

Supply Chain Strategies and New Emerging Business Models - Challenges for Firms in Converging Industries.

Purpose of the paper and literature addressed. Our work-in-progress paper explore the relation between a firm's supply chain strategy and the business model towards services in the context of industry convergence. We ask how firms are renewing their business model and the challenges they encounter in managing their supply chain strategies when industries are converging. Our empirical focus is on system integration projects of managed services within IT and telecommunications. The paper contribute to the supply chain management literature by exploring how firms are challenged to manage and uphold both the old supply-driven business models and supply chain strategies, and the new customized system integration model and of value creation and supply chain strategies.

Research method: We have conducted a case study of a system integration project of managed service within IT and telecommunication industry. The data has been collected through 30 semi-conducted interviews with boundary spanning persons during 2010, all having strategic positions in top or middle management and were responsible for strategic issues within their functions of R&D, product development, sourcing, supply and sales.

Research findings: The case study illuminates how the firms encounter a number of challenges within a supply-side and demand-side driven convergence and has to transform their business model and supply strategies to meet new requirements of customization. We summarize our findings and conclusions in two main themes, firstly how firms manage system integration (SI) driven business models and secondly how firms managing the flexibility of supply chain roles to create and capture value when firms are cooperating and competing simultaneously.

Key Words: business model, supply chain strategy, co-opetition, capabilities, IT and telecommunication industry

Introduction

Within industry convergence such as within the IT and telecommunication, new open strategies of innovation emerge and network and supply chains become more distributed and co-opetitive, as firms cooperate and compete simultaneously to create and capture value in the network structures (Bengtsson and Kock 2000; Bengtsson and Johansson 2011; Gnyawali and Park 2011). Firms transform their business models to position themselves in the changing networks and to take part in the creation and capturing of value (Hamel 2000; Shafer et al 2005; Chesbrough et al 2006; Chesbrough and Appleyard 2007; Teece 2010). Multinational companies from the IT industry has open up their supply chains for open software such as Linux, and the vertical supply chains from multinational companies within the telecommunication industry have in the same way gradually gone from proprietary business models for innovation towards more open, dynamic business models (Chesbrough et al 2006; Chesbrough and Appleyard 2007; Mason and Leek 2008). This in turn influences the supply chain relations, logic of interaction, and the distribution of value, goods and services.

The new industrial logic has changed the interaction between firms within supply chains in at least two important dimensions relating to the firms renewal of business models and supply chain strategies. Firstly, from the demand-side, the supply chain strategies become more customer-driven as the creation of value is increasingly customer-centric (Lee and Whang 2001, Christopher 2000, Christopher and Towill 2000; ; Sawney 2006; Davies et al 2007; Cova and Salle 2008). The customers, in our case a mobile operator, are to a greater extent involved in the decision making of a system integrations, with preferences for the included parts, product specifications, services, suppliers, and deployments. This alters the logic of the traditional supply-driven chains where telecom system and the creation of value were developed within the unit of R&D and product development within the company and pushed out to a market.

Secondly from the supply side, the collaborative and vertical supply chains of upstream customers and downstream suppliers have been replaced by co-opetitive supply chains and networks where firms cooperate and compete with each other simultaneously (Bengtsson and Kock, 2000; Gnyawali, He and Madhavan, 2007; Lou, 2005; Padula and Dagnino, 2007; Tsai, 2002; Walley 2007). Supply chains have been described as containing stable and well-defined roles of customers and suppliers, but these roles have become unclear. There is a blurring of roles and an increased temporality within this network context where a supplier is not always a supplier. The supplier can at the same time act as a competitor or a customer in, either the same, or another tender simultaneously. The interaction within these supply chain networks is highly co-opetitive, where firms cooperate and compete simultaneously to create and capture value, and play different roles in a previous stable and well-defined supply chain relation.

It is therefore important from a supply chain strategy perspective to increase the understanding for firstly the co-opetitive network context and the forces and mechanisms that affects the actions taken by firms, to be able to navigate in a business environment where the roles that different actors are playing continuously are changing. Secondly how the changes require companies to re-evaluate their strategies and transform their business models for how

to address and respond to the customer requirement and how to interact to create and capture value within the networks (Hamel 2000; Shafer et al 2005; Teece 2010; Doz and Kosonen 2010). The aim of this paper is to explore the relation between firms supply chain strategy and firms business models in the co-opetitive networks of converging industries. More precisely we ask how firms are renewing their business model and the challenges they encounter in managing their supply chain strategies in an industry convergence and network changes. Our empirical focus is on system integration projects within IT and telecommunications.

The paper is structured in the following way. First we discuss contextual factors of an ongoing convergence as drivers of the firm's renewal of business models and supply chain strategies. Secondly we theoretically discuss the concept of business models and supply chain strategies followed by methodological considerations and the data collection. A case study of a system integration of managed service is described in the next section. The paper further discuss a number of challenges of firms supply chain strategies as the traditional supply chain roles are blurring, when firm cooperate and compete simultaneously. The paper contribute to the supply chain management literature by exploring how firms are challenged to manage and uphold both the old supply-driven business models and supply chain strategies, and the new demand-driven logic of value creation and supply chain strategies.

Contextual drivers of firm's renewal of business models and supply chain strategies in converging industries.

The IT and Telecom industries are converging both on the supply side and on the demand side (c.f. Bröring and Leker, 2007) particularly evident in the service layer. This is contextual drivers challenges the firms to develop their business models and supply chain strategies to sustain their competitive position. Convergence of industries is defined as a blurring of industry boundaries by the converging of firms value propositions, technologies and markets (Choi and Valikangas, 2001).

