activity configuration represents all activities necessary to provide an end result in terms of a product or a service. In this study, Signal Solutions' offering constitutes the end product, consisting of a combination of parts, components and subsystems, which together build up the offering. However, in order to analyse the principles for system design and division of labour we need to approach the system and its parts from the opposite perspective. Instead of examining how the offering is built up of components and subsystems, we should consider how this totality has been divided into its parts – or 'partitioned' in the terms of von Hippel (1990). Some parts are designed and manufactured by Signal Solutions, while others are outsourced to suppliers. The decisions in these respects determine the configuration of activities of the offering – the first significant aspect of this building block.

According to Ulrich (1995) there are endless ways to divide a totality into parts and subsystems, but partitioning seems to be dominated by two logics: modular or integrated product architecture. The main difference between the two is that in modular architecture the interfaces between the various subsystems are designed so that changes in one part of the system do not spread to other parts, since interfaces are decoupled from each other. When integrated architecture is applied changes in one interface impact on adjacent interfaces. Von Hippel (1990) explores issues related to the product architecture, concluding that the distribution of responsibilities among firms are central to the interplay between partitioning of tasks and division of labour. Responsibilities for design and manufacturing therefore represent the second vital aspect of this building block. For example, the need for joint problem-solving across corporate boundaries is

enhanced when some responsibilities stay within the buying firm, while others are outsourced. The main problems in this respect tend to appear when both design and manufacturing are outsourced – to different firms (Gadde & Jellbo, 2002).

The partitioning principle applied and the actual division of labour have considerable consequences in terms of efficiency and effectiveness. In a study of system sourcing principles, the functioning of the system was found to be determined by the interplay between the capabilities of the supplier and the buyer on the one hand, and the design and manufacturing activities on the other (Gadde & Jellbo, 2002). The particular division of labour constitutes the conditions for the functioning and performance of activity configurations in terms of similarity and complementarity. Moreover, the need for coordination depends on these characteristics. The organising of purchasing and the supply side thus directly influence the opportunities to reap similarities in the activity configuration. The organisational principle applied to supply side organising is also a driver of the coordination of activities and the extent of serial interdependencies and complementarity.

Depending on the contextual circumstances, there are various possibilities of addressing both system design and division of labour. In the case study, the data processor represented modular architecture, while the other systems were integral. Owing to the integral architecture in the case of the structural frame, there were substantial interdependencies between the purchased system and other sub-systems of the end product. This is one of the reasons why Signal Solutions faced problems when design was kept in-house while manufacturing was outsourced to High Tech Structures. Moreover, it was difficult to revise the responsibilities for design and manufacturing owing to lacking capabilities on either the buyer or seller side.

7.3. Bridging the use and produce contexts

For the analysis of the bridging of the contexts of use and produce we return to previous discussions concerning resource combining across firms. Particularly important in this respect is the connection between various types of resources, where North (1981) focuses on the interplay between technological and organisational resources. Similar analysis relying on a distinction between organisational and physical resource interfaces is found in Gadde et al. (2010). On the one hand, the physical resources in the use and produce contexts need to fit each other. Simultaneously, the organisational resources must connect appropriately. With regard to physical resources the main interfaces concern the technical and functional features of these resources. Considering organisational resources, the most important features relate to social and administrative aspects.

The most complex issues to be analysed and handled relate to physical and organisational resource interfaces (Gadde et al., 2010). These mixed interfaces involve a combination of technical/functional and social/administrative resources (see Figure 10). In these types of interplay, economic and financial issues emerge as additional factors, because resource combining across the use and produce contexts is determined by economic logic. The nature of the resource interfaces are dependent on the type of supply side organising applied, at the same time as this organising is affected by the conditions in these interfaces.

The fit between resource interfaces is achieved through adjustments and adaptations of resource features, as discussed in the analysis of the resource layer of the industrial network model. These adaptations are carried out in various ways and can

