

The development of business relationships
- A case study

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Introduction

This paper emphasizes business relationships, and how a firm establishes, develops, and manages its business relationships for different purposes, and when several different objectives are considered and pursued. In the literature business relationships have been characterised as a governance form capable of handling several relationship specific processes simultaneously and for many firms these relationships have become an essential part of their overall strategy (Håkansson and Gadde, 2001).

A distinction is made in the paper between the development *of* a business relationship and *in* business relationships. The development of business relationships is understood as firms developing solutions for improving the interaction processes between themselves and their counterparts. The interaction processes, assuming there exists some type of business transaction between the firms, can be divided into two main processes, exchange processes and adaptation processes (Johansson and Mattsson, 1987). The purpose of developing a business relationship is to capture some of the economies involved in the interaction process as well as in the value stream as a whole. The development in business relationships is understood as other types of collaborations that are not directly related to the interaction processes or a business transaction, and have other objectives such as resource development arrangements. A counterpart, such as a customer or a supplier, may make different types of capabilities and resources available to a firm, which in turn may enable a firm to utilize its current resources in a new way or in the interface with the counterpart create new resources.

The aim of the paper is to describe and analyse the development of and in business relationships. The analysis is based on a case study, and will focus on two major issues:

- I. How the development *of* relationships can enable a company to capture the economies connected to specialization and process integration.
- II. How the development *in* relationships can add a resource development and/or be a stimulus for innovation for a focal organization.

As far as the first issue is concerned, there have been numerous studies that have investigated how relationships between firms can be established and developed for the purpose of capturing the economies related to the value stream (Reve, 1990). Two characteristics of the value streams often referred to in the literature are specialisation and integration (Gadde and Håkansson, 2001). The economies related to specialisation are economies of scale and scope. The economies related to process integration are economies of integration. Relationships have been approached as an essential governance mechanism (a vital means) to approach and relate to the other actors in a value chain. The establishment and development of business relationships for the purpose of capturing these economies have been regarded as a critical part of the focal firms overall strategy (Reve, 1990; Håkansson and Persson, 2002).

Addressing the second issue, a distinction is made between establishing, developing and managing a business relationship (a) for the purpose of capturing the economies that lies in the value stream through specialisation and integration and (b) for the purpose of seeking to share resources and/or develop new resources in the interface with a counterpart in the value stream. The basic assumption is that there might be interesting interdependencies between the different business relationships developed, which might involve some interesting challenges and dilemmas.

To explore how business relationships can be utilized to exploit different types of economies, we have chosen to use a case study of a sub-contractor in the electronics industry. Through the case study we want to visualize how the company has developed and utilized relationships to exploit the potential benefits and the economies involved in the value stream in which the case company takes part.

The paper is structured into the following parts: first, we will give some background to the case, followed by a description of the value stream in which the focal organisation is involved. We will then describe and discuss major drivers or forces for specialisation in this particular value stream and how the actors involved in the process exploit the economies of scale and scope. This will be followed by a discussion concerning the need for standardisation and coordination and a presentation of how relationships have been developed to capture the economies of integration and the content of these relationships. Next, we will address the issue on

how relationships have been developed and modified to enhance development and innovation. Finally, we will discuss some of the implications of the case study.

Background

In the year 2000 two major sub-contractors merged to become one of the leading Electronics Manufacturing Service-companies (EMS) in Northern Europe, offering development and production services within a wide range of products- and customer segments. The main motivation for the merger was to establish a dominating and competitive organization that could take advantage of the strong market growth in sub-contracted production of electronics products in Northern Europe. As expressed in the annual report the basic business concept is “to support their customers in all parts of the value chain from an initial idea, through development, production, and delivery, including installation and service”.

The firm has over 30 years of experience as a sub-contractor, developing and producing electronics products and systems for product owners. It operates in several customer segments: telecom, medical, offshore, defence, computer, industrial and microwave to mention a few. Today, more than 1800 are employed, of which 150 are engineers. The company is divided into several development and production units in Northern Europe. Annual sales for the year 2000 amounted to 310 million euro, of which the gross purchasing costs of electronics components (COGS) amounted to 210 million euro. Short-term liabilities and inventory were perceived as challenges being respectively 62 million euro and 82 million euro. Despite an increase in sales from previous year of more than 20 percent, the year 2001 showed a negative net profits after restructuring costs. The order reserve the same year was just under 140 million euro.

The original Company had their core competence within design and development of specific types of electronics products, and in some areas the company also provided production services. Since the early nineties, the company has grown considerably as revenues have increased from 75 million euro in 1995 to 310 million euro in 2000. In a sense, the sub-contractor can be regarded as an outsourced activity, as the existing company consists of activities and services previously carried out by their customers.

The growth is realised by taking over similar activities from other companies. Behind such a strategy lies an objective of achieving economies of scale through the integration of several similar entities and realizing potential synergies as far as general management, purchasing and logistics, marketing, and supporting functions related to production and development processes are concerned.