The convergence on the supply side is expressed in that telecom networks have become more complex as components and service developed within both industries are integrated, the telecom network systems are integrated with the IT systems and the differentiation is done in the service layer. This integration often requires the forming of new relationships and ending others (Snow et al 2009). The integrated systems have become more transparent and open as firms opens up their business models and vertical supply chains. The transparency and openness requires open standards, and an interoperability and connectivity between de-coupled products, components, platforms and application, which makes it possible to be flexible and to have a service-oriented approach towards the mobile network operators. The trend towards modularity and open standards has resulted in specialized components and service suppliers and system integrations (Brusoni 2001; Dubois and Araujo 2006; Prentice et al 2006)

The convergence on the demand side is expressed by mobile network operators' demand for long-term service partnerships and support in all aspect of their business. The supplier need to take the role of a service provider and therefore needs to have competences related to products and services that traditionally have been separated and handled either by IT or Telecom firms. For service providers such as Ericsson or Nokia, this means that they need to radically change their business models to become more oriented towards software and services (Basole 2009). As a result of the response to this requirement Ericsson's involvement in mobile network operators business now spans from consulting and network design to systems integration, network operation and support (www.ericsson.com).

The convergence, both on the supply-side and the demand-side, is driven by innovations enabling technology integration and by end-user demand. The users requires connectedness between devices such mobile money set ups to transfer money and/or pay, such as paying for the car parking with the mobile phone account. The deliveries of such products are made possible through technological innovations and through standards that enable interoperability and connectivity between different parts. This development creates both opportunities and challenges for existing and entering firms who race to become innovative in order to deliver new products and services on emerging markets (Basole, 2009). To make this possible new supplier networks emerge, alliance form, and positions are forwarded by mergers and acquisitions, resulting in a dynamism firms need to cope with.

Emerging Business Models and Supply Chain Strategies

In the changing context of a convergence the firms are competing and cooperating to repositioning themselves in the networks and integrates forward to take the leading role and position as solution providers in the supply chains (Wise and Baumgartner 1999; Olivia and Kallenberg 2003; Araujo and Spring 2006; Davies et al 2007; Windahl and Lakemond 2006; 2010). It follows with a trend where industrial companies are transforming their business models and strategies from offering products to offering product and services towards offering solutions, with the aim to improve the competitive position and to protect their profit margin (Sawhney 2006; Cova and Salle 2008).

The co-creation of value between the customer and the suppliers are highlighted as the important element of a solution (Windahl and Lakemond 2006; Cova and Salle 2008). Characteristics of solutions are that it is co-created by customers and suppliers and covers all aspects of the relation (commercial, operational and financial). The solutions are customized in one way or another either by design, assembly, delivery, operation or pricing. A solution also often involve the supplier taking managed risks and therefore, often include performance and/or risk based contracts (Cornet et al 2000:2).

Elements of Business Models

We follow Shafer et al (2005) definition of a business model as a representation of a firms' underlying core logic and strategic choices for creating value and capturing returns for the value within a value network (Shafer et al 2005: 202). We adopt a network perspective on the firm's business model with the view that both the value creation and value capture occur within firm's interaction in networks (Hamel 2000). The role the firm chooses to play within the network is furthermore an important element of the business model (Shafer et al 2005). This is of particular interest in temporary network of customized solution, where the interacting firms perform and act upon different roles. To "open up" the business model concept we follow Storbacka and Nenonen (2011:257) characteristics of business models as the firm's configuration of resources and capabilities and use of practices. Capabilities can be understood as the know-how retained, maintained and developed over time and is executed by processes and governance of content in the interaction between firms (Kogut and Zander 1992; Mason and Spring 2010). The value of the capabilities is the manager's ability to access and use information knowledge and information in the relation with other companies (Araujo et.al. 2003; Mason and Spring 2010). Resources are the assets needed to implement value-creating strategies and capabilities and enables the firm to coordinate activities and make use of resources effectively (see also Chesbrough and Rosenbloom 2002; Osterwalder et al 2005; Zott and Amit 2008; Teece 2010). The practice of business models are for instance strategies of value propositions market segmentation, customer definitions, , content of exchange, pricing, revenue management and formulation of the firms overall strategies, which includes the supply chain strategies (Shafer 2005; Storbacka and Nenonen 2011; Chesbrough 2011).

Supply Chain Strategies

The supply chain construct mainly builds on the interaction logic of asymmetric relationship of upstream customer and downstream suppliers, where the resources and network position enables a firm with a prime position to influence the other, initiate change in the relationship and/or dominate the relationship due to the position closer to end customer and the access to installed base (Holmlund and Kock, 1996; Lambert and Cooper 2000; Mentzer et al 2001; Harland et al 2001; Johnsen and Ford 2001; Mouzas and Ford 2007). These firms are therefore in a better position than their suppliers to develop the capabilities of system integration and to deliver a solution and related services to the customer.