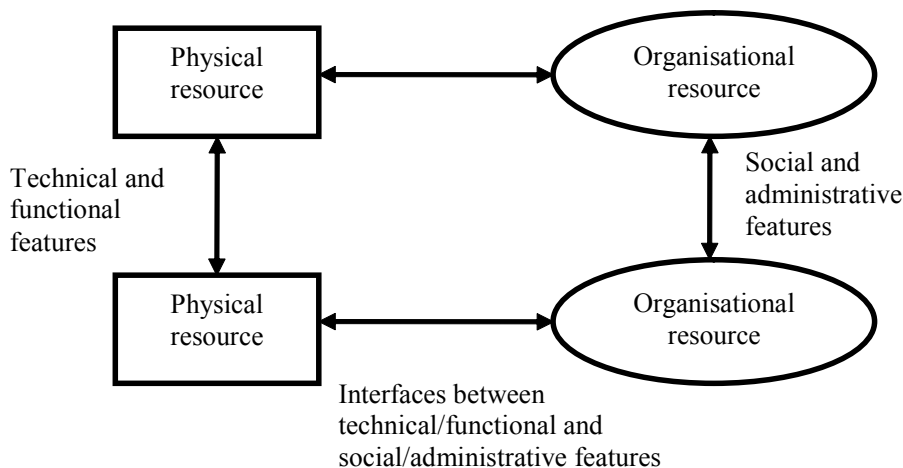


Figure 10: Physical and organisational resource interfaces (Gadde et al., 2010:70).

be undertaken either jointly or unilaterally.

The three embedded cases illustrate various aspects of these resource interfaces in the bridging of the use and produce contexts. As an example of the physical resource interfaces, the material prescribed by Signal Solutions for the use context was not appropriate for the conditions in High Tech Structures’ produce context. Furthermore, the organisational resource interfaces were difficult to handle for the suppliers of Signal Solutions owing to internal organisational problems and irregular transactions. While the relationship with Communication Platforms represents a successful attempt to match physical and organisational resources, the outcome was not as fruitful in the cases of High Tech Structures and Secure Communications.

7.4. Interaction and involvement

As mentioned in the literature review, Araujo et al. (1999) provide a framework for analysis of interaction and involvement with regard to the interfaces between buyer and supplier. We showed above that the division of responsibilities between the parties is critical when it comes to the principles for task partitioning and division of labour. The analysis described in Araujo et al. (1999) shows how a buying firm, by establishing various types of interfaces to the resources of suppliers, gains a variety of opportunities to exploit the capabilities of the vendors. The interface between supplier and buyer is determined by their interaction and the way the two relate their resources. The four types of interfaces described differ considerably in terms of the extent to which the buyer takes the produce context into consideration (see Table 2).

The standardised interface is a characteristic of the typical arm’s-length relationship where the buyer preferably chooses from a standardised assortment. In this case the buyer gives no direction to the supplier and has to take what is available on the shelves. Specified interfaces represent typical subcontractor relationships where the buyer completely determines the details of the activities of the supplier without taking that context into consideration. When translation interfaces are applied the buyer specifies the functionality of what is to be exchanged, but provides freedom to suppliers with respect to how this functionality should be fulfilled. The supplier then has to translate these functional specifications to its produce context to be able to deliver what is requested. Finally, interactive interfaces feature open-ended dialogues, concerning how buyer and supplier can best exploit their joint knowledge of the use and produce contexts. The particular interaction and involvement affect the extent to which the buyer is able to access the resources of suppliers. Each type of interface has its own requirements concerning what principle for supply side organising is appropriate. In a similar vein it can be concluded that the way the supply side is organised determines the features of the interfaces.

The understanding of what takes place between a buyer and a supplier in a specific interaction episode is improved substantially if the network context of the interaction is taken into consideration (see Figure 11). Firstly, what happens between buyer A and supplier B is contingent on the interaction in other relationships of both firms. Secondly, time impacts on the interaction between A and B. The interaction at a particular point in time is patterned by experience from previous interactions, as well as expectations about future interaction.

Table 2: Interfaces representing four types of involvement and interaction

Type of interface	Characteristics
Standardised	No directions from buyer. Connections between use and produce contexts not considered.
Specified	Specific directions from the buyer – mainly derived from the use context.
Translation	Functionality required by buyer. The supplier can exploit the conditions in the produce context.
Interactive	Joint development based on resources and skills in both the use and the produce context.

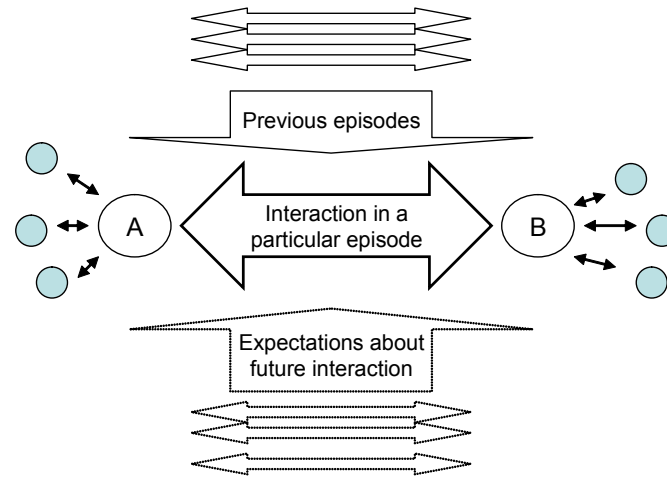


Figure 11: Buyer-supplier interaction in its wider network context (Gadde et al., 2010:113)