Having experienced difficulties in realizing these potential synergies when integrating the operating units, they started to re-evaluate their position and relationships to major customers and suppliers in 2001. As a consequence of this process they developed an internal sourcing organisation viewing the supply side in relation not only to the production processes, but also the development and design processes. One might say that the strategic agenda of the organization changed from an internal to an interorganizational focus. The business relationships became an essential part of the overall strategy, and developing tighter connections to strategic counterparts was a major element in the new strategy.

The value stream

The value stream in which the focal firm is involved is depicted in figure 1. It is divided into a supply side consisting of R&D companies, manufacturers, distributors, and transporters, and a customer side consisting of transporters, developers/producers, and wholesaler/retailers. In the following sections some of the characteristics of the different stages in the value stream are described and discussed.

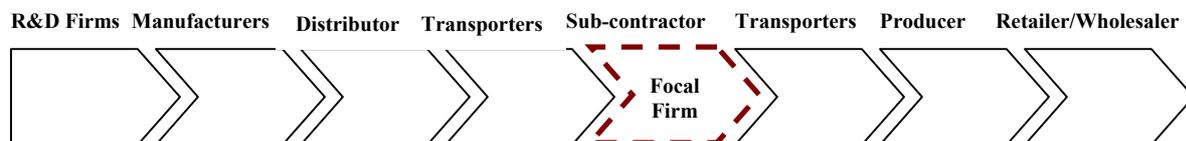


Figure 1: The value stream – The Sub-Contractor as Focal Firm

The sub-contractor

As mentioned in the section above, the sub-contractor has two major business processes, production and development of electronics products for product owners.

Their product portfolio is wide and the company operates in many customer segments. The core product, however, in both business processes is an electronics card used in complex industrial systems. These cards consist of components of various size, costs, quality and functionality. An average card consists of a total of 1500 components and 250 different types of components. The price of the components per unit varies from 11 cents to 30 euro, the lead-time in delivering the components varies from 1 week to 18 weeks, and an average number of suppliers per electronics card are 20.

The electronics manufacturing industry has changed rapidly the last two decades, and this is also the case for the sub-contractor. Related to this development, the sub-contractors are often divided into three categories, the CEM (Contract Electronics Manufacturer), the EMS (Electronics Manufacturing Service) and OEM (Original Design and Manufacturing) companies, the categories representing different levels of specialisation and focus. The CEM's are characterised as being involve in many product sectors and also servicing many customer sets. The EMS (Electronics Manufacturer Service) providers are known for being involved in many product sectors, but a limited number of customer sets. The OEM (Original Design and Manufacturing) provider is characterised by a limited product sector and limited customer sets. All three types of sub-contractors may be involved in both production and design/development processes. In this case, the company is moving from being a pure EMS provider towards being also an OEM provider.

An interesting fact as far as relationships is concerned is that while the production related processes is first and foremost dependent on the actors and activities performed on the supply side in the value stream, the development processes is strongly dependent on both the supply and customer side of the value stream.

The supply side

There are more than 1 million different electronics components in the world today, and the global electronics component market was estimated to be worth approximately 346 billion dollars in 2002. The semiconductor segment was the largest segment, valued to be 44 percent of the total electronics component market. The other segments were electro-mechanical (21%), passives (18%), display components (15%)

and rechargeable (2%) to mention the most important. The semiconductor industry was estimated to be worth 150 billion dollars in 2002, a decline of 20 percent from the previous year. There are over 400 companies operating in this industry, and the average capital and R&D spending in the industry was approximately 18 percent of revenues. The semiconductor content is on average worth 260 dollars in PC's, 35 dollars in mobile phones, 25 dollars in hearing aids, and 30 dollars in TV's. The price of a component varies from 20 cents to 25 dollars. The micro components represent the largest product group within the semiconductor industry representing 31 percent of the market. As a comparison the most expensive chip in the world, the Intel Itanium II, has a price of 2000 dollars and is worth over ten times its own weight in gold. The chip industry introduces a new basic technology each 2-4 years and each generation reflects the level of micro-miniaturization.

In the global component market, 70 percent of the manufacturers and R&D companies are being located in North America, 20 percent in Europe and 10 percent in Asia. This is also the case for the distributors, and sub-contractors. There are tight connections between the R&D companies and the manufacturers, and the two types of actors are often integrated with each other through ownership arrangements. Although much of the innovation and technological development of electronics component comes out of a regional cluster in the US, more precisely in Silicon Valley in California, a major part of the actual production take place in other parts of the world like for instance in Asia.