Supply chain literature have traditionally had a cooperative logic of interaction within the supply chain where firms' cooperate and build long-term relation with its suppliers, customers and partners to create a "collective value" in form of reduced costs and enhanced quality and development (Cooper and Ellram 1995; Mentzer et al 2001; Wilkingson and Young 2002; Ford et al. 2003; van Weele 2005; Giunipero et al 2008). As it has become increasingly common that firms both cooperate and compete with each other simultaneously, within system integrations with the higher specialization, modularity and standardized interfaces of multi-vendor technologies, products and services (Davies et al 2007), the co-opetitive perspective on relationships can be used in this context to understand the interaction (Bengtsson and Kock 2000; Lou, 2005; Gnyawali, He and Madhavan, 2007; Padula and Dagnino, 2007; Walley, 2007; Dagnino et al. 2010). Firms are interacting to create and capture value where creation of value is a cooperative process, while capturing of value is a competitive process (Lou 2005). To obtain these outcomes, firms need to uphold co-opetitive relationships with the challenge of finding a balance between the co-creating and dividing up value in the relationship (Gnyawali and Park 2011). With an increasing level of co-opetition and short-term interaction the vertical supply chains of upstream customers and downstream suppliers have been replaced by co-opetitive supply chains and networks where firms cooperate and compete with each other simultaneously and meet in different roles in the same relationship.

Within the co-creation of solutions the leading firms aiming at taking the role of the prime integrator and solution provider. The role of a prime integrator is to act as the prime contractor and provide strategic consultancy service and support to the customer and to organize and orchestra the overall system designing and integrating product and service components from multiple suppliers into a customized system (Davies et al 2007). The core logic and business model of system integrators should be seen as a development of the longer-term evolution of system selling (Mattsson 1973; Davies et al 2007). The shift towards service providing and role of system integrators is described as "a shift away from traditional structures, product units are being reorganized to become back-end providers of standardized and replicable components that are combined into solution provided by newly-formed customer-facing units. These front-end units are based on temporary project which are continuously formed, combined, and disbanded around each customer's need for a solution" (Davies et al 2007:185).

Therefore both the co-opetitive nature and the temporality of business relationships must be accounted for in order to understand fully the networking in converging industries. These aspects must also be incorporated in the supply chain strategies of the firms to grasp how firms are related to each other and their different roles within the network. The firms need to develop their capability to engage in, and manage these temporary networks of firms providing different parts of a solution.

Data Collection

The empirical data in this paper is a qualitative case study of a multinational company within telecommunication, Ericsson AB and its supply chain relation with its customer, suppliers and partners, who also shows up as competitors in the tender for system integration projects. A case study approach is suitable to understand a complex and context dependent phenomena (Eisenhardt 1989). In our case, the continuous configuration of the firm's business model is embedded in a relational context of networking with other firms to create and capture value, therefore it needs to be analyzed in relation with the context. The data has been collected by qualitative interviews during January to December 2010. Thirty semi-structured interviews have been conducted with strategic purchasers, product developers, system architects and key account managers. All respondents interviewed had leading positions in top or middle management and were responsible for strategic issues within their functions. The respondents also interacted directly with suppliers, customers, cooperation partners, and sometimes competitors in relationships in which the firm's and the individuals' roles are blurred and change with the specific system integration project. Secondary data (previous studies, newspaper articles, industry and company reports, and press-material) have been used to prepare questions and to interpret the collected interview data.

From the interviews and secondary data we were able to obtain a broad description of the action and interaction within the networks, with Ericsson as the focal actor moving in its role from being a system provider with a closed business model of R&D and system integration conducted in-house and pushed to a market, moving towards being a solution provider within open and co-opetitive networks where the value is created in the interface with the customer and interacting suppliers.

Data Analysis

The case study is part of a larger case study of firm's innovation processes in complex networks. We started the analysis process by writing detailed case descriptions, with the context of converging industries from our secondary data collection, the networking logics between firms, and smaller in-depth case studies of value creation networks and tenders of systems and solution. Within these in-depth case studies we were able to capture how the firms acted and interacted. We also analysed industry and company reports and annual reports over time to capture how the telecommunication firms in general and Ericsson in particular

transforming their business models from being a system provider towards taking the role of a solution providers. To ensure the validity of the study the interview data was sent back to the informants to be approved, and for comments, clarification and amendment (Guba and Lincoln 1994). To further secure the validity of the study, we continuously conducted informal feedback meetings and discussions with key informants and managers within the firms.

Empirical Observation from the Converging IT and Telecom Industries, firms climbing the ladder of services¹

Ericsson AB has a leading role within telecommunication equipment and related services in mobile and fixed telecom networks. Telecom equipment providers, or system providers, have traditionally supplied embedded OEM systems like radio base systems, or devices like as mobile phones, with little or no customization, or transparency to the included components and suppliers who deliver parts of the system. The customer, the telecom operators, sourced a system or a solution with little interest or influence of the included parts. All R&D activities and system integration was conducted in-house within the system provider, the manufacturing and assembly was conducted by a preferred manufacturing firm chosen by Ericsson.

The value has traditionally been created in a vertical, often bounded and demarcated by a value chain, controlled by an OEM company and/or a industries, such as telecommunication, with clear roles and position of the suppliers versus customer. The former supply chain logic of Ericsson can (very simplified) be illustrated as following

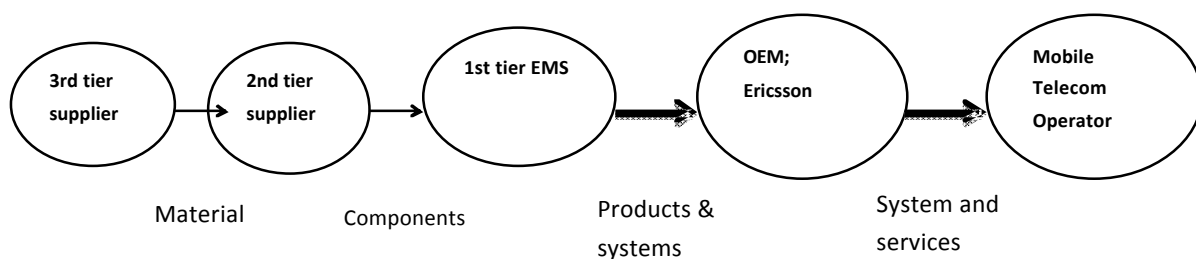


Figure 1, the traditional supply chain of Ericsson

Ericsson has historically built a long-term relationship with its customer, the mobile network operators. One example is with the Swedish leading mobile telecom operator TeliaSonera, previously Televerket, Sweden's state-owned PPT. Ericsson and TeliaSonera has cooperated since the mid-1950s. The firms have a long tradition of cooperation.. After the deregulation of

