

Natalia Reen

The Pricing of Industrial Services



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*Espoo, February 2014
Natalia Reen*

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Abstract

This thesis focuses on different aspects of the pricing of industrial services, i.e. what are the problems with industrial service pricing, how can these problems be overcome, what are the factors affecting pricing decisions, and how can pricing mechanisms be constructed for industrial services.

Product manufacturers and industrial suppliers increase their scopes of supply by including services into their offerings. Currently, industrial markets are experiencing increased global competition and declining margins, and therefore suppliers are trying to differentiate themselves by developing industrial solutions. These solutions combine physical goods and services to better fulfill customer needs, achieve higher margins and business stability, satisfy the customers' growing demands, and sustain their competitiveness by differentiating their offerings from the competitors.

Several positive consequences have been connected to this development of services by manufacturers, such as extra invoicing, enhanced profitability, a more steady cash flow, and a better corporate image. However, there are also challenges on the way to success in service business, e.g. lack of competition, over-supply, unfavorable business cycles, rigid industry, lack of the necessary competences and resources, intangibility of services, and lack of a customer-oriented culture in the organization. Previously, many services have been given free of charge to customers, as part of delivery or as customer support. Managers have difficulties in organizing and selling such services, and they often report that the pricing of services is a challenging and unclear issue for them.

Industrial service is an emerging topic for academia, and the literature on pricing has such a small scope that it cannot provide clear answers on how to price industrial services. Hence, the objective of this thesis is to explore the problem of service pricing and suggest a model that can support the challenging issue of the pricing of industrial services.

The thesis is structured as follows. The first part is a problem formulation, including an introduction to service research that can be regarded as a pre study of the literature. Due to the lack of established theories for industrial service pricing and the novelty of the subject, a pre-study is needed in order to find domains for a thorough literature search. These domains were identified during the pre-study phase, and literature has been reviewed in the areas of services, value, relationships, and pricing domains.

The research approach used in this work follows the ‘disciplinary convention’ of management science to some extent (i.e. exploratory, interview-based multiple case studies, built on positivistic assumptions and cross-sectional design). For example, a significant part of the data has been collected by interviewing people, and the elements of the initial research construct have been explored from data and literature findings. However, a better description of the research approach is “systematic combining”, a process of combining the research effort with a goal of matching theory and reality. This approach includes abductive matching between the model, the analysis, and the data that is achieved by direction and redirection of the research flow.

The studies have been conducted in the marine, energy, engineering, and metal industries, and complemented with the results of several connected studies in telecom, forestry, and machinery industries. The empirical part of study includes four subsequent cases connected by loosely defined questions and hypotheses that are suggested as an outcome from the previous case and developed in the next stage of the study. Addressing the calls for more studies on the pricing of industrial services, the industrial service pricing model has been developed, including pricing factors, a pricing process, and a value driven pricing logic, which is needed for the understanding and application of the developed model. The model includes many internal and external (from the supplier’s point of view) factors that affect the pricing decision. It is complimented by a pricing process that enables the model to be developed into real life pricing mechanisms. The logic justifies the usage of a value driven approach to industrial service pricing by introducing three fundamental statements:

1. The relational component of value provides significant impact on the pricing of industrial services. Customer retention, satisfaction, trust, and commitment have direct impact on a company’s profitability. Investment in the development of relationships is a profitable business for both the supplier and the customer, and therefore pricing should not only focus on monetary income but also on relational value.
2. For an industrial solution that includes services, the subject of pricing is not the solution itself, but the value proposition created for this solution.
3. The pricing process of industrial solutions considers all participants of the value creation process and analyzes their value.

During the study several practical tools and methods have been developed that implement the elements of the value driven pricing model in practice, e.g.

a value based segmentation of the customer base, a service platform profiling tool, and service maturity assessment tools. Though it is of paramount importance to take a systematic approach to pricing, it is natural that companies are focused and interested in certain tasks, depending on their priorities and criticality of the task to the current business situation. It is more realistic to expect companies to apply certain parts of the model and to move gradually towards a wholly value-driven approach, rather than to implement radical changes and to apply a completely value driven method.

Sammanfattning

Denna avhandling fokuserar på olika aspekter av prissättning av industriella tjänster genom att undersöka vilka problemen med prissättningen av industriella tjänster är, hur man kan övervinna dessa problem, vilka faktorer som påverkar prissättningsbesluten samt hur man bygger upp prissättningsmekanismer för industriella tjänsterna.

Producenter och industriella leverantörer strävar efter att utöka sina leveransomfång genom att inkludera tjänster i sina erbjudanden. Den globala konkurrensen och sjunkande marginaler på den industriella marknaden har fått företagen att försöka differentiera sig på olika sätt. Ett sätt att differentiera sig är att utveckla industriella lösningar som kombinerar fysiska varor med olika tjänster för att bättre möta kundernas behov. På detta sätt försöker man uppnå högre vinstmarginaler samt en bättre affärsstabilitet som tillgodoser kundernas ökade krav.

De nya industriella tjänsterna har flera positiva effekter. Av dessa kan man nämna ökad fakturering, förbättrad lönsamhet, ett mer stabilt kassaflöde samt en bättre företagsimage. Det finns dock många utmaningar på vägen till framgång i tjänsteverksamheten. Som exempel kan nämnas brist på konkurrens, överutbud, ogynnsamma konjunkturen, en styv industri, brist på nödvändig kompetens och resurser, tjänsteinstabilitet samt en brist på kundorienterad kultur i organisationen. Många chefer har rapporterat att det är både utmanande och oklart hur man ska organisera, prissätta samt sälja sådana tjänster som tidigare har getts gratis till kunderna som en del av leveransen eller som kundstöd.

Trots att intresset för de industriella tjänsterna har ökat inom den akademiska världen, är litteraturen om prissättning av dem ännu begränsad och förmår inte ge klara svar på hur de skall prissättas. Syftet med denna avhandling är att undersöka problemet med tjänsteprissättning och att föreslå en modell som kan stödja prissättningen av olika industriella tjänster.

Avhandlingen är strukturerad enligt följande:

I den första delen formuleras forskningsproblemet. I denna del ingår en introduktion till tjänsteforskning, vilken kan betraktas som en förstudie av litteraturen. På grund av bristen på etablerade teorier för det nya ämnet prissättning av industriella tjänster, behövdes en förstudie för att hitta huvudområdena för den grundläggande litteraturstudien. Dessa områden identifierades under förstudiefasen genom litteraturstudier inom områdena tjänster, värde, relationer och prissättning.

Forskningsmetoden som användes i detta arbete följer i viss utsträckning den ”disciplinära konventionen” inom företagsadministration (d.v.s. flera undersökande, intervjubaserade fallstudier vilka bygger på positivistiska antaganden och tvärsnittstudier). Huvudelementen i den grundläggande konceptualiseringen bygger på insikter från såväl insamlad empirisk data som från litteraturstudier, medan en betydande del av forskningsdata har samlats in genom intervjuer. En bättre beskrivning av forskningsmetoden kunde därmed vara ’systematisk kombinerings’. Metoden omfattar abduktivt matchande mellan modell, analys och data, vilken kan uppnås genom att ständigt överväga och vid behov omrikta forskningens nästa steg.

Studier har genomförts inom marin-, energi-, teknik- samt metallindustrin och kompletterats med resultaten av flera relaterade studier inom telekom-, skogs- och maskinindustrin. I den empiriska delen av avhandlingen ingår fyra på varandra följande fall som binds samman genom vagt definierade frågor och hypoteser vilka föreslås som ett resultat av de föregående fallen. För att tillgodose behovet av flera studier om prissättning av industriella tjänster har en industriell tjänsteprissättningsmodell utvecklats. Den består av tre distinkta element. För det första innehåller modellen många (från leverantörens synvinkel) interna och externa faktorer som påverkar prissättningsbeslutet. Modellen kompletteras av en prissättningsprocess, som möjliggör omsättandet av modellen till praktiska prissättningsmekanismer. Det tredje elementet är en värde driven prissättningslogik, vilken är nödvändig för att man skall kunna förstå och tillämpa modellen. Logiken motiverar användningen av en värde driven strategi för att prissätta industriella tjänster genom att formulera tre grundläggande påståenden:

1. För en industriell lösning som inkluderar tjänster är föremålet för prissättningen inte lösningen i sig själv, utan snarare den värdeproposition som skapats för ifrågavarande lösning.
2. Den relationella komponenten av värde har en betydande inverkan på prissättningen av en industriell tjänst. Kundlojalitet, tillfredsställelse, förtroende samt förpliktelse har en direkt inverkan på ett företags lönsamhet. Investeringar i utvecklingen av förhållandet är en lönsam affär för både leverantören och kunden, därför bör prissättningen inte bara fokusera på den monetära inkomsten utan även på det relationella värdet.
3. Prissättningsprocessen av industriella lösningar skall beakta alla parter i den värdeskapande processen och analysera värdet för dem.

I samband med arbetet för denna avhandling har flera praktiska metoder och redskap utvecklats för att stöda implementerandet av den värde drivna

prissättningsmodellen i praktiken, exempelvis värdebaserad segmentering av kundbasen, profileringsverktyg för tjänsteplattformar, samt bedömningsverktyg för tjänstens mognadsstadium. Även om det är av största vikt att ha en systematisk strategi för tjänsteprissättning, är det naturligt att företagen fokuserar på vissa områden beroende på sina prioriteringar och hur kritisk området är i det aktuella affärsläget. Ett realistiskt tillvägagångssätt för ett företag skulle vara att gradvis gå mot ett mera värdedrivet styrsätt, snarare än att genomföra radikala förändringar till ett totalt värdedrivet styrsätt på en gång.

Chapter 1. PROBLEM FORMULATION

1.1 Development of services by industrial companies

Product manufacturers and industrial suppliers increasingly try to maintain and build their competitive advantage by including services in their offerings. Such ‘servicification’ of traditional manufacturing businesses has received increasing attention in recent research (Davies 2004, Hobday 1998, Normann 2001, Reinartz and Ulaga 2008, Wikström et al 2009, Kinney 2000). The researchers studied and emphasized the reasons for the expanding the provision of services. The researchers (Oliva and Kallenberg 2003, Anderson, Fornell and Rust 1997, Heskett, Sasser and Schlesinger 1997) emphasized three main goals that companies aim for when deciding to develop services. First, by focusing on service business, a company usually aims to achieve higher margins and business stability. Second, companies have to add services into their offering to satisfy growing customers’ demands; while thirdly growing competition stimulates service development in the industrial sector. Sometimes the industrial companies struggle to make money on services after their products start to become commodities (Reinartz and Ulaga 2008, Ostrom et al 2010). By providing services in addition to their products, the manufacturers implement a strategy to repel competitive pressures from global competition and to compensate for the decreasing margins of their industrial products (Sawhney 2006, Vandermerwe and Rada 1988, Wise and Baumgartner 1999). Currently, industrial markets are experiencing global competition and declining margins and suppliers are trying to differentiate themselves by developing industrial solutions that combine physical goods and services to better fulfill customer needs (Bonnermeier, Burianek, and Reichwald 2010). Manufacturing companies are inspired by professional service companies that, compared to manufacturers, typically require lower fixed capital investment, frequently provide a more predictable stream of revenue, and often generate higher profit margins (Ostrom et al 2010).

The role of services has changed in recent decades, especially in manufacturing. In the 1970s, services were viewed by the manufacturers as an unfortunate necessity (Kuusisto and Mayer 2003). The growing complexity of industrial equipment has forced suppliers to include mandatory installation and commissioning services, warranty services, and training for customers’ staff into their offerings. This change necessitated developing new non-core competences, such as consulting, teaching, and supporting skills that were not associated with the

main business and were mainly considered by industrial suppliers as costly operations. Nowadays, services are often developed as a means of competition and are even a separate business area (Laine, Ojala and Paranko 2004). Several positive consequences have been connected to the development of services by manufacturers, including extra invoicing, enhanced profitability and performance, a more steady cash flow, and a better corporate image (Mathieu 2001, Kuusisto and Mayer 2003, Malleret 2006, Kohtamäki, Partanen, and Möller 2012).