In the electronics industry, the investments in a large-scale production plant for manufacturing electronics components could be as high as 3 billion dollars. The high investments are forcing the manufacturing companies to concentrate on the manufacturing part of the value stream. The trend throughout the last decade has therefore been that most manufacturing companies in the electronics industry specialise in a limited number of activities, and ultimately focus on a limited number of core products and services. In order for the larger manufacturers to also be able to provide distribution services, they would have to possess the capital, competence, knowledge, and other organisational capabilities needed to run an efficient distribution system in a global context. The need for distributors and particularly global distributors therefore became apparent throughout the nineties. The global

distributors today are capable of purchasing high volumes from the manufacturers, often guaranteeing to purchase a specific quantum within a specific time period. This allows the manufacturers to have an even and stable production, and thereby lowering production unit costs. The distributors are rewarded for their long-term perspective with significant purchasing discounts.

Today, there are four global distributors of electronics components in the world, in addition to hundreds of medium and small sized distributors often operating with unique types of components, in a low volume segment and/or within a limited geographical region. The global distributors on the other hand are involved in purchasing and sales of goods in large scale. Their value configuration can be characterised as a value network (Fjeldstad and Stabell, 1996), as they connected many manufacturers and customers with each other. Their core competence is in warehouse management and asset risk management. The large-scale investments in components are combined with financial assessments considering the potential risks, earnings, and costs of the investments. At times when the world's economy is strong and the manufactures produce a lot of electronics components leading to an over-supply of components, the distributors purchase components in high volumes for storage. On the other hand, when there is a shortage of components, due to for instance lack of investments by the manufacturers, the global distributors make "good profits" by selling components to customers that they do not have delivery-contracts with. This allows the distributor to take a different prize on the same electronics components and they more or less set the prize themselves. In this way, their way of conducting business has many similarities with what traditional wholesalers do, and is often referred to as a "Wholesaler strategy". The global distributors have outsourced the actual transportation activity of the components to transportation companies or third party logistics service providers.

The transportation costs in the industry are low relative to the total cost of producing the products. Despite the fact that the price of components varies significantly, their value when transported is high compared to other types of industries such as agriculture and office material. Professional logistics service providers such as DHL, TNT, and UPS have created global distribution networks, where organizational size and volumes are critical factors for making their transportation and storage services

profitable. These actors operate in many different and additional markets, and they are capable of servicing customers of all sizes.

The customer side

The sub-contractor has grown considerably in size since the beginning of the nineties, mainly through mergers and acquisitions and thereby also enhanced the number of market segments served. Their growth is a result of manufacturing and development operations being outsourced by other actors, and several of the sub-contractor's facilities were previously owned by their customers. There has been an explosive increase in products based on electronics substance, and the Internet and mobile-and telecommunication industry has led to a rapid growth in related markets such as within PC's – software and hardware, multimedia tools, and mobile phones.

Customers can be divided into two groups depending on the services they are requesting: the ones demanding OEM services and the ones demanding EMS services. The sub-contractor is currently characterised as basically an EMS provider. Their overall goal, however, is to restructure their business model so to move towards the OEM segment.

Some examples of large OEM customers are Intel, Dell, IBM, Cisco, Compaq, HP, Delphi and Visteon. These customers are characterised for their high volumes within the PC market, either as manufacturers of hardware such as a micro processor (Intel), or end products such as PC's from IBM, Dell and HP. There are many EMS customers worldwide, varying in size and needs, and some examples of large EMS customers are Solectron, Celestica, Sanmina-SCI and Jabil. Since the sub-contractor operates mainly in Northern Europe, their volumes are relatively small compared to the leading EMS companies in the world. The sub-contractor's customers are localized in the same geographical region as themselves, and the customer value short geographical distance, and a common language. Their product portfolio is wide, and the volumes are low (high mix-low volume), so a key challenge for the sub-contractor is therefore to standardise operations both within production and in the design and development processes.

Specialization and integration in the value stream

The globalization process and the specialization of actors

The globalisation of the electronics industry began with the manufactures, and continued gradually downstream as illustrated in figure 2. The globalisation was characterized by large investments by the big manufacturing companies, who grew in size mainly through mergers and acquisitions of domestic and foreign companies. Especially the US manufacturers benefited from the high capital accumulations from the stock exchange, allowing them to grow in size, increase volumes and enter new geographical markets. The investment strategy was primarily aimed at specializing in a limited product base meaning specific types of components, enabling them to obtain economies of scale in production.