¹ Part of this case description has been presented within a paper on the 2011 IMP Journal Seminar in Uppsala, Sweden.

the telecommunication industry the leading telecom operators, who traditionally have been in control of their R&D activities, started to enter the international market, but it was reluctant to turn to local suppliers in each country and continued to source the systems from its preferred suppliers in its traditional supply chains. Thus, the telecom equipment providers became more sophisticated in R&D and gradually took the leading role of R&D activities within telecommunications. The stronger the leading telecom OEM suppliers became, the more the mobile operators relied on them for R&D and new product development (Fransman 2007). Similar outsourcing processes has happened upstream the supply chain, where Ericsson have outsourced its manufacturing and assembly to selected first tier suppliers, Electronic Manufacturing Suppliers EMS; and they have sourced component and material from second and third tier suppliers in the traditional supply chain illustrated above. Now with an ongoing industry convergence the firm needs to change its business model and related supply chain strategies to keep its leading position interfacing the customer and controlling the value creation in the supply relations.

With the transformation to IP based networks, Ericsson and other similar telecom providers such as Nokia-Siemens-Networks, Huawei and Alcatel-Lucent have been challenged in their dominant position in control of the customer interface with the mobile network operators and the leading role as a prime integrator. This is an effect of supply side convergence and a technology shift where the network infrastructure transforming from telecom-based wired and wireless networks to a digitalization and IP-based network infrastructure. With the industry convergence Ericsson today competes with global companies from other industry sectors, such as Accenture within management consultancy, HP, IBM, Oracle within the IT industry, and India-based off-shore companies, e.g. Tata Consultancy Services and Tech Mahindra. These firms can all take the role as prime integrator and with this role manage the direct relation with the mobile network operators and controlling the supply chains..

From a business model perspective Ericsson has gradually developed its resources and capabilities towards software and services, to take the role of prime integrator within the new value creating networks. The company has differentiated its business model within the segment where they meet the new competition and developed it from offering one-fits-all solutions (OEM product packages) to provide customer tailored solutions of system integrations and solution of managed services. Much of these businesses is about upgrading, monitoring and maintaining the network, and from this point the telecom industry is becoming more and more a software industry, stepping into the IT sphere.

We will use an empirical example of a system integration of managed service to illustrate the re-configuring of the firm's business models within the converging industries and the blurring of roles in previous vertical value chains. The tender illustrated is one for the system integration and managed service of a product that was once solely a telecom product.

The process starts when the mobile network operator sends out a tender in three steps—a request for information, a request for proposal, and, finally, a request for quote—for the system integration and support. In this case, Hewlett Packard (HP), Oracle, Ericsson, and Accenture answer the tender and offer to take the role as prime integrator, providing the

complete solution to the mobile operator. As a prime integrator, the firm can influence the decisions concerning which other firms should be involved in the development of the specific solution, unless the mobile network operator has some specific demand regarding certain parts of the system. HP wins this tender and becomes the prime integrator. HP turns to Ericsson to source the telecom system, as it does not have a telecom system in its product portfolio. As a prime integrator, HP primarily manages the interface with the customer and orchestrates the supplier base. Ericsson sources services, software tools, and consultancy work, from HP and Accenture, sources the database, the Sun server, and the operating system from Oracle, and sources a number of best-of-breed products from several small and large suppliers. Ericsson can at the same time win a bid to another mobile network operator for a similar system and play the same role as HP in that project. Ericsson cannot handle everything by itself, so it sources services and consultancy from HP and Accenture. Having the role of prime integrator is clearly an advantage, as the firm can, to a large extent, choose its own or a partner's products if the mobile network operator does not require specific best-of-breed products or a specific server suitable to their needs, which the following quotation illustrates;

“If you are going into a customer's IT milieu and makes a system integration, the customer has very strong preferences about for example if it should be an IBM server etcetera which makes it difficult to push an already bundled system”.

Within these integrated technical systems and solution there is an increasing transparency and openness about the supplier base with so-called ‘best-of-breed’ products. Suppliers with best-of-breed products are often companies that have pioneered a segment and have developed most features of their products. System providers as Ericsson, or customers, the mobile network operators want to include best-of-breed products into their product base to deliver the most cutting edge, innovative solutions to the market. The supplier of these best of breed products, often SME's, hence becomes more independent and do not let themselves be lock-in within a value chain controlled by an OEM firm. They are more free-standing and can offer their products to different layers in the previous value chain constellation, sometimes directly to the mobile operator.

“Everyone is forwarding their positions, today we can do a system integration that previously was managed by our customer, a telecom system provider such as Ericsson.”

“As we have two parallel solutions, we sometimes act as solution provider in direct relationship with the operator. Sometimes we act as supplier to Ericsson. There are also tenders where we meet as direct competitors.”