What represents an appropriate level of involvement and interaction depends on the principles for partitioning and the division of labour, as well as the network context in which buyer-supplier interaction takes place. In the case of Signal Solutions, specified resource interfaces were applied in relation to High Tech Structures and Secure Communications, while a translation interface characterised the connection to Communication Platforms. Moreover, in relation to High Tech Structures costs escalated because the network context did not provide the supplier with opportunities to exploit its resources adequately. In contrast, in the interaction with Communication Platforms a common awareness of the network context allowed the supplier to translate the requirements of Signal Solutions to fit with its own produce context. It should also be mentioned that Secure Communications initially acted with expectations of future interaction and later adjusted their behaviour when these expectations changed.

8. A revised framework for analysis of supply side organising

The discussion in 7.1-7.3 leads to revision and extension of the preliminary framework, including some useful concepts and tools for further analysis of supply side organising. The building block 'system design and division of labour', identified as crucial to our cases is now somewhat modified. As shown in 7.1, system design is a central issue in any activity configuring and partitioning of a totality into its parts. This partitioning is not only important to system sourcing. It is crucial to any type of purchasing, because it determines the specification of the features of what is being purchased. The significance of partitioning is accentuated in the current attention to outsourcing. On this basis the label of the first building block is changed to 'partitioning principles', dealing with issues related to the specification of what to purchase. The partitioning principle applied is affected by the capabilities of buyer and supplier and determines the configuration of activities and the responsibilities for design and manufacturing, as accounted for in section 7.1.

No modifications of the basic features of the two other cornerstones of the framework are necessary. The tools and concepts suggested for analysis of the bridging of the use and produce contexts, and the level of involvement and interaction remain as discussed in 7.2 and 7.3. The extended framework for supply side organising is illustrated in Figure 12. The interplay among the three domains of supply side organising is affected

by, and affects, the three building blocks previously identified that have now been specified and detailed in terms of their central aspects.

This study contributes to the literature on supply side organising by identifying a set of conceptual cornerstones for analysis of organisational arrangements in general, and of the interplay between internal and external organising in particular. The point of departure is that supply side organising occurs in three overlapping domains: internal organising, relationship organising and supplier base organising (the inner section of Figure 12). The literature review demonstrates the need for a holistic perspective on supply side organising and research on the interplay among the three domains. The industrial network approach was chosen as an appropriate framework owing to its emphasis on the embeddedness of relationships in a business network, thereby allowing for analysis of organisational arrangements across all three domains. Thereafter, concepts and models from the industrial network model and an extensive single case study were used iteratively in order to identify three main building blocks for the analysis of supply side organising (the headings in the outer section of Figure 12). These three cornerstones imply that supply side organising affects and is affected by (i) the partitioning principles of what is purchased, (ii) the bridging of the use and produce contexts, and (iii) the features of interaction and involvement between buyer and supplier. Each building block was ultimately scrutinized further to identify the relevant aspects for analysis (the contents of the building blocks in the outer section of Figure 12).

This paper provides no normative recommendations for the specific organising of the supply side concerning the actual linking of internal organising, relationship organising and supplier base organising. The main conclusion is that there is never a 'best' way to organise the supply side of the company, because of the overlap of the three organising domains. Since these domains have to be considered simultaneously, different combinations may result in similar effects. For example, a stratified contact pattern, as described by Cunningham and Homse (1986), combined with internal cross-functional teams as suggested by Minahan (1996), may lead to an organisational arrangement comparable with a centralised purchasing function in combination with the purchasing coordinated contact pattern defined by Cunningham and Homse (1986). Thus the main task is to identify appropriate means for buyer-supplier interaction by combining internal organising and relationship organising, while simultaneously considering the entire supplier base.