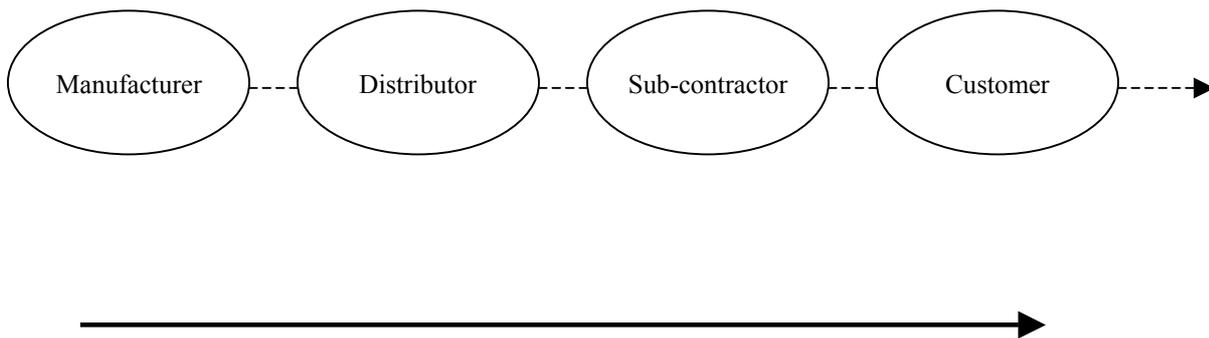


Figure 2: Globalization of the Electronics Industry through out the 90's and 2000

These changes soon also became apparent to the distributors, and especially the US distributors listed on the Stock Exchange benefited from a strong capital base due to capital rose through the stock markets, resulting in numerous mergers and acquisitions in the industry. Those who failed to do so faced the risk of bankruptcy. The critical success factors were size and solid liquidity and it was essential to have a large market share in the home market and from there establish positions in other markets. For the global distributors, differentiating the customers in terms of size, regional location, and customizing the logistical solutions, would mean developing an organization that sought to standardize the main processes such as procurement and

warehousing, while at the same time build a flexible organization focusing on the unique customer.

Thus, parallel to the globalisation process, the general development in the industry is that companies focus on a few core competencies in order to gain efficiency in operations, but also in order to differentiate relative to competitors by focusing on specific products, services, and customer segments. In the quest of getting as much out of the current resource base – technology, knowledge, competence – firms nurture a limited number of products, or they prioritize a wide product scope by focusing on product variety based on a few commodity products (Prahalad and Hamel, 1990).

Perusing a “selective growth strategy” by specializing, and outsourcing all non-core operations, many organizations have experienced difficulties in capturing some of the potential synergies from the mergers, acquisitions, and alliances. There might be several reasons for that. Firstly, a difference in organizational culture, organizational structure, informational and communications systems and such prohibited the “new” organizations to capture the potential synergies involved. Secondly, regional differences between the different companies within the larger umbrella organization made standardization difficult, as the companies also had to develop flexible regional-specific solutions aimed at customization.

A growing need for standardization and coordination

The electronics industry represents a rapidly changing competitive environment. Time is therefore essential from several points of view. Time in relation to product development (testing, mapping of customer and consumer preferences, searching for and gathering information about the technology available in the market), time-to-customer (distribution and marketing of products in the supply chain), and rapidly decreasing product life cycle, pressures manufacturers to get as much out of the current technology as possible before new technology replaces the old one.

The costs of obsolete materials, whether it is raw material, components, or end products, are high in the industry.

Thus, there is a growing need for standardization and coordination internally as well as among the actors in the value stream.

In the case of the focal organization, several recent initiatives responding to this growing need might be observed. A common characteristics in these initiatives is that they all involve changes in relationships, internally, externally or both. The sub-contractor decided to redefine the way they approached a major supplier (the global distributor FE), and the objective was to develop the interaction processes between them so to enhance supply efficiency, which was essential for acquiring economies of scale and scope within the focal firm. Developing the interaction processes, which consists of different exchange- and adaptation processes would potentially also reduce the costs of interacting, a necessity for capturing the economies of integration. The two organizations decided to jointly improve the firm-specific processes through focusing on the interaction or more specifically the purchasing processes as a common starting point.

The buying and selling of components between the two firms can be viewed as only a part of the larger interaction process, which again is related to and dependent on other important processes both within and outside the firms' boundaries. The "new" business relationship went from a prize orientation and discussions concerning the right prize, to now focusing on finding the right concept. The goal for the distributor was to be able to provide their key customer(s) with the right total-solutions, and not only to be best on prize. The new purchasing agreement was characterized as very flexible and an example of that was that the sub-contractor had the possibility to increase or decrease their ordered volumes based on the variation in their customer's demand with out any significant consequences. This was not common in the industry. Furthermore, the distributor operated with a cancellation timeframe of 14 days, meaning that the sub-contractor free of charge could cancel an order if the cancellation was conducted 14 days before delivery date. The distributor also guaranteed to always have 25 percent of the annual forecasted demand stored in their facilities, and one-day delivery time, regardless of the manufacturers' ability to deliver the components. A well-developed infrastructure as well as an integrated control system enables these service levels.