With their best-of-breed products the suppliers are more independent as they see that they can go either with Ericsson, or with another prime integrator or they can go by themselves in a tender. In this way, the increasingly co-opetitive networks challenge the established supply chain structures.

A large multinational firm like Ericsson is active in over a thousand open opportunities globally in this segment. In every project it has a different constellation of partners, and it

plays different roles, leading to new, temporary network structures of short-term relationships, stated in the following quote;

“The flexibility is much larger, which leads to the question, are we competitors or partners? We are not one thing or another, we are everything”.

The flexibility within a system integration is increasing and a system integrator can choose, for example, different vendors for the storage device, the server, the operating system, the database, the middleware, and the applications, and can integrate these products into a customized solution. Therefore, these products must be stand-alone products that ensure interoperability with customized solutions. It is thus possible to be flexible and have a service-oriented approach towards the mobile network operators. This requires open standards, interoperability and connectivity between de-coupled products, components, platforms and application. For the most part, the mobile operators want to choose the best-of-breed products with which to build customized solutions. Therefore, their involvement in the decision-making has increased, enhancing the transparency and openness within the system integrations.

Many of the decisions of how to configure the system and do the customization are made in direct interface with the customer, so it is possible to be flexible and to have a service-oriented approach toward the mobile network operators. The service orientated business model has traditionally been more developed in the IT as well as the management consultant sector, so the telecom firms need to transform and become more service-oriented and hence change their business model. Therefore, they are taking the role of consultant to the customers, and they are involved in tenders that include the management of services for customers' networks and system integrations.

“It is difficult to build a solution without being totally clear about the customers' business models, intentions, and their already existing eco system. More often we take the role as consultants today, where the customers ask us for advice for a system integration which neither we or the customer knows in beforehand but by sitting together we can find a suitable solution by looking at the demand, what are in place, the existing ecosystems etcetera.. After that they can set up a tender. But Ericsson, Nokia-Siemens and Huawei have made a bid on this eco system, with the aspiration to define it”.

From a supply chain perspective it is important to withhold its dominant position being a system provider as it controls the direct interface with the customers, the mobile network operators, hence having the leading role to orchestra the downstream supplier relations in supply chains and in system integration projects. With new competitors entering the process, Ericsson perceives the risk of being challenged for its leading role as prime integrator. For instance, if Accenture wins the tender, Accenture does not supply any of the products themselves but only takes the role of prime integrator, while Ericsson gets short-circuited from the customer relationship with the mobile telecom operator.

“We have the customer, our competitors, any system provider, and all the different suppliers, who also are our competitors in some cases. The hardware suppliers, such as Sun Microsystem [now Oracle] have their direct business relations with the customer, and they go through us as system provider and, via our competitors, to the customer. In this way, everyone tries to influence everything, back and forth. Even if we have the business, we know that our suppliers are keen on influencing the customer, as they know we can turn to their competitors, HP or IBM, to source hardware or components”.

As a result, the traditional supply chain structure dissolves. All actors strive to press their positions forward with the aim of taking the role as a prime integrator in the system integration.

Changing business models to sustain the control over the customer interface

Having the role of prime integrator being in control over the customer interface is crucial in a solution-based business model, as the value is created in this dimension.

“Everyone tries to influence, but it is the prime integrator who makes the decisions”.

The suppliers use different strategies and action to capture as large part of the value as possible to secure its own profit margin. In the customer interface it is decided what to be sold and here many things that come into play.

“The value creation occurs when you sit down with the customer and its chief of operators and technical officers and purchasers that determine how the solution should look like, it is here the customization of the system integration occurs”.

It is within the customization the offer and value proposition is differentiated and it is here many services is added, which makes the system it unique so the customer gets exactly what it wants. A crucial difference from the previous value chain of product packages and OEM systems is that nothing is specified in advance, everything is decided in the meeting with the customer. In these situations Ericsson can find their supplier sitting next to them offering the same solution and want to source systems or platforms from Ericsson.

To have the capability to differentiate in a late stage of the value creation and respond quickly to meet the changing requirements and unique customizations the firms de-couple the software from the hardware. By this strategy they can both lower their costs by using standardized hardware from different suppliers, and increasing their flexibility and responsiveness, and have the capacity to differentiate their solutions within the service layer.

The strategy is to move up in the supply chain to be in control over the service layer and the customer interface. Software and services is becoming an increasing part of the Ericsson's value propositions, foremost in the company's business units of global services and

multimedia. The business unit of global services handles consulting, system integration, network rollout, operations, customer support and education. The company has grown rapidly in the service layer. In 2010; 45 000 service professionals were employed, these competences were recruited by insourcing people from their customers, the operators, and acquiring companies in consulting and system integration (Ericsson annual report 2010). In total Ericsson has about 90 000 employees, so almost fifty percent of the employees are today within software and services which is a great shift within the company.

Discussion.

The purpose of this paper was to explore the relation between firms supply chain strategy and entering of new business models in the co-opetitive and dynamic relations within converging industries and we asked us how firms are renewing their business model and what challenges they meet in managing their supply chain strategies when industries are converging. The case study illuminate how the firms encounter a number of both challenges within a supply-side and demand-side driven convergence and has to transform their business model and supply strategies to meet new requirements. The case shows how the former supply chain structure of the telecommunication firm dissolves and firms from both IT and telecommunications cooperate and compete more intensively to take the role as a prime integrator in the system integrations. As a prime integrator the firms can control the creation of value to a higher extent as it manage the direct interface with the customer and orchestra the value creation of the service and component suppliers in the supply chain networks.