The development of industrial services covers a variety of different types of services (Mathieu 2001, Johansson and Olhager 2004, Aarto et al 2009). Manufacturers develop services by implementing changes in value chains and processes. For example, they take care of certain tasks that a) have previously been undertaken by the customers (maintenance services, investment planning, project planning); b) are entirely new to the supply chain (remote performance measurement, lifecycle services); c) are innovative modifications of existing services (customer asset optimization); or d) are productified internal services and competences (information management, customer asset management) (Paranko, Laine and Suomala 2010). Thus in order to become service providers industrial companies make significant efforts on different levels, e.g. they announce a new service strategy, they create new service units, they perform significant organizational change, and they invest in change in the mindset of the company and the employees. However, there is a strong opinion, supported by a growing research body, that only a few manufacturers have achieved the ambitious financial objectives related to services (Gebauer, Fleisch, and Friedli 2005).

There are many challenges on the way to achieving success with services (Kuusisto and Meyer 2002, Rynänen, Salminen, and Pekkarinen 2009): lack of competition, over-supply, unfavorable business cycles, a rigid industry, lack of required competences and resources, and intangibility of services. Most of the manufacturing companies developing services face a significant cultural transformation related to the changes in mindset of the supplier and the customer. The effort to establish industrial services, then change them from being provided as a free part of delivery to requiring a fee, as well as to organize and to sell them have been reported by practitioners as challenging (Reen et al 2011, Wikström et al 2008).

Although the development of services does not seem to have been an easy process for companies, the growing share of services in the economy shows that services are an attractive goal for business developers. Analysis and improvement of financial performance from services, understanding service value, managing profitability drivers, and pricing mechanisms have become crucial tasks in global service competition.

1.2 Introduction to service research

As well as business practitioners, service researchers from different fields show a growing interest toward services having their own focuses, perspectives, and research approaches. Some are interested in how to manage services and service innovations; others are trying to understand the nature of services, and how services differ from products. The growing share of services in national economies poses the question of how to educate specialists in service engineering and management fields.

The phenomenon of mixing products and services is not new for researchers; it was already noted by Levitt in the 1970s (Levitt 1972, Levitt 1976) and later by Chase and Garvin (1989). The recent attention that has been given to services is reflected in a growing body of research literature (e.g. Anderson, Fornell and Rust 1997, Davies 2004, Heskett et al 1997, Hobday 1998, Normann 2001, Oliva and Kallenberg 2003, Spohrer and Maglio 2010, Lovelock and Wirtz 2011, Kohtamäki et al 2012), and the activities contributing to service research: international conferences and seminars (e.g. Frontiers in Services¹, RESER², QUIZ³), service science initiatives, service oriented journals (e.g. Service Research Journal, Service Management Journal, Service Marketing Journal), research programs (e.g. FUTIS, PBS in scope of the Finnish Metals and Engineering Competence Cluster, i.e. FIMECC⁴), academic programs and courses in universities (e.g. Industrial Services in Åbo Akademi University, Faculty of Technology, course of Project Management). The following examples review the main tendencies in service research, especially in marketing and management science.

During the past 40 to 50 years, service researchers have created a branch of marketing to address previously unaddressed exchange phenomena and to distinguish them from the marketing of goods (Vargo and Lusch 2004b). Researchers (e.g. Swartz, Bowen, and Brown 1992) have made a significant effort to “break” services marketing “free from goods marketing” mainly by conceptualizing service marketing through outlining the four characteristic differences between services and goods - intangibility, inseparability, heterogeneity, and

¹ The Frontiers in Services Conference founded 1992 by Roland Rust, one of the world's leading annual conference on service research;

² The RESER conference is an annual event of one of the major international associations for service research “RESearch in SERvices”, founded in 1888, mainly located in Europe

³ QUIZ - International Research Symposium on Service Excellence in Management stands for Quality in Service, is held every two years at a different university worldwide;

⁴ FIMECC - Future Industrial Services program of Finnish Metals and Engineering Competence Cluster funded by the Finnish Funding Agency for Technology and Innovation

FUTIS – project within FIMECC, Future of Industrial Services

PBS – project within FIMECC, Project Business Service

perishability (IHIP). Nowadays, many authors (e.g. Dearden 1978, Lovelock 1981, Thomas 1978, Cowell 1984, Shostack 1977, Zeithaml and Bitner 2003, Wright and Race 2004) base their service research on these IHIP characteristics that in their opinion differentiate services and physical goods.

Recently, differences between service and traditional goods marketing became even more evident and services marketing established itself as an independent science (e.g. Lovelock and Wirtz 2011, Lovelock and Gummesson 2004, Grönroos 2000, Rust, Zahorik, and Keiningham 1995, Heskett, Hart, and Sasser 1990, Normann and Ramirez 1993). For example, the 'Nordic school' of service research (see Grönroos and Gummesson 1985) has developed service marketing theories based on consumption. They argue that a fundamental difference between service and product marketing models is created by the difference in service and product consumption; they state that consumption in services refers rather to a process than an actual outcome. When customers consume a physical product they use the product itself, i.e. they consume the outcome of the production process. However, when consuming services customers perceive the process of producing the service to a different degree by taking part in the process; the outcome for the customer in case of services is the service process. Thus, the consumption of the service process becomes a critical part of the service experience (Grönroos, 1998).

An alternative approach to service marketing is derived from the modern and influential theory of service dominant logic. Adherents of service dominant logic (e.g. Vargo and Lusch 2004b) argue that such an approach, which distinguishes services from physical goods based on a number of criteria or characteristics, is not sufficient in order to understand and manage services. The foundational proposition of service dominant logic is that organizations, markets, and society are fundamentally concerned with the exchange of service, and that service is exchanged for service. Thus all firms are service firms, all markets are dealing with the exchange of service, and all economies and societies are service based (Vargo and Lusch 2004a). Therefore, the important goal for researchers in services marketing is to break free from manufacturing-based models and build new marketing theories and practices based on service logic and principles.

Researchers from managerial disciplines aim to understand different aspects of the integration of services into company offering in order to understand how to identify, classify, and manage services in an industrial context. Such studies as a widely recognized process theory for the transition from a purely manufacturing company to a service company by Oliva and Kallenberg (2003),

the papers that describe the different success and failure scenarios of new industrial service development from de Bretani (1991), a service process matrix by Schmenner (1986), different service classification schemes (e.g. by Silvestro 1992, Kellogg and Chase 1995, Kellogg and Nie 1995, Buzacott 2000, and Lovelock 1992) have significant impact on service research.

There are several specific theories have been developed in the managerial field. The researchers from the operations and management fields presented a 'Unified Services Theory' (UST) that aims to delineate service processes from non-service processes and to identify key commonalities across seemingly incomparable service businesses (Sampson and Froehle 2006). According to the UST, a service production process relies on customer inputs and therefore, customers act as suppliers for all service processes. The goal of UST is to provide a common reference point for future research in service management.

Another developing initiative is Service Science (Service Science, Management, and Engineering SSME, a term introduced by IBM), a relatively new scientific concept that aims at solving the complex problems of the service economy by applying a trans-disciplinary approach in an intensive collaboration between academia and service organizations. Service science is positioned as a specialization of systems science that studies value co-creation in the human-made world (Spohrer and Maglio 2010). The proponents of service science describe that the emergence of service science is conditioned by general movements toward systematic services innovations that accelerate co-creation of value, product, and operations management. The main ideas behind SSME are a trans-disciplinarily research approach, the intense collaboration between academia and companies, and the teaching of services within academic educational systems. Already more than 200 universities in 50 countries have begun service science related educational programs (Hefley and Murphy 2008).

A significant body of research belongs to the domain of service innovation, which has been rapidly developing during the past two decades in several research schools (e.g. Barras 1986, Miles 1993, Sundbo 1996, Edvardsson and Olsson 1996, Gallouj and Weinstein 1997, Howells 2000, Drejer 2004). For many researchers the major point of reference for assessing the characteristics of a service specific innovation is Schumpeter's notion of innovation (Drejer 2004).

Researchers discuss aspects of innovations in the service itself, in the process of services development, and in innovations in service firms. Regarding aspect of innovation in services, important contributions have been made by Sundbo and Gallouj (Toivonen and Tuominen 2009). By analysis of the nature and management of innovation processes in services from the resource-based

perspective Sundbo and Gallouj (2000) described the loosely-coupled interactional structure, empowerment system, where the ideas and innovations take place in an informal system of employees and coordinated by the management structure, which represents the official organizational goals and norms.

Researchers from the 'Lille school' (e.g. Gallouj 2002) focus on the nature of innovation or renewal and suggest several types of renewal, including improvement of a service component, a replacement of a service component, the addition/substruction of a service component, the recombination of components, and the 'formalization' or 'productization' of a service. Their model (Gallouj and Weinstein 1997) is built on three types of service characteristics (final, technical, and competence) and thus developed independently from product and process innovation stereotypes (Toivonen and Tuominen 2009).

The 'Nordic school' defines service in three dimensions, as a service concept, a service process, and a service system (Edvardsson and Olsson 1996) and any of these dimensions can be changed following an innovation process.

The topic of service innovation has been connected to the New Service Development (NSD) concept, extensively discussed in the last decades (Cooper et al 1994, Edvardsson and Olsson 1996, Perks and Riihela 2004, Kindström and Kowalkowski 2009, Fitzsimmons and Fitzsimmons 2000). The NSD concept is introduced in order to study the development phase of innovation that although it has not been rigorously addressed in literature is still very important from a managerial perspective.

Additionally to traditional streams of science - marketing, management and innovations - there are several specific extensive service research areas, for example, service engineering, (e.g. Bullinger and Scheer 2002; Luczak, Gill, and Sander 2007), and service productivity (Djellal and Gallouj 2008).

Service Engineering is an emergent interdisciplinary research field that aims at systematically elaborating business-to-business service provisions. The systematic development of services is viewed as a central success-factor, decreasing time-to-market, costs, and increasing service quality (Bullinger and Scheer 2006). The lack of service development methodologies and "ad hock" development lead to ineffective and low quality service provisions and as a result, a majority of newly developed services fail soon after being introduced into the marketplace (Bullinger and Scheer 2006). Thus the scope of service engineering has recently broadened from the actual development of new offerings to corporate functionalities, including corporate culture, strategy and policies (Luczak et al 2007, Edvardsson et al 2002). Service engineering employs service dominant perspective in sub-area "distributed service engineering" by the inclusion of clients into service development (Spath et al 2007).

Yet another important topic – service productivity – has been reflected in a solid body of research (e.g. Djellal and Gallouj 2008, Grönroos and Ojasalo 2004) driven by growing confidence that monetary measures for output do not provide a holistic representation of service productivity. They therefore attempt to measure productivity taking into account the customer inclusion into the value creation process.

One of the most researched topics in services is the value of services. Researchers (Brady, Davies, and Gann 2005, Ulaga 2003, Lapierre 2000, Walter, Ritter, and Gemünden 2001, Grönroos 2000, Möller, Rajala, and Westerlund 2007, Spohrer et al 2007, Zeithaml et al 2006) argue that the key success factor for a company developing services is an understanding of the logic of how the value has been created. According to Spohrer and Maglio (2010), without value creation no service has been performed. Researchers emphasize that the way value is created (or co-created), used, and captured is different for services compare to physical goods. The research into service value recognizes the dominant role of customers in value creation for services. Customer relationships and cooperation with all value network partners increases a firms' competitive advantage (Lusch et al 2007) and therefore the relational perspective is very important for the service value (Barry and Terry 2008, Liljander and Roos 2002, Möller and Törrönen 2003, Anderson and Narus 1990).