A major challenge for the sub-contractor was that the organization had a very complex material management system as a result of the many mergers and

acquisitions. The same component could be registered under several different item definitions, and the reason for this was that the firm used the customer's definition/identification number of the components. This could mean that the same component, used by five different customers, could be registered as five different item definitions leading to a very complex logistical system affecting the material requirement planning as well as the warehousing operations. This also led to difficulties when communicating with the suppliers and when ordering components. The sub-contractor and the global distributor sought to develop a standard material management solution that would also lead to improvements in purchasing processes with all of the suppliers. The solution was to categorize the components and standardizing the item-definitions according to their origin, meaning that the firm uses the definitions of the manufacturers of the components instead of the customer's definitions. This would basically mean that for article A there would be X numbers of manufacturers, for article B X numbers of manufacturers and so on, and most of the sub-contractor's distributors already used this procedure. The standardization process was time consuming and demanded high competence and knowledge concerning the components, their properties and use, and the distributor played an important role sharing their experience and knowledge of developing such a material system.

Thus, the development of the supplier relationships were prioritized in order to increase the adaptation processes related to the components purchased. By defining the components after its origin – the same way as the distributors did – the interaction processes with the suppliers were improved. The result of the improved interaction process was an increased transparency in terms of materials available in the sub-contractors warehouses.

There are also tight connections between the transporters and the distributors in the industry, and the global distributors are very often integrated with the logistical systems of the transporters through the use of EDI technology. The sub-contractor is reliant on the distribution processes of the distributors and the transporters in order to obtain a continuous flow of raw material in line with the company's production schedule.

From a logistical and supply integration point of view, developing and managing business relationships is vital for controlling costs and supply efficiency in the exchange processes between the firms in the supply chain. The relationship is the fundamental phenomenon that can allow a firm to take advantage of the opportunities that exists between two firms by adapting and utilizing specific interdependencies in all the activities of the two firms in relations to each other. In other words, managing the relationship makes it possible to connect what goes on in the transactional processes with what goes on within the firms.

Two companies may be involved in activities to co-develop their joint interaction processes. In the quest for finding new and improved ways to develop and produce products, industrial actors may also be motivated to develop their business relationships for the purpose of finding more cost efficient ways and/or find ways to add value to the company's key business processes. Based on the notion that a business relationship consist of an interaction process, and that this interaction process is highly integrated with and connected to other processes such as the company's logistics processes, developing the interaction processes such as a purchasing process may lead to an improvement in other related processes. Through engaging in resource developing processes with a counterpart such as developing a common communication platform such as an EDI interface, the two companies' activity structures can become more coordinated. This might potentially lead to numerous benefits such as increased delivery accuracy, decreased uncertainty and potentially also releasing human resources from the purchasing process, as more of the tasks are handle through the use of such technical systems.

Resource development and innovation in business relationships

As is described in the section above, two companies may develop a specific business relationship for the purpose of enhancing supply efficiency. The same companies may also be involved in other types of collaborations, and in the following we will present two arrangements where business relationships are utilised to develop resources and/or find innovative products and processes. We will first describe how the sub-contractor developed a sourcing organization and a database called CIS (Computer Information System), and how the introduction of these new functions and resources

are aimed at improving the organization's decision-making processes and ultimately costs. Then we will present how these new features enable the focal firm to capture the economies of the value stream through changing the demand creation logic.

The sourcing organisation initiative

The sub-contractor established an internal sourcing organization responsible for servicing all of the organizations production and development units. The hearth of the new organization was a database consisting of information on suppliers, supplier contracts, suppliers' logistical processes, and component characteristics (prices, functionality, quality, life cycle assessment, manufacturers) to mention a few. This was possible after first engaging in resource sharing collaborations with one specific distributor, where informational resources controlled and owned by the suppliers where transferred to the sub-contractor. Soon all the distributors agreed to offer the same type of information to the organization.

The primary purpose of the sourcing organisation is to improve the decision-makers' ability to choose the most cost-efficient solutions and products at all times. This was essential for the sub-contractor, as the primary goal of the organisation was to reduce costs of developing and producing the products. Organisational decisions such as these depend on information, estimates, and expectations that ordinarily differ appreciably from reality; especially as the market conditions are changing so rapidly (March et al, 1959). Many organisations consider only a limited number of decision alternatives, and by introducing the sourcing organisation and the database CIS, the sub-contractor is seeking to increase the number of decision alternatives, while at the same time providing guidelines on which criteria to base the decisions on (March et al, 1959). Furthermore, organisations will vary with respect to the amount of resources they devote to organisational goals on one hand and sub-organisational goals on the other. With respect to the CIS database, the sub-contractor has had this system available in the organisation since the mid-eighties and only one development unit within the larger corporation utilised the system. The CIS tool was primary used as a storage facility of information relevant for a particular type of product development process. The actor who utilised the system primarily used it as a way to get an overview of the material available to the designer, the functionality, quality and other central technical features with the material. The system was integrated with a

central computer system at the development facility, but there were no direct connections to systems in the other business units within the corporation or to other external actors.