We will summarize our findings in two main themes, firstly how firms manage solution based business models and secondly how firms managing the flexibility of supply chain roles to create and capture value in interaction.

Manage Solution Based Business Models.

Ericsson is transforming their business model within the service segment with the value proposition to be a professional service provider. Chesbrough (2011) describe how firms need to come out of their “commodity trap” being a product focused company where the value proposition is based on costs of products sold, not their value. Today all firms can develop these capabilities and capacity and the competitiveness need to be developed in other ways. Companies need to change their way of thinking as a product manufacturing company and start to think of business from a service perspective. In our case we have explored how a firm is doing this transformation using different strategies.

Our case shows how the firms are climbing the ladder of services going from being a provider of telecommunication system to be an integrator of telecom and IT system and now is changing their role of being a service provider. It is in the service layer the differentiation is made. It can be illustrated as following:

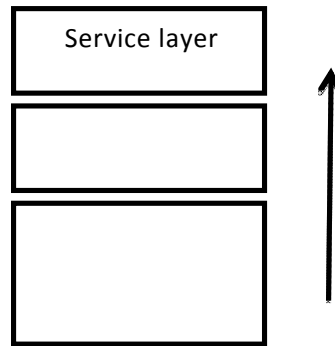


Figure 2: Integrating forward and climbing the ladder of services

The core capabilities of a telecommunication firm have been to provide telecom systems and networks to its customer. The IT and telecommunication industries have been demarcated with clear borders. Now the industry borders are becoming blurred as the industries are converging (Malhorta and Gupta, 2001; Pennings and Puranam, 2001; Bröring et al., 2006; Bröring and Leker, 2007). Ericsson is also a provider of the IT system and the service layer in integrated, multi-technology systems and solutions. The value of software and service are an increasing part of these system integrations, which we can see in our case study of managed service. The firms are climbing the ladder of services integrating forward with the aim of being a solution provider.

The dynamic context in our case study requires fluid and adaptive behavior of the firms and it is important to respond quickly to changes (Timmons and Spinelli 2004). Our case shows how the firms develop their business models and strategies to enhance their resource fluidity (Storbacka and Nenonen 2011). To achieve this they are re-configuring their resources and are to a further extent using standardized system and platforms in their sourcing strategies in the back end. By this strategy it is possible to lower their dependencies towards one supplier of hardware, for instance a server, and to lower their costs of the system, since they can choose between different suppliers. The firms are de-coupling the hardware (platforms) and software (applications) within the systems. With this strategy they can be more flexible and respond quickly to the customer requirements in the front end and differentiate themselves within the service layer (Chesbrough 2011).

Firms need to develop a capability of strategic agility (Doz and Kosinen 2008; 2010) to make the internal resources more fluid and adaptable. The resource fluidity created by the product and sourcing strategies of modularization and de-coupling aiming at gaining the flexibility needed due to the increasing demand for customization of the systems, and firms and supply chains to become more responsive to meet unique and changing needs (Christopher and Towill 2000; Young and Burns 2003). Agility is designed to increase the capability of customization and the ability to adapt the systems to the customers need and requirement (Christopher 2000; Juttner et al 2007; Doz and Kosinen 2008; 2010)

Manage Flexibility of Supply Chain Roles

The former supply chain structure of the telecom firm dissolves and firms from both IT and telecommunications compete more intensively to take the role as a prime integrator in the system integrations. As a prime integrator the firms can control the creation and capture of value to a higher extent as it manage the direct interface with the customer and orchestra the value creation of the service and component suppliers in the distributed supply chain networks. Our case study illustrated these temporal organizing of actors where the relations are constantly formed, re-combined and disbanded in the front-end, depending on the customer specific requirement of the solution (Davies et al 2007) and how firms in these processes cooperate and compete and perform different roles to be part of the value creation and value capturing.

To be able to create and capture value in in this context firm hence need to develop a flexibility in their supply chain roles. Role-flexibility is a capability to use role-making and role-taking strategies within a network and where the roles deliberately can be used to create a position and relationships, and where different roles can allow the firms to navigate between positions and their relationships in emerging and existing network (Balker and Faulkner 1991, Callero 1994). This also increases the ambiguity for Ericsson how to handle the new roles of the interacting supplier and the expectations in the relationship (Merton 1957; Sieber 1974; Christensen and Overdorf 2000). The supplier are expected to behave according to the norms associated with the role inherent in the supply chain position (Biddle 1986), where an ambiguity can appear in the relation if the actor do not follow the norms and expectations of a role as a supplier or a partner, instead turning up as a competitor or even a customer. To manage these situation the firms has to develop their supply chain strategies to perform different and changing roles. The case also shows how the firms need to manage co-opetitive relations and balance different logic of interactions, cooperative and competitive to create and capture value in the networks. To act as a competitor in one activity and as a partner or supplier in other activities creates role ambiguity within the relationships that needs to be managed (Bengtsson and Kock 2000; Gnyawali et al. 2007; Faems et al. 2010; Bengtsson et al. 2010a; 2010b).

The firms hence need to develop new capabilities to manage many different co-opetitive relationships as part of their supply chain strategies. Gnyawali and Park (2011) refer to firm's co-opetitive capabilities and for the managers to develop a co-opetitive mind-set, which makes it easier to both see and to accept that they are involved in both cooperation and competition. In this way they can manage the relationship. To benefit from these relationships they need to accept the "roles of the game". This is a capability the firms need to develop to create and capture value in the system integration project based upon of temporary interactions with different roles, and where multiple projects are continuously formed, combined, and disbanded around each customer's need for a solution.