Supply side organising is highly context dependent, implying

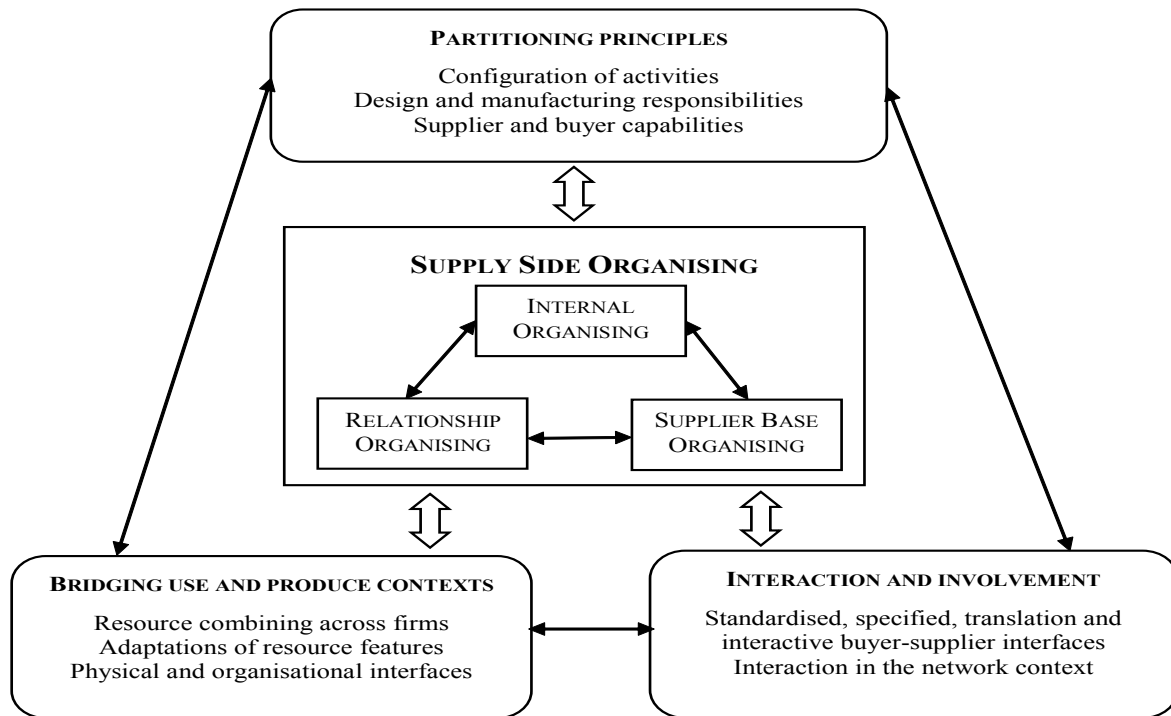


Figure 12: The resulting framework for analysis of supply side organising

that different purchasing situations and supplier relationships call for diversity in the linking across organising domains. Dubois and Wynstra (2005) categorise purchasing situations in terms of the internal status of purchasing in combination with supply base characteristics. Naturally, a situation featuring standardised supply and a powerful purchasing department that can direct other operations, differs substantially in organisational requirements from a case where purchasing has to follow the direction of others and where mutual adjustments occur between buyer and seller. Similarly, the nature of technological interdependencies as outlined by Persson and Håkansson (2009), impacts on the principles for organising, both internally and in relation to suppliers. The case of Signal Solutions provides an example of complex technological interdependencies, limited buying power and a purchasing function with a supporting role. Situations with diverse characteristics would benefit from other ways of linking internal and external organising.

Supply side organising is an ongoing and dynamic undertaking. Previous organisational settings, internal as well as external, must always be taken into account. A company is continually involved in organising a number of issues on its supply side and these parallel initiatives often feature conflicting priorities. Furthermore, there is a larger network context to relate to when organising – a context where the actors have diverse perspectives and intentions and act accordingly. In other words, what constituted adequate organising and principles for linking internal and external dimensions yesterday may not be suitable today and may be even less so in the business landscape of tomorrow. In such a complex reality, there is no best way to design internal organising, relationship organising and supplier base organising. Instead, it is important to continually inter-relate the three domains on the basis of a detailed understanding of their interplay and the context at hand. The framework developed in this paper makes it possible to analyse supply side organising and the specific context in which it takes place by emphasising the partitioning principles, the bridging of the use and produce contexts and the interaction and involvement between buyer and seller. Together, the analysis of these three building blocks and

their interplay in a specific network context offers a means for appropriate linking of internal organising, relationship organising and supplier base organising.

Finally, we welcome more research on the links between internal and external organising. Since there is no universal solution to supply side organising, it is vital to study the consequences of diverse ways of linking internal organising, relationship organising and supplier base organising in various business contexts. This paper represents a small step by suggesting a set of cornerstones that can support the linking of the three organising domains. A great deal of work remains to fully conceptualise the connections among them.

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