The new central sourcing organisation was responsible for developing supplier contracts and delivery conditions, collect specific types of information on distributors, manufacturers, and components (other production material) that would be utilised by all of the development and production units within the corporation. This information would have to be collected and stored in a cost-efficient and timely manner, and so they sought to build a database that would be the heart of this new organisation. They decided to utilise the CIS database already available in the organisation, though they needed to alter the features of the system so to fit the purpose of the sourcing organisation. New features were added to the database, the number of different items registered was increased, the characteristics of the registered items was redefined, and the system was now located centrally and integrated with the control and logistics systems in all of the sub business units within the organisation. The “new” CIS database was now, however, reliant on information that needed to be updated continuously such as price levels, availability, and functionality on components, and also information on the supplier base. Furthermore, the input of new informational resources from the distributor would now make it possible to produce different types of analysis such as life cycle analysis of components, numerous supplier quality evaluations, comparing contracts and delivery conditions, and to get an overview of each suppliers product portfolio. After redefining the value of that CIS and also adding to the existing features of that database, the database gained renewed value (Håkansson and Walusewski, 2002; Håkansson and Gadde, 2001; Håkansson and Snehota, 1995).

The distributor has spent large proportions of their resources to develop a marketing organisation capable of searching for and developing relationships with manufacturers and developers of the components. This capability has not only been a necessity for the distributor when purchasing and investing in components for speculation and storage, but also with regard for lowering costs and developing more accurate risk

assessment. The sourcing organisation's database CIS is reliant on continuous input of updated information of the components to have the expected value for the sub-contractor. Now all relevant information of suppliers, developers and the components needed to make good decisions is located centrally, which increases visibility, and potentially also the firm's internal resource utilization.

How then was the sub-contractor able to have more actors utilise the CIS database? The database would become a valuable contribution for both the development and production units in terms of improving the decisions made at different stages of the production and development processes. The development process consists of several development stages, including specification, design and construction. The introduction of the database will now enable the engineers to save costs directly through utilising updated information on component and material prices to consider lowest price while at the same time meeting functionality and quality requirements set by the specific product. Equally important is it to early on locate potential suppliers of each item based on the supplier quality evaluations performed by the sourcing managers. The developers can also affect future costs for the customer through utilising the component life cycle analysis to reduce the risk of having to redesign the products in the near future. If the designer chooses to design in components that are at the end of their life cycle, these components are likely to be more expensive when "newer" components with the same technical features become available. They can also risk having to redesign the products due to component shortage (the manufactures have stopped producing the components) or significantly decreasing supply the next years leading to higher prices. The end product for the development units is a list-of-parts or a so-called BOM (bill of material), and a detailed description and drawing of how the different items function, which is then sent to a production unit.

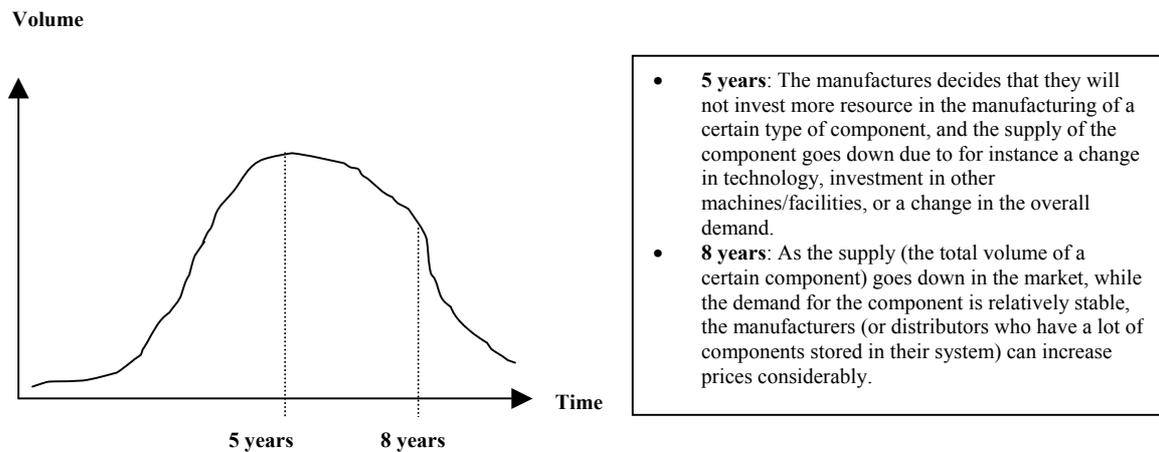


Figure 5.3: The life cycle for component

The logistics managers and purchasers then take over and go through the parts list and decide on which suppliers and the number of suppliers to choose for each product. The purchasers' ability to alter features defined in the parts list is limited. Still, by utilising the CIS database, the purchasers can find the most cost efficient supplier solutions in terms of evaluating the suppliers' logistical processes, and also find the right number of suppliers for each specific product. The purchasers can also influence the costs related to production through the interaction processes.

“Demand creation” – an important element in the product development process

The introduction of a central sourcing organization represents a major change also in regard to the product development processes for the sub-contractor. The new approach to distributors and collaborating in a new way allowed the sub-contractor to approach the customers in a new way related to their joint development processes. The new technical and organizational features made it possible to offer the customers redesign services, and also change the demand creation process in the value stream.