Finally we can conclude from our case study that a firm can be a system integrator in one system integration project and performing the role of a component supplier in another project and the previous notion of collective competition where supply chains compete against supply chains (Christopher 2000) becomes somewhat obsolete in this industrial context, as the roles and relations within these supply chain networks are more complex. The interaction is more

short-termed than interactions described in traditional supply chain literature (cf Holmlund and Kock 1996; Johnson and Ford 2001; Mouzas and Ford 2007). Furthermore these firms often work with multiple system integration projects with different constellations of suppliers, partners, customers and competitors resulting in a web of relationships and interdependencies (Tushman et al. 1997; Van de Ven et al. 1999; Faems et al. 2005). The projects and deliveries constantly succeed each other, which increase the complexity and blurring of actors roles. An actor is a member of several supply chain and innovation networks simultaneously and can perform different roles within and between supply chains.

References

- Araujo L., Spring M. (2006) Services, products, and the institutional structure of production, *Industrial Marketing Management*, 35 pp. 797–805.
- Baker W., Faulkner R. (1991) Role as resource in the Hollywood film industry, *American Journal of Sociology*, 97, 279-309.
- Basole R.C. (2009) Visualization of converging mobile ecosystem, *Journal of Information Technology*, 00, 1-16.
- Bengtsson M., Kock S (2000) “Coopetition” in business networks, to cooperate and compete simultaneously, *Industrial Marketing Management* 29(5) 411-426
- Bengtsson M., Johansson M. (2011) Clashes between competing market regimes – a challenge for firms in converging industries, *forthcoming in European Business Review*.
- Biddle B.J. (1986) Recent developments in role theory, *Annual Review of Sociology* 12, 17-92
- Brusoni S., Prencipe A. och Pavitt K (2001) Knowledge specialization, Organizational Coupling, and the Boundaries of the Firm: Why do Firm Know More Than They Make?, *Administrative Science Quarterly*, 46 597-621.
- Bröring, S., and Leker, J. (2007) ”Industry convergence and its implication for the front end of innovation: A problem of absorptive capacity” *Creativity and Innovation Management*, 16 (2) 165-175.
- Callero P. (1994) From role-playing to role-using, understanding role as a resource, *Social Psychology Quarterly*, 57 (3) 228-243.
- Casadersus- Masanell R., Ricart J.E. (2010) From strategy to business models and onto tactics, *Long Range Planning* 43 pp 195-215.
- Chesbrough, H.W. (2003) *Open Innovation: The New Imperative for Creating and Profiting from Technology*. Harvard Business School Press, Boston, MA.
- Chesbrough H.W., Vanhaverbeke W., West J., (eds). (2006), *Open Innovation: Researching a New Paradigm*. Oxford: Oxford University Press.
- Chesbrough, H.W., Appleyard, M.M. (2007) Open innovation and strategy. *California Management Review* 50 (1), pp. 57–76.
- Chesbrough (2011) *Open Service Innovation, rethinking your business to grow and compete in a new era*, Jossey-Bass, Wiley, CA.
- Christensen, C.M., Overdorf, M. (2000). Meeting the Challenge of Disruptive Change. *Harvard Business Review* 78(2):66–76.
- Christopher, M. (2000) The Agile Supply Chain, Competing in Volatile Markets, *Industrial Marketing Management* 29, pp. 37–44.

- Christopher M, Towill D.R., (2000) "Supply chain migration from lean and functional to agile and customised", *Supply Chain Management: An International Journal*, Vol. 5 Iss: 4, pp.206 – 213
- Choi, D. and Valikangas, I. (2001), *Patterns of Strategy Innovation*, *European Management Journal*, 19, 7-26.
- Cooper M., Ellram L. (1993) Characteristics of supply chain management and the implications for purchasing and logistics strategy, *The international journal of Logistics Management* 4(2) pp. 13-24.
- Cornet E., Katz R., Molloy R., Schälder J., Sharma D., Tipping A. (2000) Customer solutions: From pilots to profits: Booz, Allen & Hamilton Viewpoint pp. 1-16.
- Cova B., Salle R. (2008) Marketing solution in accordance with the S-D logic: co-creating value with customer network actors, *Industrial Marketing Management* 37 pp. 270-277.
- Davies A., Brady T., Hobday M. (2007) Organizing for solutions: Systems seller vs systems integrator, *Industrial Marketing Management* 36 pp. 183-193.
- Dubois A., Araujo L. (2006) The relationship between Technical and Organisational interfaces in Product Development, *The IMP Journal* 1, 21-38.
- Doz Y.L., Kosonen M. (2010) Embedded Strategic Agility, A leadership agenda for accelerating business model renewal, *Long Range Planning* 43 pp 370-382.
- Eisenhardt K.M. (1989) Building theories from case study research, *Academy of Management Review*, Vol. 14 (4) 532-550.
- Eisenhardt K.M., & Graebner M.E. (2007), Theory building from cases: Opportunities and challenges, *Academy of Management Journal*, 50(1) 25-32
- Esper T.L., Ellinger A.E., Stank P.T., Flint D.J., Moon M (2010) Demand and supply integration: a conceptual framework of value creation through knowledge management, *Journal of the Academy Marketing Science* 38 pp 5-18
- Faems D., Janssens M., Van Looy B. (2010) Managing the Co-operation-Competition Dilemma in R&D Alliances: A Multiple Case Study in the Advanced Material Industry, *Creativity and Innovation Management*, 19 (1) 3-22.
- Ford, D., Gadde, L.E., Håkansson, H., Snehota, I. (2003), *Managing Business Relationships*, John Wiley, Chichester.
- Gnyawali D.R., He J. & Madhavan R. (2007) Impact of co-opetition on Firm Competitive Behavior: An Empirical Examination, *Journal of Management*, 32(4), 507-530
- Gnyawali D.R. Park R. (2011) Co-opetition between giants: Collaboration with competitors for technical innovation. *Research Policy forthcoming*
- Hamel G. (2000) *Leading the Revolution*, Harvard Business School Press, US.
- Holmlund, M., & Kock, S. (1996) Customer dominated relationships in supply chain. – A study of four small-sized suppliers, *International Small Business Journal*, 15(1)