Worldwide growth of services, the complex nature of services, along with the fact that researchers in many disciplines are reframing their research toward services, created a need to systematize service research and to identify the most pressing issues requiring research attention (Ostrom et al 2010). There is a growing need to continue to refine and promote global service research topics using the interdisciplinary perspectives of academics and cross-functional approaches of business executives (Ostrom et al 2010). A group of researchers from Arizona State University Center for Services Leadership recently performed an 18-month endeavor to identify and articulate global, interdisciplinary research priorities for services. The priorities and related research topics were developed through in-depth interviews and online surveys from more than 200 service-minded academics. These service minded academics were from approximately 15 disciplines and from institutions in 32 countries, and 95 business executives, located in 11 countries, and representing approximately 25 industries, ranging from small startup businesses to Global 1000 companies. Ten service research priorities were identified and categorized within three broad aspects of business: strategy, development, and execution (see Table 1.1).

Strategy priorities	Development priorities	Execution priorities
<i>Fostering Service Infusion and Growth</i>	<i>Stimulating Service Innovation</i>	<i>Effectively Branding and Selling Services</i>
<ol style="list-style-type: none"> 1. Identifying business models for growth and expansion based on service 2. Evolving goods-based organizations into service-oriented enterprises 3. Integrating and aligning goods, services, and solutions strategies 4. Developing and managing a services-goods portfolio 	<ol style="list-style-type: none"> 1. Identifying drivers of sustained new service success 2. Designing emergent and planned processes for incremental and radical service innovation 3. Identifying and managing customers' roles throughout the service innovation process 4. Infusing creativity and arts into service innovation processes 5. Aligning organizational structure, customer, and supplier relationships with service innovation 6. Generating, prioritizing, and managing service innovation ideas 7. Using modeling and service simulation to enhance service innovation 	<ol style="list-style-type: none"> 1. Effectively branding service and solutions and identifying ways to assess brand value 2. Developing consistent brand experiences across touch points 3. Harnessing social media's impact on service brands 4. Achieving effective solution selling and defining the new role of the sales force 5. Forging closer relationships between employees and the brand
<i>Improving Well-Being through Transformative Service</i>	<i>Enhancing Service Design</i>	<i>Enhancing the Service Experience through co-creation</i>
<ol style="list-style-type: none"> 1. Improving consumer and societal welfare through service 2. Enhancing access, quality, and productivity in health care and education 3. Delivering service in a sustainable manner (i.e., one that preserves health, society, and the environment) 4. Motivating the development and adoption of green technologies and related services 5. Planning, building, and managing service infrastructure for metropolitan areas, regions, and nations 6. Democratizing public services for the benefit of consumers and society 7. Driving service innovation at the base of the pyramid 	<ol style="list-style-type: none"> 1. Integrating "design thinking" into service practices, processes, and systems 2. Integrating the performing and visual arts into service design 3. Designing dynamic and flexible services across economic cycles, maturity stages, and market segments 4. Aligning service design approaches with existing organizational structures 5. Learning systematically about how to best engage customers and employees in collaborative service design 6. Using service design to influence the behavior of people within service systems 	<ol style="list-style-type: none"> 1. Managing the customer experience across complex and diverse offerings, touch points, and customers 2. Defining the customer's role and developing methods for motivating customer contributions to enhance service success and loyalty 3. Driving customer/service collaboration through technology (e.g., Web 3.0) 4. Creating, managing, and measuring the impact and returns of customer communities 5. Determining intellectual property rights to and the pricing of co-created services

Strategy priorities	Development priorities	Execution priorities
<i>Creating and Maintaining a Service Culture</i>	<i>Optimizing Service Networks and Value Chains</i>	<i>Measuring and Optimizing the Value of Service</i>
<ol style="list-style-type: none"> 1. Recruiting, training, and rewarding associates for a sustained service culture 2. Developing a service mind-set in product-focused organizations 3. Creating a learning service organization by harnessing employee and customer knowledge 4. Keeping a service focus as an organization grows, matures, and changes 5. Globalizing a service organization's culture across different countries 	<ol style="list-style-type: none"> 1. Optimizing inter-organizational service network collaboration around customer experiences 2. Creating and improving distributed service networks globally 3. Developing effective pricing to share gains and losses across a service system 4. Managing upstream and downstream migration in the service value chain 5. Using outsourcing for enhanced service productivity and success 	<ol style="list-style-type: none"> 1. Measuring the value and return on investment from service 2. Creating and enhancing tools for capturing the value in use for services and communicating value to customers and throughout the firm 3. Integrating service value and the costs of service delivery into joint optimization models 4. Creating and enhancing service standards and metrics that link to financial outcomes of the firm 5. Managing the sales and service channel portfolio to maximize value 6. Integrating the role of customers, employees, and technology for value optimization (e.g., the use of self-service technologies)
<i>Leveraging technology to advance service</i>		
<ol style="list-style-type: none"> 1. Building business models for new service technologies (e.g., smart services, cloud computing) 2. Accelerating adoption and acceptance of new, service-oriented technologies 3. Capturing and delivering service-oriented information for real-time decision making 4. Enabling and accelerating mobile commerce and productivity for consumers and employees 5. Enhancing online privacy and security of information and assets to protect service consumers, employees, companies, and society 6. Using the service system paradigm to drive innovation 7. Enabling agility and integration through service-oriented architecture and service platforms 		

Table 1.1. Service research priorities and research questions (from Ostrom et al 2010)

Nine of the priorities fall under these three categories and the tenth priority—Leveraging Technology to Advance Service—is ‘a pervasive force enveloping the other nine priorities’ (Ostrom et al 2010). The important but under-developed (Indounas 2009, Lukassen and Wallenburg 2010) topic of pricing for services is literally mentioned in development and execution related topics,

but undoubtedly belongs to strategy as well. For example, identifying business models for growth and expansion based on services (see Table 1.1-> Strategy priorities) requires designing of pricing mechanisms; for successfully developing and managing a services-goods portfolio, pricing is a key managerial task. Therefore, it makes sense, not to allocate pricing as a separate research topic, but to relate different aspects of pricing to service strategy, development, and execution related themes.

The review of these service research priorities supports a belief, expressed by many researchers, that services should be studied from a multiple disciplinary perspective, and that a synergy of different approaches will bring the best understanding of the phenomena of services (The 11th International Research Conference in Service Management, La Londe les Maures, France, May 2010, Round Table). Nevertheless, the researchers belong to different scientific schools and different disciplines, and they often have contradictive opinions about service related problems. However, research collaboration across disciplines will help the development of new insights, theories, and solutions related to service challenges and opportunities (Ostrom et al 2010).

The importance of relationships within service systems shifts the researchers' attention from the research 'domains', such as customers, suppliers, customer value, knowledge, to the relationship between these 'domains'. The complexity and diversity of relationships within service systems provide researchers with a fertile area for studying and understanding services (The 11th International Research Conference in Service Management, La Londe les Maures, France, May 2010, Round Table).

Commenting on the research priorities, Grönroos (in Ostrom et al 2010) remarked that for far too long, research has focused on trust, commitment, satisfaction, loyalty, and perceived quality effects of service strategies. Now monetary effects should be in focus, and metrics required to do the necessary measurements should be developed because it is important to focus on pricing related aspects.

1.3 Gaps and controversies in industrial services literature

The previous section describes the growing attention of researchers to services. Nevertheless, the study of services is far from being completed and the overall status of service literature is somewhat confusing (Laine, Paranko, and Suomala 2009). Below some of the gaps and disagreements in service research are discussed.

Service research has established itself as a separate field of research (e.g. Shostack 1977, Grönroos 2000, Lovelock and Gummesson 2004, Zeithaml, Bitner, and Gremler 2006). However, there are fundamental concepts missing – there is no an appropriate definition for services (Vargo and Lusch 2004a) and there is a lack of a commonly shared opinion about the distinctive characteristics of services (Zeithaml and Bitner 2003, Vargo and Lusch 2004b).

IHIP (intangibility, heterogeneity, inseparability of production and consumption, and perishability) characteristics, which have been widely applied in service research, have recently have been heavily criticized and challenged for the lack of a systematic introduction (Lovelock and Gummesson 2004, Edwardsson et al 2005), and for the complexity and subjectivity of the variables (Grönroos 1998, Vargo and Lusch 2004b, Laine et al 2005). According to Vargo and Lusch (2004b), the IHIP characteristics of services are “the four service marketing myths”. They argue that these characteristics do not distinguish services from goods and only have meaning from a manufacturing point of view.

Regarding industrial services, there is a lack of common vocabulary on industrial service development. According to Oliva and Kallenberg (2003), “several labels are used in the literature: industrial services, service strategy in manufacturing, product related services, product services, or after sales services” in order to label the phenomena of service development in industrial companies. Table 1.2 provides insight into a variety of terms that the researchers use for the phenomenon of services in industrial contexts.

Table 1.2. Labels used for service development in manufacturing sector

Name	Reference
Concepts of servitization process and strategy	
Servitization	Vandermerwe and Rada 1988
Service orientation	Bowen, Siehl, and Schneider 1989
Going downstream	Wise and Baumgartner 1999
Service infusion	Brax 2005
Transition to services	Oliva and Kallenberg 2003
Service provision	Valtakoski 2010
Solution provision	Brown 2000
Service productification(productizing)	Reen and Wikström 2008, Valminen and Toivonen 2007

Service-based strategy	Quinn et al 1990
Service strategy in manufacturing	Oliva and Kallenberg 2003, Homburg, Hoyer and Fassnacht 2002
Concepts of industrial service offerings	
Industrial services	Boyt 1997
Product related services	Oliva and Kallenberg 2003
Product services	Furrer 1997
After sales services	Oliva and Kallenberg 2003
Customer solutions	Sawhney 2006
Complex products and systems	Hobday 1998
Product-service system	Tukker 2004, Kim and Meiren 2010, Mont 2000
Integrated solution	Davies et al 2001
Complete offerings	Penttinen and Palmer 2007
Hybrid contracts	Kalnins and Mayer 2004
Services in industry, services additional to the project	Malleret 2006

Such variety indicates the novelty and recent emergence of the field and calls for the need to develop and stabilize terminology in order to better describe and conceptualize the phenomenon of service development by industrial suppliers.

There is neither a common opinion, nor any systematic empirical evidence as to how beneficial it is for companies to explore and develop industrial services. Many authors present service development as a beneficial strategy for manufacturers and provide some insight into how to achieve success and how to sell services at a profit (Brown 2000, Foote et al 2001, Wise and Baumgartner 1999, Reinartz and Ulaga 2008). Mathieu (2001) and Davies (2004) argue that a good opportunity for the industrial supplier would be to increase its scope of supply by early involvement during the planning of the investment, and thereby during the investment phase of the customer project. This gives a supplier an opportunity to be part of the overall customer project life-cycle, which should provide financial benefits for suppliers as they have been involved during the operational phase in the decision making regarding the selection of providers for the project's investments, operations, and maintenance. Reinartz and Ulaga (2008) propose a four-step path to profits in industrial services, which ensures that the company recognizes itself as a

service company, industrializes the back office, creates a service-savvy sales force, and focuses on customers' processes.

However, adopting a service strategy is not always a successful strategy for manufacturing firms. There are also examples of the failures of some companies' attempts to adopt service business (Miller et al 2002, Nambisan 2001). According to Reinartz and Ulaga's (2008) study, for every one story of success there are five warning lessons that demonstrate the difficulties that the companies face in order to make a profit from their services. Thus the overall impact of service development on industrial firm performance is not yet clear (cf. Fang, Palmatier, and Steenkamp 2008, Gebauer 2008, Homburg et al 2002, Reen et al 2011) and models for service infusion and growth are often lacking (Ostrom et al 2010). Though researchers are almost unanimous in suggesting that goods-dominant firms should develop services by creating new service business units or adjust existing business units to provide services (Oliva and Kallenberg 2003), the literature does not explore what factors enhance the performance of a company developing services, or how they should do it (Neu and Brown 2005).