In the process of planning, designing, testing, and constructing an electronics product in a product development unit, designing the product will affect the purchasers in the

production facilities directly, who have few possibilities to change the components in the parts list. The engineers and designers can add value or reduce costs for their customers by now taking advantage of the information in the CIS database (functionality's, price, availability, duration, and life span), either when designing or redesigning a product. The developers can secure access to key component through evaluating the life cycle analysis, and potentially reduce the risk for the customer of investing in a product that in a few years will lack access to these components. The process of redesigning the product is costly, but if necessary, the sooner the redesigning is conducted the better. The majority of the sub-contractor's customers lack the resources and time to evaluate if and when to redesign, and what type of solutions is most cost efficient. By now providing these services the sub-contractor can lower the customer's development costs and also control the costs in other related processes such as production.

The customer's choice of material (components) is of importance to the profitability of both the sub-contractor and the customer. If the sub-contractor is able to recommend the customer to choose those components the sub-contractor have well developed supplier delivery agreements with (good logistics processes, but the same quality, and functionality), this could mean lower cost of material and better performance.

The sub-contractor purchase standardized inputs that are not altered in any way by the distributors, but transported and stored from the manufactures of the inputs (components) to the producers of the end-products (semi-finished goods or end-products). This limits the possibilities the sub-contractor has to alter the technological features in the interface with the suppliers so to add value to the end products. All the major actors in the value stream – manufacturers, distributors, sub-contractors and end product developers/producers - have development resources within their companies (see figure 4). The manufacturers and the R&D companies develop the technology related to electronics components and in order for them to increase revenues, the end-product developers must design in their component at an early stage so to secure a continuous demand for the components. The demand creation logic in the sub-contractor's value stream has changed after the introduction of the sourcing organization. Previously the manufacturers worked with the distributors, which then

were responsible for contacting and communicating with the customers at the end of the value stream (see figure 4). In order for them to manage this, the distributors held seminars and workshops for the designer at the sub-contractor's development units. To make this possible the distributors had to invest in development resource themselves. Thus, while the distributor played an important role in influencing the customer in his choice of components, the corresponding role of the sub-contractor was rather limited.

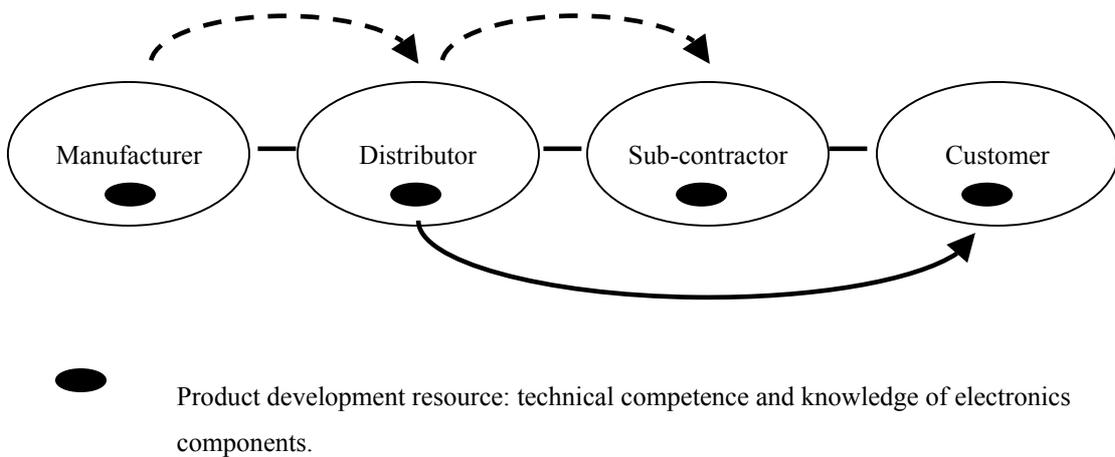


Figure 4: The Demand Creation Logic – The Resource Development Processes *before* the Introduction of the Sourcing Organisation

The sharing of informational resources with the distributors made it possible for the sub-contractor to have a significant role in the demand creation process (see figure 5). The sub-contractor now utilise the new features in the CIS database in their dialog with the customers.