- Johnsen, R. E., & Ford, D. (2001) Asymmetrical and symmetrical customer-supplier relationships: Contrasts, Evolution and Strategy, Proceedings of the 17th Annual IMP Conference, Norwegian School of Management (BI), Oslo: Norway
- Juttner U., Christopher M., Baker S. (2007) Demand chain management-integrating marketing and supply chain management, *Industrial Marketing Management* 36 pp. 377 – 392.
- Lee H.L., Whang, S (2001) Demand chain excellence, *Supply Chain Management Review*, March/April), pp. 41–46.
- Luo, Y. (2005). Toward coopetition within a multinational enterprise: a perspective from foreign subsidiaries. *Journal of World Business*. 40: 71-90.
- Mason K.J., Leek S. (2008) Learning to build a supply network: An exploration of dynamic business models, *Journal of Management Studies* 45 (4) pp. 774-799.
- Mattson L-G. (1973) Systems selling as a strategy on industrial markets, *Industrial Marketing Management*, 3 pp. 107-120.
- Mentzer J.T., de Witt W., Keebler J.S., Min S., Nix N.W., Smith C.D., Zcharia Z.G. (2001) Defining Supply Chain Integration, *Journal of Business Logistics* 22(2) 1-25.
- Merton R.K. (1957) The Role-set: problems in sociological theory, *British Journal of Sociology*, VIII (2) 61-65.
- Mouzas S., Ford D. (2007) Contracting in asymmetric relationships: The role of framework contracts, *IMP Journal* 1 (3) 42-63.
- Olivia R., Kallenberg R. (2003) Managing the transition from product to services, *International Journal of Service Industry Management*, 14 (2) 160-172.
- Osterwalder A., Pigneur Y., Tucci C.L. (2005) Clarifying business models: Origins, present and future of the concept, *Communications of the Association for information systems* 16(1)
- Padula, G., and Dagnino G.B. (2007), “Untangling the Rise of Coopetition: The Intrusion of Competition in a Cooperative Game Structure”, *International Studies of Management and Organization*, No. 37, Vol. 2, pp. 32-52.
- Prencipe A., Davies A., Hobday M. (2006) *The Business of System Integration*, Oxford University Press.
- Shafer S.M., Smith H.J., Linder J.C. (2005) The power of business models, *Business Horizons*, 48, pp. 199-207.
- Sawhney M. (2006) Going beyond the product, devining, designing and delivering customer solutions, in Lusch R.F. Vargo S.L. (eds) *The service dominant logic of marketing: dialog, debate and directions* pp. 365-380, Armonk, New York: M.E. Sharpe

- Sieber S.D. (1974) Towards a theory of role accumulation, *America Sociology Review* 39 (4) 567-578
- Snow C.S., Fjeldstad Ö.D., Lettl C., Mile R.E. (2011) Organizing continuous product development and commercialization: The collaborative community of firm model, *Journal of product and innovation management* 28 (3) 3-16.
- Storbacka K., Nenonen S. (2011) Scripting markets: From value propositions to market propositions, *Industrial Marketing Management* 40 pp. 255-266.
- Teece D.J. (2010) Business Models, *Business Strategy and Innovation, Long Range Planning* 43 pp. 172-194.
- Tsai, W. (2002) "Social Structure of 'Coopetition' Within a Multiunit Organization: Coordination, Competition, and Intraorganizational Knowledge Sharing", *Organization Science*, Vol 13 No. 2 pp. 179-190.
- Tushman, M.L., Anderson, P.C. and O'Reilly, C. (1997). Technology Cycles, Innovation Streams, and Ambidextrous Organizations: Organizational Renewal through Innovation Streams and Strategic Change. In: Tushman M.L. and Anderson P.C (eds.). *Managing Strategic Innovation and Change: A Collection of Readings*. New York: Oxford University Press.
- Walley, K. (2007), "Coopetition: An Introduction to the subject and an agenda for research", *International Studies of Management and Organization*, Vol. 37 No 2. pp. 11-31.
- Van de Ven, A.H., Polley, D., Garud, R. and Venkataraman, S. (1999). *The Innovation Journey*. New York: Oxford University Press.
- Windahl C., Lakemond N. (2006) Developing integrated solutions: The importance of relationships within the network, *Industrial Marketing Management* 35 pp. 806-818.
- Windahl C., Lakemond N. (2010) Integrated solutions from a service-centered perspective: Applicability and limitations in the capital goods industry, *Industrial Marketing Management* 39 pp. 278-1290.
- Wise R., and Baumgartner P. (1999) Go downstream: The new profit imperative in manufacturing, *Harvard Business Review*, sept-oct., pp. 133-141.
- Zott C., Amit R. (2008) The benefit between product marketing strategy and business model: Implications for firm performance, *Strategic Management journal* 29(1) pp.1-26.