In order to decide which services to develop and offer, industrial suppliers use several indicators: customer needs and wants, competitors' service offers appreciated by customers, and the suppliers' own strengths and competences created by their technology and knowledge base (Frambach, Wellips, Gundlach 1997, Wikström et al 2009). The process of identifying high potential services poses the questions as to how such services can be developed within organizations, how to use them effectively, how to build value utilizing these services, and how the services affect business performance. However, although these topics have received some attention in the literature, some specific areas such as industrial service pricing seem to be underdeveloped and lack empirical research (Indounas 2009, Lukassen and Wallenburg 2010).

Despite the growing practical importance of industrial solutions, only a few attempts have been conducted by scientists to address pricing issues in the area of industrial services (Bonnermeier, Burianek, and Reichwald 2010). Recently, researchers have extensively discussed operational and engineering approaches for building and delivering service-enriched customer solutions (e.g. Froehle, Roth 2007, Edvardsson, Olson 1996, Ramaswamy 1996, McAloone 2006, Fitzsimmons and Fitzsimmons 2006, Hefley and Murphy 2008). However, pricing and methods for calculating the economical outputs of offering have largely been ignored (Beverungen 2010). Literature research performed by Lukassen and Wallenburg (2010) revealed that only 31 percent of the arti-

cles on industrial service pricing are empirical and thus the majority of articles are conceptual with a prevailing explanatory approach. According to their research, the general tendency in empirical papers about pricing of industrial service is to review different pricing approaches employed by companies and describe them. Regarding conceptual articles, the authors pointed out that the papers lack any inclination towards the established economics theories, such as Transaction Cost Theory, Principal-Agent Theory, and Resource-Base View. Service pricing literature tends to focus instead on different pricing approaches and mechanisms. Such a lack of “inclination for established economics theories” can be seen as a serious methodological shortcoming in industrial service pricing research. However, proponents of service-dominant logic (e.g. Vargo and Lusch 2004a) argue that the entire marketing theory requires rethinking so that it moves from a product perspective to a service perspective in order for new theories to emerge.

The described gaps provide opportunities and should inspire service researchers as well as predefine certain approaches. A lack of common vocabulary on industrial service development, a lack of appropriate definition for services, and a lack of commonly shared opinions about the characteristics of services affect the methodological choice, theoretical background, and the way in which the ideas are conceptualized. For example, a lack of commonly used labels for services challenges the usage of automated bibliometric methods. A lack of “inclination for established economics theories” very much enables a multi-disciplinary approach to studying the problem; the research is not limited within a certain domain and looks for different concepts from marketing, management, knowledge, and organizational domains.

This thesis aims at filling the gaps in industrial service pricing research by developing a pricing model, which is supported by existing theoretical views and tested in a real business environment. The empirical part extends the empirical research (although not yet strongly established) for industrial service pricing by iterative development, validation, falsification, and a refinement of pricing concept.

1.4 Research questions and goals

The main research question for this thesis is:

How can industrial services be priced?

In order to answer the question, it is necessary to understand what is actually wrong with industrial service pricing, what the challenges and failures are

that managers face when they send and receive pricing proposals, what is behind these challenges, and how to resolve these pricing issues. Thus the starting point for the research is formulated in the first sub-question:

- RS1: Why is pricing of industrial services difficult and how can these difficulties be overcome?

During the preliminary literature search, described in the previous sections, it already became clear that the pricing aspect for services should be discussed in context and together with the topic of service value. Most researchers agree that the key success factor for a company going into the service business is an understanding of value creation logic (Brady, Davies, and Gann 2005, Ulaga 2003, Lapierre 2000, Walter, Ritter, and Gemünden 2001, Grönroos 2000, Möller et al 2007, Spohrer et al 2007, Zeithaml et al 2006), and therefore it is important to understand how pricing is connected to value creation. Researchers (Brady, Davies, and Gann 2005, Ulaga 2003, Lapierre 2000, Walter, Ritter, and Gemünden 2001, Grönroos 2000) are also unanimous on the important role of customers for services. The development of customer-supplier relationships through interaction and dialogue poses the question of how the development of a customer relationship affects value and therefore the pricing of services. Thus the second research question is:

- RS2: What is the role of the customer-supplier relationship for service value?

Yet another important topic connected to pricing is the profitability of services for industrial companies. One of the main goals (or perhaps the only goal) for successful pricing, is to increase and maintain a company's profitability (hereinafter profitability refers to general financial performance of the company, to the actual and potential earnings the desired level of income). A preliminary literature search shows (e.g. Gebauer 2008, Homburg et al 2002, Reinartz and Ulaga 2008) that there is no agreement among researchers as to when the strategy of service development is profitable. Little evidence exists on the impact of a supplier's services on profits and the role of relationship factors on supplier performance (Kohtamäki et al 2012). Therefore, it is important to examine empirically, using concrete evidences from a company developing services, the factors that affect profitability, including the aspects of relationships. It can then be decided how these factors can be included into the pricing model. Thus, the third research sub-question is:

- RS3: How does an increase in the scope of supply by adding services affect the profitability and customer-supplier relationship of industrial companies?

By answering these questions, the thesis aims to achieve the main goal – to develop a pricing model. This model should: add transparency to the relationship between value and pricing of services in an industrial context; reveal, describe, and systematize factors important for pricing; draw the links between profitability and customer relationships; and provide practical tools that can be used for the development of pricing mechanisms by the industrial suppliers when developing services.

Chapter 2. LITERATURE REVIEW: Domains and Concepts

The goal for the literature review is to reassemble existing knowledge in this field and summarize what is known. In practice, a literature review should be performed in certain domains that outline and shape the direction of research. According to the observation of Lukassen and Wallenburg (2010), service pricing literature lacks inclination for established economics theories, and therefore it is important to demonstrate the conceptual relevance of the selected domains by making clear connections to the research problems. The selected research topic of industrial service pricing anchors the literature search of the present study in the following domains:

- Services, phenomenon of industrial services;
- Value created by services;
- Pricing and service pricing.

2.1 Services

The share of employment in the service sector in the developed countries is large and growing. According to Caldwell's (2008), "the U.S. now has more choreographers (16 340) than metal casters (14 880)... more people make their livings shuffling and dealing cards in casino (82 960) than running lathes (65 840), and there are almost three times as many security guards (1004130) as machinists (385690)." According to the International Labor Organization, in 2007, nearly 80% of employment in the developed countries was in the service sector. Even the countries that have historically focused on manufacturing are nowadays showing rapid service development; more than 40% of China's GDP is now attributed to services (Ostrom et al 2010).

Acceptance of services as an important part of the economy is reflected in the division of industry by economists (Fisher 1935) into the following sectors: primary (agriculture, forestry, and fishing), secondary (manufacturing and construction) and tertiary (service and distributive trade). Sometimes the quaternary sector is mentioned, which includes intellectual activities, e.g. libraries, education, and IT. The quinary sector (sometimes considered to be a branch of the quaternary sector), includes the highest levels of decision making in a society or economy sector i.e. in such fields as government, sci-

ence, universities, healthcare, culture, the media – non-profit organizations that play an important role in society and the economy (Rosenberg 2011). Services can be found in the tertiary sector (restaurants, hotels, barber, laundry, repair; performed as domestic services), quaternary sector (transportation, commerce, communications, finance; facilitates division of labor), and quinary sector (health care, education; improving customer in some way) (Foote and Hatt 1953).

Although everyone understands what service means there is no widely accepted general definition for services (Edvardsson et al 2005), or according to Vargo and Lusch (2004a), there is a lack of an appropriate definition for services. The researchers do not agree on whether a univocal exact definition of services is needed at all (Grönroos 2000). However, a growing number of definitions and characteristics of services (see examples in Table 2.1) indicates the need for a proper definition of services in order to understand and manage the service business, and to understand service-specific business models.

From Table 2.1 (though it does not claim to provide a full review of existing definitions for services) it is possible to observe how researchers' view on services evolved. Most of the early definitions distinguish services from goods and describe the relationship between services and goods. Later researchers did not contrast goods and services but rather emphasized the importance of the specific characteristics of services, such as, for example, intangible nature of services. From this the IHIP model was developed. Recent definitions of services include different aspects of value and customer benefits.

Table 2.1. Definitions of service (developed from Fitzsimmons and Fitzsimmons 2000)

Compared with goods, connections to goods	
The Physiocrats (c. 1750)	All activities other than agricultural production.
Adam Smith (1723–90)	All activities that do not end in tangible products.
J.B. Say (1767–1832)	All non-manufacturing activities that add utility to goods.
Western Countries (1925–60)	Services do not lead to a change in the form of a good.
Fuchs (1978)	Transportation, communication should be excluded from services and placed in the industry sector, since they are heavily dependent on equipment.
American Marketing association (1960)	Activities, benefits or satisfactions which are offered for sale, or are provided in connection with the sale of goods.

Intangibility	
Alfred Marshall (1842–1924)	Goods (services) that pass out of existence at the moment of creation.
Stanton (1981)	Services are those separately identifiable, essentially intangible activities which provide want-satisfaction, and that are not necessarily tied the sale of a product or another service. To produce service may or may not require the use of tangible goods. However, when such use is required, there is no transfer of title to these tangible goods.
Gummesson (1987)	Services are things that can be bought, but cannot be dropped.
Kotler (1988)	A service is any activity or benefit that one party can offer to another that is essentially intangible and does not result in the ownership of anything. In production may or may not be tied to a physical product.
Value adding processes, mutual benefits	
Grönroos (1998)	Services are produced and consumed simultaneously, and the customer becomes a part of the value-adding process.
Zeithaml and Bitner (2003)	Services are deeds, processes and performances.
Laine et al (2004)	Services are activities undertaken for someone else.
Preist (2004)	A service is the provision of something of value, in the context of some domain of application, by one party to another.
Edvardsson et al (2005)	Service is an aspect of value creation.
Maglio et al (2006)	The service system is conceptualized as a configuration of people, technologies, and other resources that interact with other service systems to create mutual value.
Lusch et al (2007)	Service is applied knowledge for another party's benefit.
Katzan (2008)	A service is a provider/client interaction that creates and captures value. A unique characteristic of services, unlike agriculture and manufacturing, is that both parties participate in the transaction, and in the process, both capture value.
Spohrer and Maglio (2010)	Service is a value co-creation, value as change that people prefer, and value co-creation as a change ... that people prefer and realize as a result of their communication, planning, or other purposeful and knowledge-intensive interactions.
Scott (2010), from unified service theory	Services are production processes wherein each customer supplies one or more input components for that customer's unit of production. With non-service processes, groups of customers may contribute ideas to the design of the product, but individual customers' only participation is to select, pay for, and consume the output.
Chan et al (2010)	A service is a (market) offering by one party (the provider) to create value for another party (customer) through interaction in a co-production process (with the consumer).

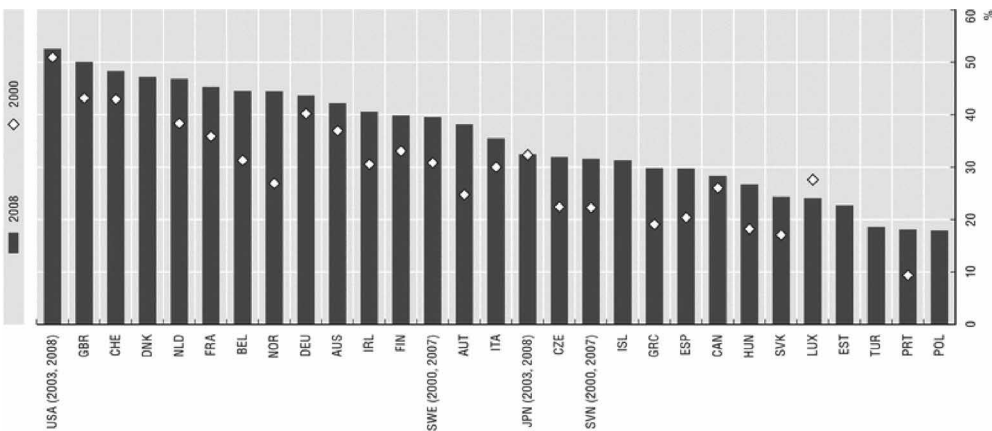
Miscellaneous official	
W3C World Wide Web Consortium	A service is an abstract resource that represents a capability of performing tasks that represents a coherent functionality from the point of view of provider entities and requester entities.
United Nation	Services are heterogeneous outputs produced to order and typically consist of changes in the conditions of the consuming units realized by the activities of producers at the demand of the consumers.
Oxford dictionary	Service is the action of helping or doing work for someone.