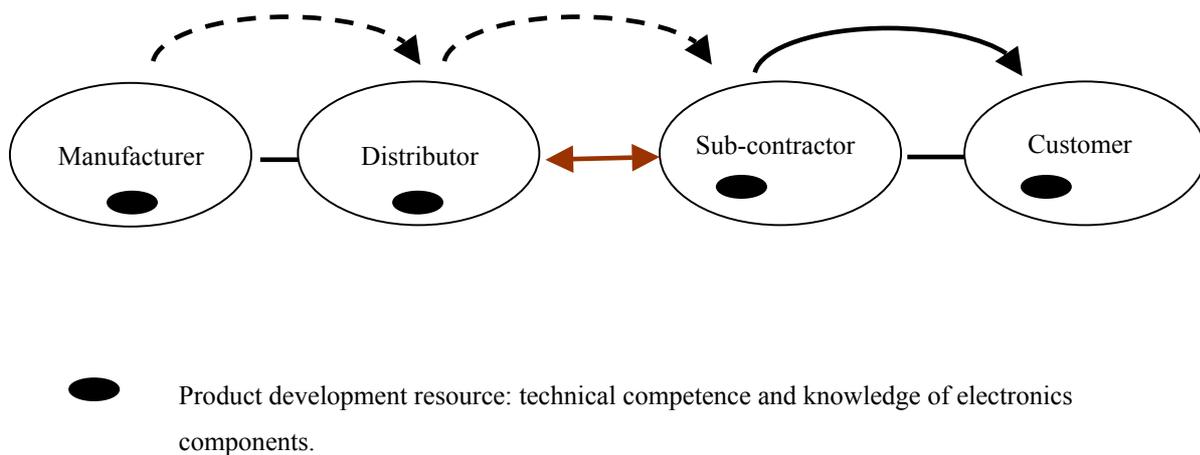


Figure 5: The Demand Creation Logic – The Resource Development Processes *after* the Introduction of the Sourcing Organisation

Business relationships and resource development

The empirical evidence in the case have illustrated different aspect concerning how business relationships can be a vital mean for securing efficient flow of material between firms, but also how they can be an essential enabler of resource development in terms of developing specific resources or resource intensive processes.

In the electronics industry, the development of technical resources is prioritized, and a counterpart such as a supplier can be of great significance in terms of finding innovative ways of developing and producing products. Technological development is characterized as searching for solutions that are mainly unknown, so when industrial actors claim to be engaged in technological development processes, per definition the actors cannot know what is searched for (Håkansson and Gadde, 2001). Through interacting with a counterpart and combining their distinctive resources, the parties may develop new ways of interacting with each other or between functions within the firms. Through search and experimentation, through trying and retrying different solutions, they might get a better understanding of how the technological features functions and how they can be combined with existing solutions (Håkansson, 1987).

Specific resource assets can be developed through establishing or altering already established resource ties to a counterpart (Håkansson and Waluszewski, 2002). The

resource ties will enable the focal firm to increase the value of specific/given resources by adding resource elements/features to the already present features of a specific resource/resource constellation. The given resource constellation may be altered and resources combined in a new way leading to the development of a “new” resource/resource constellation. The basic assumption here is that in order to increase the value of given resources, new resources must be added or the current resource constellation must be combined in a new way. The firm can take advantage of resources controlled and owned by other firm through establishing and/or altering already established resource ties between them (Gadde et al, 2002).

Conclusions and implications

The electronics industry can be characterized as a highly competitive industry. Over the last decade, a globalisation process has been taking place driven by a need for specialisation. This need for specialisation has been caused by, among other factors, the capital investments needed on the manufacturing side of the business. Economies of scale have been sought not only by the manufacturing companies, but also in distribution, and in sub-contracting operations. Some of the distributors have developed into global distributors; others have positioned themselves based on geography or assortment. Sub-contractors have been perusing a growth strategy based on the assumption that taking over similar operations from customers (then outsourcing these activities to the sub-contractor) will create significant economies of scale and scope.

The interdependencies between the actors in the value stream are however significant as well as increasing. Thus, there has been a parallel growing need for process integration, involving coordination as well as adaptations, to cope particularly with the amount of components, the shortening of product life cycles, and the following huge investments in inventories and risks of obsolete products and components. To avoid such an exposure, process integration is required, and some actors have established and developed business relationships to exploit the economies related to process integration as can be observed in the case study.

Thus, there have been significant changes in the industry as far as relationships are concerned as a consequence of the actors seeking to exploit the economies of scale, scope, and integration. The manufacturing side seem to represent a dominating economy, therefore driving much of the structural change in the industry.

An interesting observation related to the sub-contractor is that the set of relationships developed for process integration and for product development and innovation seems to differ. This might lead to conflict of interests, and some interesting dilemmas.

Thus, in the process of developing a business relationship for a specific objective, a firm will also have to take into account the other relationships specific processes part of that same relationship. Understanding the economic consequences of business relationships related to the transactional exchange processes are only one part of the different dimensions that can exist in a business relationship. There are both costs and benefits related to business relationships, and while the economic consequences both in terms of costs and value added are difficult to measure, the potential benefits of resource development collaborations even more so. Organizations utilize a number of technical, commercial and organizational solutions when developing business relationships, but depending on the type of collaborations involved, these solutions is likely to also differ.

A final conclusion is that the significance of relationships, both as an instrument to realize efficiency gains in the value stream, and as a mean to support development and innovation is increasing in the industry. In other words, relationships seem to become a necessity rather than a choice for further enhancements of efficiency and effectiveness in the electronics industry.

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