Despite the many attempts to conceptualize services on different abstraction levels, in relation to physical goods, or in terms of real-life processes, the actual relationship between the concepts of services, products, goods, processes, and the customer need remains unclear (Laine et al 2004).

2.2 Services in the industrial sector

The growth of service-related occupations in the manufacturing sector reflects the shifting of the focus from products to services, even in traditional manufacturing companies. According to the OECD Science, Technology, and Industry Scoreboard (2011), services related occupations in the manufacturing sectors in Finland have grown from 33.1 % in year 2000 (as a percentage of all employees in manufacturing) to 39.8 % in 2008. This reflects a general tendency in the industrial sector for EU countries, US, Australia, and Japan (see Figure 2.1).

Figure 2.1. Services-related occupations in manufacturing, 2000 and 2008 (OECD Science, Technology, 2011)



Blomberg (2010) argues that in some cases such movement does not change the nature of the job itself. For example, a truck driver is assigned to a manufacturing sector if he takes the goods inside his employer premises, but he will be assigned to the service sector if he has a contract for delivering goods to an external company. This example is valid for the industrial sector in general – if certain functions and activities are a part of a manufacturing company's own production process (project management, procurement, maintenance, testing), they are considered a part of manufacturing. However, when such activities are bought from an outside source (outsourcing of H&R, accounting, logistics) or sold externally (investment planning, project management, certified operating) the actual work is counted as service-sector employment. Though the nature of a job, required competences, and capabilities might not change, the business models of the supplier, customer, and other partners can be very much affected by the 'servitizing' of business. Increasing the share of services in manufacturing businesses requires, initiates, and provokes many changes on all levels of the organization i.e. the industrial and service markets, the value chains, the value distribution and in the mindset of people. By selling more services the companies become more customer-centric organizations and change their value proposition from offering products, spare parts, and a number of services to the building of added value for the customer (Foote et al 2001, Galbraith 2002).

2.2.1 Classifications for industrial services

Service research in the industrial sector also suffers from a lack of widely accepted concepts and definitions. Researchers use different labels for the phenomena of service development in manufacturing (see Table 1.2). Sometimes, the terminology has a mixed meaning, for example, Paloheimo, Mietinen, and Brax (2004) have found that the term 'industrial services' has been used in at least three ways in the literature:

- 1) To indicate services that is offered for customers' industrial production processes (Woodside and Pearce 1989);
- 2) To indicate any business-to-business services (Gounaris 2002, Cooper and de Bretani 1991);
- 3) To indicate all services that is provided by the service industry (Quinn, Dorley, and Paquette 1990, Lindbergh and Wilson 2001).

The lack of a common vocabulary complicates any literature search and

makes almost redundant the usage of automated methods of references and content analysis. As an example, there was a study, performed during the spring and summer of 2009 within the scope of a PBS-FIMECC project and connected to this thesis, which employed several bibliometric methods implemented as a software tool and performed on a database of electronic journal publications. This attempt did not produce any reliable outputs. The outcome of the cross – citation method for the keywords ‘industrial service’ applied to ISI Web publications that depicts citations between cited articles provided a very limited view of the existing literature about service development in the manufacturing sector (see Figure 8.1 in the Appendix). This method has also been applied to other combinations of words, such as ‘service and product’, ‘integrated solution’ and others. Though the outputs contain some important and relevant references, usage of merely automated methods of literature search in the area of services developed by industrial suppliers did not provide a systematic view of the existing literature. Despite the different terminology, the increasing effort to understand the nature, characteristics, and impact of services for industrial suppliers is reflected in the different classification schemes presented by researchers.

Mathieu (2001), Frambach, Wels-Lips and Gundlach (1997) distinguish between customer services, product services, and service products in industrial markets. By customer services, they include all activities that are needed to attract and retain customers, usually related to entire organizational processes, such as order handling, and lead time. Product services are those that are more directly related to a specific solution, for example, equipment warranty, repair services, and installation. Service product relates to consultancy type services, when goods are not included into core offerings.

Boyt and Harvey (1997) classify industrial services into elementary services, intermediate services, and intricate services by assessing such service characteristics as replacement rate (how often does the customer need the service?), essentiality (how important is the service in relation to the product?), risk level (how much does a failure in service affect the product?), complexity (what is the level of skills needed and difficulty in providing the service?), personal delivery (has the service provider to deliver the service in-person?), and credence properties (are there characteristics that complicate evaluating or understanding the service?). Such classifications can be used for careful service design and marketing, and to organize and manage the supporting processes (Paloheimo et al 2004).

Vaattovaara (1999) has grouped industrial service into five different categories based on the value they provide for the customer (see Table 2.2).

Table 2.2. Vaattovaara's classification of service product (1999)

Type of service	Description
The service essence	Key contents of the service from the customer's point-of-view
Enabling services	Necessary modules in production of the service essence
Facilitating services	Help the customer in the service implementation
Administrative services	Used for management of the service contents; e.g. billing, augmenting services
Optional services	Enhance the total value of service essence to customer

Vaattovaara's classification contributes to a customer value management strategy that prioritizes, selects, and enables development of different services.

Paloheimo et al (2004) classify industrial services according to their target object:

- Equipment, which is a part of an industrial production process;
- The correct use of the equipment in the customer's process or equipment;
- The customer's ability to conduct their business optimally.

Such classification emphasizes movement from equipment related services to customer business related services that according to several authors provide better business potential (e.g. Mathieu 2001, Anderson et al 1997).

Cook (2004) has classified services into product-oriented, use-oriented, and result-oriented for the purpose of studying the potential opportunities that will improve resource productivity by services.

According to Oliva and Kallenberg (2003), industrial services can be classified into four groups: basic installed services (spare parts, transports), maintenance services (preventive maintenance, condition monitoring), professional services (engineering, consulting, training), and operational services (support and operating customer equipment, operations, or entire business).

An industrial project can include many different services during its lifetime. Artto et al (2009) have examined projects conducted by several industrial suppliers and identified a vast number of services that potentially can be developed into independent or bundled offerings and delivered to customers. The authors have identified altogether six different 'impact types' that explain the impact of services on the business performance, and categorized indus-

trial services according to these impact types:

- 1) Customer entry refers to the desired effect of the service representing an entry point to a customer, for additional services or projects in the future.
- 2) Customer value refers to the effect of creating additional value to the customer with the service, which obviously has a favorable impact on the supplier firm's margins and profitability.
- 3) Competitive advantage means an increase in the competitiveness of the company's own offerings by making their offering more attractive to the customer than the competitors' offerings.
- 4) Delivery efficiency means experience in supply change management.
- 5) Service business refers to the fact that the delivered service itself is justified as part of a profitable service business.
- 6) Service Innovation refers to the level of innovativeness in a service offering.

Table 8.4 in the Appendix summarizes the observations from the empirical study by Artto et al (2009). Performance based categorization of industrial services helps to better align the potential impact of the service with the established goals, and therefore to make a justified decision on which services have a higher potential for future development and sales.

By comparing the general characteristics of services introduced in the IHIP model (see section Introduction to service research, p.10) and the specific characteristics of industrial services, Lukassen and Wallenburg (2010) emphasize several additional characteristics that distinguish industrial services from, for example, consumer services. Industrial services require an extensive provider selection process in order to ensure that the service provider has the necessary capabilities (Morris and Fuller 1989). Industrial services are more often provided at the location of the customer; they are more related to goods (e.g., in logistics, order handling, warehousing) than those delivered to people (Morris and Fuller 1989). The long duration and continuity of the relationship in industrial services allow for a better prediction of the demand pattern than in consumer services (Lukassen and Wallenburg 2010).

The researchers discuss the potential benefits and opportunities for the companies developing industrial services.

Malleret (2006) classified the possible advantages to be gained by companies through developing services into four major themes:

- Development of the services builds customer loyalty. Additional services

make the customer more dependent on the supplier. For the supplier, services help to change a one-time transactional contract into a long-term relationship. The profitability of a customer increases over time; although companies sacrifice margins to attract new customers, in the long term they restore their margins in these continuous business relationships. By regular interactions with the customer through industrial services, the producer obtains a better view of the customer's business and uses this advantage for proposing other products and services.

- Customer specific industrial services increase differentiation, since it becomes more difficult to evaluate the complex offers of different suppliers when they combine products and services in different ways. It reduces direct competition on price and improves profitability.
- Selling industrial services increases and stabilizes turnover, since it extends the supplier's participation in the value chain. Selling equipment requires significant investments from the customer, and, therefore, it is a transaction that only occurs monthly or once a year. The sale of services can follow a recurring pattern and enable long term contracts for equipment life cycles that provide and generate a regular income and reduce uncertainty.
- Industrial services improve the corporate image through giving signals about technological advances, the ability to serve the customer, and awareness about the customers' business models (Malleret 2006).

Thus industrial services are sources of direct (services have higher margins than products) and indirect (service increase the demand for products and they are a source of differentiation) profit for the supplier (Furrer 1997).

The challenges and drawbacks of service development in industry was also the focus of one researchers' attention. Many of the expected benefits relate to corporate competitiveness rather than profitability; to become profitable customers have to be charged for the services and the services have to be produced at a lower cost than the competitors (Malleret 2006). However, industrial services are in general characterized by a low awareness of costs (Mathieu 2001) due to the involvement of multiple business units in service organizing, the 'opportunistic' approach to the development, and the low level of use of activity-based cost methods (Anderson and Narus 1995). Researchers relate these issues to service pricing (Malleret 2006, Berry and Yadav 1996) and express concerns that it is quite possible that companies offer and provide services to a customer free of charge. It is not clear whether prices for industrial services should simply cover costs or also generate

a margin of profit, and whether they should be charged as part of a package (the bundling principle) or separately.

2.2.2 The role of knowledge in industrial services

An important characteristic of industrial services is their dependency on a company's knowledge and technological base. Regarding industrial services, researchers emphasize two things related to knowledge and skills intensity (Paloheimo, Miettinen, Brax 2004). First, traditionally manufacturers have not paid much attention to the usability and maintainability of equipment. Due to this fact and also the growing complexity related to equipment, services require special knowledge and skills. Second, even though the service provider possesses the required competences to deliver certain services, the customers may not be able to evaluate the outcome or the quality of these services due to a lack of specialized skills (Parasuraman, Zeithaml, and Berry 1985, Edwardsson, Haglund and Mattsson 1995). In many cases, it is difficult for the supplier to specify the outcome of the services (Aron 2003), for example, to describe in measurable values the improvement of the consumer's satisfaction. Since industrial services are built on specialized knowledge and require special competence to deliver and utilize them, they should be discussed in context of knowledge- and technology intensive services.

The importance of knowledge for services has been emphasized by e.g. Lusch et al (2007) in the definition of service as 'applied knowledge for another party's benefit'. Researchers pay special attention to the expert companies that are specialized in knowledge intensive business services (KIBS), such as engineering, ICT, advertising (see Miles et al 1995), knowledge intensive service activities (KISA). There is also the growing in manufacturing sector (OECD 2006), and the broader concepts of knowledge intensive firms (KIFs), which also include law firms, accountants, architectural practices, and educational firms (Alvesson 2004).

Knowledge-intensive and technology-enabled services in a manufacturing context have become very important; one of the reasons for this is that there has been a shift in the innovation balance from products to service innovations (Kuusisto and Meyer 2003). Thus by increasing the share of knowledge-intensive services in its portfolio, a company increases its innovation potential and increasingly becomes a knowledge-dependent organization. Moreover, the manufacturer may improve their competitive advantage developing knowledge intensive services by increasing customers' confidence in the supplier's skills and ability to deliver solutions.

A knowledge base is difficult and expensive to change; the cost of development of new knowledge remains one of the most significant organizational expenditures. Therefore, when developing knowledge intensive services it is important to follow the link between knowledge development and the company's long-term strategy (Løwendahl, Revang, and Fosstenløykken 2001).

Knowledge management is not within the scope of this thesis. However, it would be impossible to exclude completely knowledge related aspects when discussing labor and knowledge intensive service business.

The idea that knowledge has value has endured for centuries. During recent decades, the value of knowledge has acquired a business meaning. With the growing realization that financial measures "look backwards and at physical assets only", organizations need to be realistic about measuring what is perhaps their most valuable asset – knowledge (Skyrme 2005). A proper measured value of knowledge would more truly reflect the actual worth of the company, give insights into the drivers of sustainable performance, contribute to effective governance of intangibles, and provide information that is more useful to existing and potential investors (Skyrme 2005).

However, even though the importance of knowledge is widely acknowledged, measurement of the value of knowledge remains difficult. The literature search shows that the typical comments regarding measurement of knowledge value are 'difficult to measure', 'numerous attempts', 'the value of knowledge has not progressed much beyond an awareness that traditional accounting practices are misleading', 'measuring the value of knowledge remains elusive' (e.g. Fahey and Prusak 1998; Simard 2004, Strassman 1998, Martin, 1996). Practitioners and scholars (Strassman 1998, Nonaka and Takeuchi 1995, Løwendahl et al 2001, Skyrme 2005, Becker and Huselid 1998, Steward 1998, King 2003) discuss the process of knowledge creation, the market value of company knowledge, and aim to conceptualize and capitalize knowledge as a company asset. Successful companies generate value in two distinct ways: they provide value to their clients and they provide value to owners and firm members. Owners gain from both – financial returns and knowledge development, in the latter, this can be seen as the extent to which new knowledge is retained within the firm, and is, in many ways, similar to retained earnings (Løwendahl et al 2001). Therefore, knowledge development is an investment, which company owners have made in order to obtain future value (Becker and Huselid 1998). As from any other investment, companies assume they will receive a return on investment as knowledge development. Therefore, they need a clear picture of how to reflect the benefits of knowledge development, and the expenditure incurred, in the pricing logic.

2.2.3 Defining industrial services and solutions

The industrial services that have been studied in the empirical part of the present thesis do not belong to any particular typology or category. They are operational services (e.g. logistics, order handling), post-delivery services (remote monitoring, maintenance), technology and knowledge intensive services (training, consulting, conceptual design, information management), new services (fuel saving, environmental services) and other services developed by industrial suppliers. Thus in this work the term ‘industrial service’ will be used to indicate all services developed by the industrial supplier, no matter whether they are profitable or not, whether they are tightly bundled to equipment, or more knowledge intensive, whether they are part of long-term solution or a separate offering. In line with several researchers’ opinion (e.g. Lusch et al 2007), this thesis emphasizes the importance of knowledge and technology to industrial service and studies services as a process and from the perspective of value creation (e.g. Grönroos 1998, Vargo and Lusch 2004a, Edvardsson et al 2005). The following general description for industrial services is suggested:

Industrial service is a process of exploiting the competences, knowledge, and technology base of a company’s business, manufacturing, and operational processes. Industrial service can be applied for internal company’s purposes of optimization, innovation, or business development or delivered to the customer in order to provide additional value as an independent offering or as a part of a solution (see definition below). Value is created through interaction between provider and consumers. The word ‘industrial’ emphasizes the context of service development and delivery.

Integrated solutions, lifecycle solutions, tailored packages, and turn-key projects are only a few of the labels used by authors (see e.g. Davies 2004, Hobday, Davies, and Prencipe 2005,) to describe a value adding change in a firm’s strategic focus with the aim of providing customers with solutions to resolve some problems or satisfy certain needs rather than to deliver individual products or services. The mass manufacturing mindset and business models assume that the customer is in charge of integrating the purchased components and sub-systems from the supplier into its own business activity. The solution-oriented approach goes a step further by shifting ownership and responsibilities to the supplier; the solution provider becomes responsible for a particular customer asset during its whole life cycle, or for particular customer operational services including any required integration work (Hobday et al 2005).

The main driver for developing solutions instead of pure products and servic-

es is usually intense competition (Wise and Baumgartner 1999, Tuli, Kohli, and Bharadwaj 2007). The shift toward solutions embodies the new service-dominant logic (Vargo and Lusch 2004a), reflects the tendency of customers to outsource certain expertise and goods (Lovelock and Gummesson 2004), and represents a critical shift in product development (Srivastava, Shervani, and Fahey 1999). The main view in the literature is that a solution is a customized and integrated combination of goods and services in order to meet a customer's needs (e.g. Davies, Brady, and Hobday 2006, Sawhney 2006, Stremersch et al 2001, Miller et al 2002). Industrial marketing research can traced the origins of integrated solutions back to the early 1960s, when companies first developed 'systems selling' strategies and organizations; systems selling was defined as the provision of products and services as integrated systems that provide solutions to a customer's operational needs (Davies, Brady, and Hobday 2007). Following this view, in this thesis the term 'solution' is used when the services (or services and goods) are organized into the offering in order to fulfill specific customer needs or resolve customer problems. Other concepts, such as, for example, hybrid offerings, blended offerings, are used interchangeably when they are mentioned in referenced publications.

Thus, the term '(integrated) (customer) (industrial) solution is used here in order to describe a composition of goods and services (or only services) that are designed by the supplier with different degrees of co-creation with the customer and for the purpose of satisfying precise customer needs, to resolve a certain problem. The solution can be delivered in the form of a turn-key project, a lifecycle solution, a service enriched offering, or a service package and it has a unique value proposition.

The solutions are often characterized by great complexity and high costs, low efficiency and low profitability. For example, according to Stanley and Wojcik (2005), a survey of 200 executives at Fortune 1000 firms showed that about half of the solution providers gained only modest benefits, and 25% of the firms lost money. The research mentions difficulties associated with the scenarios for alternative product use, resistance of companies to fundamental shifts in culture and market engagement, delay in time to market, complexity caused by different life cycles of products and services (Kim and Meier 2010, Luczak et al 2007). Moreover, according to Day (2004), the complexities of developing solutions are difficult to master and even more difficult to copy. Several researchers have discussed the efforts that industrial suppliers have made to develop industrial solutions and have focused on modularization, standardization, and

automation of industrial solution as the means to increase a firm's possibility of outsourcing and off-shoring work, separating complex tasks from routine tasks that can be easily outsourced, dealing with the complexity associated with customer solution (Hellström 2005). Such effort from a firm requires fair compensation, but, in practice, solution providers often fail to set up a moderate price for their solutions (Roegner et al 2001).

The topic of industrial *service* pricing studied in this thesis is broader than the pricing of industrial *solutions*. It also includes such aspects as how to build industrial solutions, how to manage the company service platform, how to identify industrial services for business development, and what is the role of non-profitable services.

2.3 Value and value creation in services

"Each writer uses a different concept of value", Dixon, 1990

Value has been extensively researched in the service sector (e.g. Ramírez 1999, Grönroos 2000, Lapiere 2000, Gemünden 2001, Ulaga 2003, Prahalad and Ramaswamy 2004, Vargo and Lusch 2004a, Brady, Davies, and Gann 2005, Zeithaml et al 2006, Etgar 2006, Walter, Ritter and Möller et al 2007, Spohrer et al 2007, Vargo 2008, Spohrer and Maglio 2010). This section presents the trends in service value research regarding the nature of value in services and the processes of service value creation.

Often service value is seen as a ratio between service quality and cost (Grönroos 1988, Anderson and Zeithaml 1984, Garvin 1982, Tse and Wilton 1988). Vargo and Lusch (2004a) expressed a new perspective on value by highlighting 'value in use' for the customer. The researchers identified the difference between value created by the product supplier and the value created by the service supplier in terms of difference between 'value-in-exchange' and 'value-in-use'. In this perspective, value is realized when a service is used and thus customers become co-creators as well as the judges of the service value.

To emphasize the importance of customer involvement in a service value creation process, the researchers have introduced concepts of value co-creation (Ramírez 1999, Prahalad and Ramaswamy 2004), value co-production (e.g. Jaworski and Kohli 2006, Oliver 2006, Etgar 2006, Vargo 2008), and value co-design (Prahalad and Ramaswamy 2004). The main principles of co-creating can be described as (Jaworski and Kohli 2006):

- The customer as well as the supplier is engaged in the learning process;

- The need, capabilities, and priorities of both customers and suppliers are the subject of learning;
- The supplier and the customer jointly decide which part of the production process each will participate in.

The degree of customer involvement in the value creation process may vary from case to case but the researchers agree that the key success factor for the company going into the service business is an understanding of value creation logic.

According to Lusch et al (2007), in goods-centered logic, value is determined by the producer and embedded in the operand resource (goods). In service-centered logic the value is perceived and determined by the consumer; value sometimes can be transmitted through goods, but the supplier can only make a value proposition – a promise. Service-dominant logic conceptualizes terms of “co-production” and co-creation” in a following way:

- Term “co-production” is used to emphasize the collaborative nature of the process of creation of outputs; it indicates customer involvement, which, however, can be different, depending on the industry, the services, and the needs; therefore, “co-production” is an optional process.
- Value is always co-created through the integration of resources and application of competences of service producers and consumers (e.g. Vargo and Lusch 2004a).

Service systems are described as value co-creation configurations of people and technology, connected by value propositions and shared information, using certain models and measurements (Spohrer et al 2007). According to Spohrer and Maglio (2010), without value creation no service has been rendered. Value is created through the interactions between the service system entities. The author emphasizes that ‘value co-creation can occur when the KPIs of two or more service-system entities become linked in ways that improve the KPIs together’ (Spohrer and Maglio 2010). Value co-creation is more effective if there is strategic congruence between the client and the service provider. This congruence exists when both the client and the service provider have sufficiently related value creation strategies. Efficient value creation in client - provider relationships is premised upon motivation, commitment, and trust (Möller et al 2007). Through their competences and activities, customers have a decisive role in the realization of the end-value out of the value “potential” embodied in any service provider’s value proposition. This view directs attention from the providers’ value production to understanding

the clients' value-creating systems and the capabilities involved and leads to an understanding of the client-provider collaboration (Möller et al 2007).

Consistent with these ideas, the industrial service researchers increasingly see industrial services as processes that are co-created and co-performed by value network participants. The value of industrial services is created and realized together with the customer and often at the customer's premises (Paloheimo, Miettinen, and Brax 2004). Such a new set up in value creation and distribution requires sharing of risk and responsibilities, which in turn requires an understanding of the most rational division of labor to best utilize the advantages of each partner (Paloheimo et al 2004, Brinkerhoff 2002). The concept of value co-creation is of considerable importance and a challenge for industrial services (Paloheimo et al 2004), especially as many manufacturers of industrial products have a globally distributed production. Although local operations are conducted through regional sales offices, knowledge required for value adding services should be obtained from the global organizational structure.

A systematic approach is required to manage the complexity of relationships, technologies, and organization in industrial service systems in order to create an industrial service development process that can provide a detailed view of what the key factors are in service systems. These factors would include: the different phases of service development, the inputs and outcomes of the service process, and the required capabilities in order to create value. The recently developed and discussed concept of New Service Development sheds light on these issues and provides a framework for value creation activities.

2.4 New service development process – systematic view on value creation process

The above-mentioned concepts of value co-creation, value co-design, and value co-production require a new active customer role in value creation, and emphasize the importance of customer involvement already at the early stages of service development, when objectives and content of service are identified. Thus, the New Service Development (NSD) concept, extensively discussed in the last decades (Cooper et al 1994, Edvardsson and Olsson 1996, Perks and Riihela 2004, Kindström and Kowalkowski 2009, Fitzsimmons and Fitzsimmons 2000) can provide a systematic view on value creation processes in services, as a means of ensuring customer presence and describing the customer's role during service development. Alam and Perry (2002) have described the customer's role and involvement in each of stages of service development and according

to the model developed by them, emphasis should be placed on the customer's input at the idea generation, service design, and service testing stages.

Though many companies intend to sell new and renewed services for existing and new customers, organizations often lack systematic support and implementation of related value creation processes and perform them in an ad hoc manner (Kim and Meiren 2010). The NSD concept is commonly explained in the context of service innovation (Kim and Meiren 2010, Fitzsimmons and Fitzsimmons 2000). Service innovation comprises three main phases: (new) service development, service operation, and service improvement. The service operation and service improvement phases have been intensively studied, but the service development phase has not been rigorously addressed in marketing literature (Kim and Meiren 2010). The term "new" here is used in order to distinguish a development phase from an improvement phase of service innovation rather than to emphasize the novelty of the service developed.

By reviewing several NSD described in literature and referring to New Product Developing processes, Kim and Meier (2010) have defined a common process for NSD that consists of five steps: opportunity identification, customer understanding, concept development, process design, and refinement and implementation. Each phase of NSD is supported by various methods, including, for example, QFD (quality function deployment) and service blueprint. QFD (Hauser and Clasing 1988) is one of the methods that help to translate customer needs into production requirements, processes, and development items. This method can be applied in different NSD phases and requires different actions depending on the context of a particular phase. A service blueprint is a visual diagram of service delivery (Shostack 1984); it visualizes the process delivery and customer interaction.

Fitzsimons and Fitzsimmons (2006) describe four stages of a new service development process. The development and analysis stages belong to the planning phase; the design and launch stages belong to execution phase. The authors emphasize the importance of facilitators for NSD – i.e. people, tools, organizational context. Although the authors classify service innovation into radical and incremental, they describe the outcome as service innovation not as a new service product. Service innovation is being therefore rather a modification of existing services, which originated from different sources, such as customer suggestions, market trends, customer needs, and new technology. The NSD stages consist of the following activities (Fitzsimons and Fitzsimmons 2006):

- At the development stage - formulation of new services, objectives, strate-

gies; idea generation and screening, concept development and testing;

- At the analysis stage - business analysis, project authorization;
- At the design stage - service design and testing, process and system design and testing; marketing program design and testing, personnel training, service testing and pilot, test marketing;
- At the full launch stage - full-scale launch, post-launch review.

Kindström and Kowalkowski (2009) emphasize the cyclic nature of NSD; they point out that each development stage takes into account different sources of new service innovations as an input, which reflects successful and poor experiences from previous stages.

Alam and Perry (2002) have identified two 10-stages models of NSD, one containing linear sequential stages and another containing some parallel stages and described the customer's role at each of the stages. The author expressed the belief that the companies that adopt customer-oriented NSD process will lead their industries in the twenty-first century (Alam and Perry 2002).

Less linear service development models are also emerging, for example, those based on the ideas of effectuation (Read et al 2009). The effectual approach has a close connection with the basic thoughts of service dominant logic (SDL) and suggests the replacement of predictive logic with a means oriented approach in order to resolve market uncertainty. The means oriented approach starts from the available resources, and goals emerge in the courses of the action (Toivonen and Tammela 2013). This approach clearly differs from linear processes and should be considered in future studies.

The present trends in NSD research can be summarized as: acceleration of NSD (speed of development and launch), provision of integrated IT platforms (tools that facilitate each step of NSD), customer involvement in service development, and development of product service systems (PSS). For practitioners, the NSD process provides a good practical tool to assess service maturity and manage uncertainty.

However, such an important and crucial aspect for performance as pricing is left to the marketing stage, and not seen as an issue for the whole NSD process (e.g. Fitzsimons and Fitzsimmons 2006, Kindström and Kowalkowski 2009). NSD is seen as a back office planning activity (Kim and Meiren 2010), whereas the pricing function is often assigned to the front office unit, for example, regional sales units; therefore actual pricing is separated from NSD.

2.5 The role of relationships in services

Researchers from the service field (e.g. Brady, Davies, and Gann 2005, Ulaga 2003, Lapiere 2000, Walter, Ritter, and Gemünden 2001, Grönroos 2000) are almost unanimous on the importance of customers in value creation for services (see section Value and Value Creation in Service). Value co-creation emphasizes the development of customer–supplier relationships through interaction and dialogue, and poses the question of how development of customer relationships affects the value of services.

Engaging customers and value network partners in co-creation and co-production activity increases a firms' competitive advantage (Lusch, Vargo, and O'Brien 2007) and emphasizes the importance of the relational perspective of value for the services (Barry and Terry 2008, Liljander and Roos 2002, Möller and Törrönen 2003, Anderson and Narus 1990). The exchange relationship between the client and the supplier helps to determine the value creation logic and competences required for services (Möller et al 2007). Social bonds between customers and suppliers provide not only social benefits but also a utilitarian value to the customer through, for example, an increased number of satisfactory interactions and increased customer loyalty – an accepted metric of business performance (Selnes and Hansen 2001).

Industrial services are also much more relationship-oriented than the business of a traditional equipment manufacturer. The governance of relationships can be performed by contract terms (Williamson 1975) as well as through informal moral obligations and commitments. Customers are willing to collaborate on long-term and complex issues with those suppliers who better understand their tasks and business models and are concerned about their needs. Despite the opinion (e.g. Grönroos 1975) that the advantage to companies regarding markets depends on the company's ability to implement relational contracts, many manufacturing companies still tend to rely more on the success of single transactions rather than long-term relationships with customers. Nowadays, such mass marketing approaches are less effective in the modern mature and oversupplied markets (Grönroos 2000). It is difficult to find new customers; therefore, it is important to invest in existing relationships. A common reason for a manufacturing company to develop industrial services is that goods become commodities (e.g. Ostrom et al 2010) and the company is looking for an additional source of competitiveness and cash flow. However, by applying methods of mass marketing or goods-dominant logics, for example, by ignoring relational aspects in service development and

pricing, companies might lose opportunities to fully benefit from their new service-enriched solutions.

Historically, trading has had a high relationship-orientation, but the Industrial revolution, new production methods, and mass consumption benefited more from transactional or exchange perspectives in economics. The adaptation of goods-dominant approaches in the service sector, such as investing in mass marketing and the facilitation of exchange, led to a reputation for poor services and poor quality, particularly in the Western world during and after the Second World War period (Grönroos 2000). The tendency to apply goods-dominant logics to service development and marketing is still visible. Large manufacturing companies often apply mass marketing methods to, for example, service pricing, thus underestimating the significance of customer satisfaction and loyalty. A further relational aspect, customer retention via acquiring, can be summarized by the impressive statements of Emmet C. Murphy and Mark A. Murphy in their book, 'Leading on the Edge of Chaos': "Acquiring new customers can cost as much as five times more than satisfying and retaining current customers; a 2% increase in customer retention has the same effect as decreasing costs by 10%," (Murphy and Murphy 2002, p.43).

2.5.1 Understanding of relational value

Marketing and management research is still dominated by models developed for corporate products that appear to be imprecise if applied to services (Egan 2001). However, the development of industrial services requires new concepts, service specific models, and approaches, due to differences in the value creation process and the role of relationships. The concept of value creation and distribution requires rethinking and needs to move from a product perspective towards a service perspective (Vargo and Lusch 2004b). The lack of a tangible manufactured product challenges the traditional marketing mix, increases the importance of perceived value and quality, and raises a need for a customer-oriented approach in service development (Grönroos 1996, Egan 2001). The inseparability and complexity of supplier-customer interactions emphasize the importance of relationship-orientation in service business (Grönroos 1995). It is often difficult for industrial companies to compete on service content and price due to low offering transparency and high technology complexity. The main competitive advantage, therefore, becomes the strength and duration of the customer-supplier relationships that result in customer loyalty, retention, and commitment.

The idea of relationship marketing first started to emerge in services marketing research because traditional marketing management did not function well

for service companies (Egan 2001, Grönroos 1995). The topic of relationships began to dominate marketing studies and the importance of relationships has been widely accepted among industrial business practitioners. Understanding relationships requires distinguishing between the discrete transaction (which has a distinct beginning, a short duration and an ending) and performance and relational exchange (which grows from previous agreements, and is longer in duration and reflective in nature) (Dwyer, Schurr, and Oh 1987). Relational capital can be understood as a socially-generated asset that reflects the mutual trust and friendships that arise as individuals within cooperating firms interact (Kale, Singh, and Perlmutter 2000). One of the reasons for manufacturing companies to focus increasingly on services is the pursuit of longevity in their business relationships with service customers. As providers of capital goods, they already have knowledge of the buyers of their manufactured products and existing relationships, through re-purchases, spare part sales, and maintenance services. As long-term relationships generate a history of exchange that promotes social attachments and trust (Granovetter 1985, Gulati 1995, Macneil 1978), these relationships already have valuable capital on which to build. Measurements of the relational capital between organizations have been constructed and found to be associated with greater exchange value that supports the view that relational capital satisfies the economic definitions of capital (Elfenbein and Zenger 2009). Therefore, it is important not to overlook relational values in the context of industrial services.

In their widely accepted relationship model Morgan and Hunt (1994, p.22) suggest that the key success factors required to establish, develop, and maintain relationships are trust and commitment, 'not power and its ability to condition others'. Commitment and trust encourage marketers to preserve investments in relationships by cooperation with partners, as well as to resist attractive short-term alternatives in favor of expected long-term relationships with existing partners. Commitment and trust, which are both needed, lead to improved efficiency, productivity, and effectiveness (Morgan and Hunt 1994).

2.5.2 Commitment and trust

Researchers define commitment as the desire to continue a relationship, which is based in both emotional and commercial bonds and has three main dimensions: inputs, durability, and consistency (Hennig-Thurau and Klee 1997, Dwyer et al 1987, Wilson 1995, Mowen and Minor 1998). Commitment is a factor that leads to enduring relationships and therefore can be used to measure the future of a relationship (Grönroos 1996, Dwyer et al 1987, Wil-

son 1995). According to Morgan and Hunt (1994), commitment means that exchange partners believe that an ongoing relationship is so important that they need to invest their maximum effort into maintaining it; the committed party believes the relationship is worth working on in order to ensure that it endures indefinitely. On the other hand, a good reason to pursue commitment and to build trusted long-term relationships in the industrial world is to minimize the transaction costs related to reaching agreements. The costs are generated by adopting and enforcing terms of agreements, searches, information, and bargaining costs in the relational exchange between customer and service provider (Doney and Cannon 1997, Hennig-Thurau and Klee 1997, Gounaris and Venetis 2002, Williamson 1985). These costs are incurred, at least to some extent, every time a new relationship is initiated.

Trust has received attention from a management and research perspective (Garbarino and Johnson 1999, Sirdeshmukh, Singh, and Sabol 2002, Delgado-Ballester, Munuera-Alemn, and Yague-Guillen 2003, Garbarino and Lee 2003, Kumra and Mittal 2004). While discrete transactions are governed by formal mechanisms such as written contracts, informal mechanisms (e.g. trust or norms) play an important role in relationships (Cannon, Achrol, and Gundlach 2000, Heide 1994, Palmatier et al 2006). Trust is central in successful relationships and relationship marketing is built on trust (Berry 2000, Morgan and Hunt 1994, Moorman, Zaltman, and Deshpande 1992, Doney and Cannon 1997). Due to the relational nature of services, trust is widely accepted as a key mediating variable in the service relationship (Ganesan 1994, Palmatier et al 2006) and gains importance as the scope of the supply becomes more immaterial and uncertain (Smyth, Gustafsson, and Ganskau 2010). According to several writers (Dwyer et al 1987, Han, Wilson and Dant 1993, Doney and Cannon 1997) the intangible nature of services necessitates a high level of trust from a customer because of the limited objective measurements of quality. Trust plays a major role in the management of a service company (Grönroos 1994, Gummesson 1994). Smyth et al (2010) show that in industrial services turnover and profitability is significantly higher in high-trust relationships because of the risk-reducing effects of trust.

Researchers have performed several initiatives to conceptualize trust and define the main characteristics of trust (Kantsperger and Kunz 2010). They define trust as, for example, the belief that a party's word is reliable and that obligations will be fulfilled (Dwyer et al 1987), or as the customer's belief that the other company will perform actions that will result in positive outcomes for them and not take unexpected actions that would result in negative outcomes

(Anderson and Narus 1986). Some writers emphasize the links between trust, confidence, and the recipient's perception of the benefits provided and the achievement of goals (Lewin and Johnston 1994, Dorsch, Swanson, and Kelley 1998, Gwinner, Gremler, and Bitner 1998). According to Doney and Cannon (1997) credibility, belief in effectiveness and reliability, benevolence, and interest in the customer's interests are integral components of trust. Smyth et al (2010) define trust as follows:

‘Trust is a current conviction that another party is willing to take individual and organizational interests into account within the context and under possible events. Trust is intuitively, sometimes part-cognitively, assessed concerning the other party from recent past performance and longer term reputation through the lens of personal history, hence experiential disposition to trust, coupled with organizational capability (cultural, systemic and procedural path dependency) to accommodate trusting relations. The presence of a trusted party: (i) reduces perceived (interpreted or ‘subjective’) risk; (ii) renders the relationship, organizational and project context more conducive to further (real or ‘objective’) risk reduction; (iii) creates organizational and project opportunities to improve the service and content quality’.

In addition to the commitments and trust described above, there are more factors and indicators describing business relationships, such as customer satisfaction and service quality.

2.5.3 Service quality and customer satisfaction

Research has demonstrated the strategic benefits of quality in contributing to market share and ROI, in addition to lowering manufacturing costs and improving productivity (Anderson and Zeithaml 1984, Garvin 1982, Tse and Wilton 1988). Traditionally (for example Grönroos 1990), it has been stated that it is difficult to manage service quality, because it is created anew during every service encounter and because it has no absolute measures, as it depends on the subjective experience of the customer. Following this line of thinking the greatest difference between quality in manufacturing goods and quality in services lies in the person-person interactions or social competences, and the ability to relate and interact with the customer on a personal basis (Brown et al 1991). However, with increased use of IT technology and the possibilities created by the Internet, and other media, the issue of service quality is becoming increasingly equated with the issue of the quality of manufactured products.

With a rise in service quality expectations also increase, and customers are likely to complain if the quality is seen to fall even a little (Pratt 2003). There

is probably no benefit in over-providing quality: it simply costs more money. Over-provision of quality may raise expectations to a level which later becomes unsupportable. Quality must be consistent since inconsistent quality is equated with poor quality by the customer (Hiles 1993).

Thus, the ultimate goal is not high quality but customer satisfaction, which is a product of many factors besides quality, for example, expectations.

Two general conceptualizations of satisfaction exist in literature: transaction-specific satisfaction and overall satisfaction (Lam et al 2004). Transaction-specific satisfaction is an evaluation based on recent purchase experiences (Boulding et al 1993); it relates to the customer's satisfaction with a discrete service encounter (Bitner and Hubert 1994). Overall satisfaction refers to the customer's overall satisfaction with the organization based on all encounters and experiences with that particular organization (Bitner and Hubert 1994), disregarding any specific transaction (Johnson and Fornell 1991). Both expectations and desires have an influence on overall customer satisfaction. While transaction-specific satisfaction can at times be low during a long-term relationship because of a failure, overall satisfaction is related to trust and can stay constant or even increase due to a successful recovery. Since it is more difficult to evaluate a service than a product until it has been experienced, satisfaction plays a crucial role in the customer's choice when buying services. According to Parasuraman, Zeithaml, and Berry (1988) the degree of overall satisfaction is more capable of evaluating the service performance and more precise in predicting consumers' further purchasing plans.

Marketing researchers define the links between price fairness and customer satisfaction (Hermann et al 2007, Kukar-Kinney, Xia, and Monroe 2007, Martin-Consuegra, Molina, and Esteban 2007), as indicating that the customer's acceptance of a certain price level is dependent on their level of satisfaction and loyalty. Consequently, the converse is also true that price fairness and the way it is achieved impacts on customer satisfaction.

Although it sounds simple, many companies fail to recognize customer's expectations (Evans and Laskin 1994, Nickels and Wood 1997). While service quality is an overall construct of perceptions about a firm's service provision, satisfaction is based on an individual service encounters (Boulding et al 1993). In a business-to-business context, satisfaction can be defined as a positive affective state resulting from the appraisal of all aspects of a firm's working relationship with another firm (Geyskens, Steenkamp, and Kumar 1999). In order to build and manage relationships, organizations employ a variety of tools to measure customer satisfaction and customer needs. In practice, sat-

isfaction is usually measured by the post-purchase evaluation of a product or the service's actual performance with respect to the customer's expectations (e.g. Bolton and Drew 1991).

A significant body of research (e.g. Berry and Parasuraman 1991, Han et al 1993, Evans and Laskin 1994, Wilson 1995, Patterson et al 1997) reveals a positive link between customer satisfaction and purchase intentions, and suggests that relationships remain unharmed / undamaged when both parties are satisfied. Studies of satisfaction and post purchase behavior have shown that satisfaction has important financial value to a service provider in that it positively impacts on customer retention and market share (Zahorik and Rust 1992, Rust and Zahorik 1993). Customer satisfaction depends on an understanding of their problems and interests, an interactive relationship, consistency in time and budget, meeting expectations, matching previous experience, and predictability (Day and Barksdale 2003, Patterson 1995, Doney and Cannon 1997).

Expected and consistent quality of delivered services nurtures satisfaction. Unfortunately, sometimes there are failures in service and problems in delivery, which lead to dissatisfaction and can eventually destroy the customer-supplier relationship. What can the service provider do to sustain the relationship and restore satisfaction, and even increase it? Can service value be sustained or even increased if the service provider is able to promptly take action and impress the customer? Is it possible to diminish or prevent the negative effects of service failure and turn the situation into an opportunity through successful service recovery? The Literature review continues on these topics in order to reveal how service failures and therefore satisfaction affect service value and how it should be considered when pricing.

2.5.4 Service failure and service recovery

Service failure can be the result of many different causes and occur in many different ways. In order to better understand the phenomenon of failure and to be able to find ways to prevent it or mitigate its negative impact it is necessary to categorize the causes as well as the potential problems that indicate failure. One main consideration is that the different kinds of problems obviously necessitate different preventive measures and recovery procedures. Service failure can occur before, during, or after a service encounter (Rekola 2007): problems during preparation, problems during actual service encounters, and problems during follow-up.

In an industrial service exchange, the customer usually has responsibilities and accountabilities besides paying for the service. The term customer as

co-producer occurs frequently in literature (e.g. Wikström 1996). The idea is that when the customer is conceived as a co-producer, the interaction between the parties should generate more value than a traditional transaction process. Since customers participate in the value creation, even some of the problems may be caused by their actions, however well-intentioned they may be. From the point of view of the service provider, a participating customer representative may be more of a nuisance than of any real aid (Seiter, Gille and Stirzel 2010, Rekola 2007). However, for the customer to be satisfied, even this 'harmful' participation may be essential and should thus be tolerated. Obviously, customers sometimes can cause problems by acting in a way that should not be tolerated. For example, if the customer fails to provide access to the equipment intended for repair even though this was agreed to be their responsibility, the customer is clearly to blame. Nevertheless, even situations such as this have to be handled with care in order not to damage the future of the relationship (Rekola 2007).

Obviously not all problems are originated by customers, although in the context of relational value it is these that are of particular interest. For example, service delivery teams may unintentionally make mistakes, internal collaboration between back-office support and service engineers may fail, or a totally unforeseen and accidental event may occur. Causes of service failure can be categorized in several ways. For example, Gustafsson et al (2010) proposes six categories: quality of product, quality of solution, quality of organization, initiative and fairness (generosity), respectfulness, and responsibility. According to Rekola (2007) the problems with services can be divided into the following five groups:

- Problems caused (directly or indirectly) by customers (ignored responsibilities, disturbing participation, etc.);
- Problems caused by the service personnel (mistakes, forgotten spare parts, failure to interact with the customer representatives, etc.);
- Accidents, illnesses, unavoidable disasters (storms, power outages, etc.);
- Problems caused by the internal service organization (back office support, etc.);
- Problems originating in the objective of the service (for example undocumented changes in the equipment to be maintained).

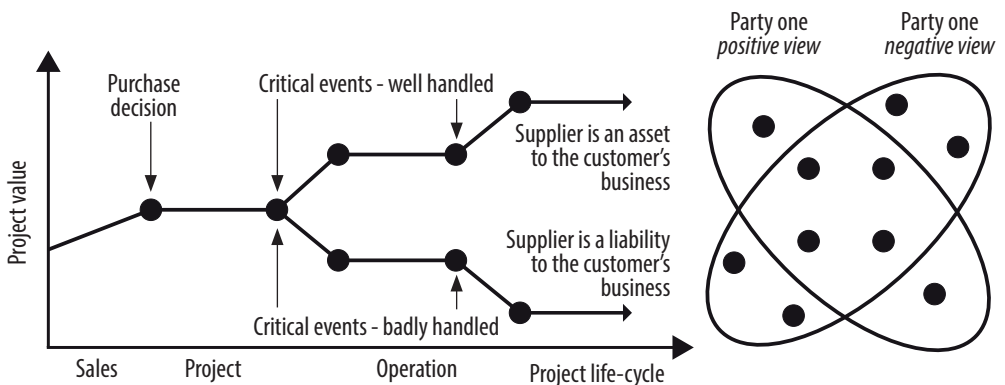
However, what links service failure, service recovery, and satisfaction is an important satisfaction element in industrial marketing - complaint handling

(Homburg and Rudolph 2001). There are six aspects of organizational responses to customer complaints (Davidow 2003) that can affect satisfaction: timeliness, facilitation, redress, apology, credibility, and attentiveness. Because of the customer-supplier duality in service supply chains (Sampson 2000), another satisfaction element consists of the supplier's accessibility and the customer's ability to contact the supplier. A quick resolution to service failure is an important way to create satisfied and loyal customers (Fitzsimmons and Fitzsimmons 2006). The interaction with the supplier's field and internal staff also plays a significant role (Homburg and Rudolph 2001). The attitude and behavior of front line service employees can have a spillover effect on the customer's evaluation of the service delivered (Heskett et al 1997).

All service encounters affect future service expectations and consequently satisfaction. Service recovery – including complaint handling procedures, compensation, and all contact with front line personnel – can also be considered a service encounter. Thus, the recovery experience inevitably affects the perception of quality as well as future expectations. Evaluations of successful encounters can also be negatively influenced by experiences of failed service encounters or ineffectively handled service recovery. Successful service recovery requires systematic planning and management of recovery procedures (Rekola and Haapio 2009).

Gustafsson et al (2010) show (see Figure 2.2) that when critical events are properly handled in industrial delivery projects with significant service input, the project value increases, and this is also evidenced in the project margin development.

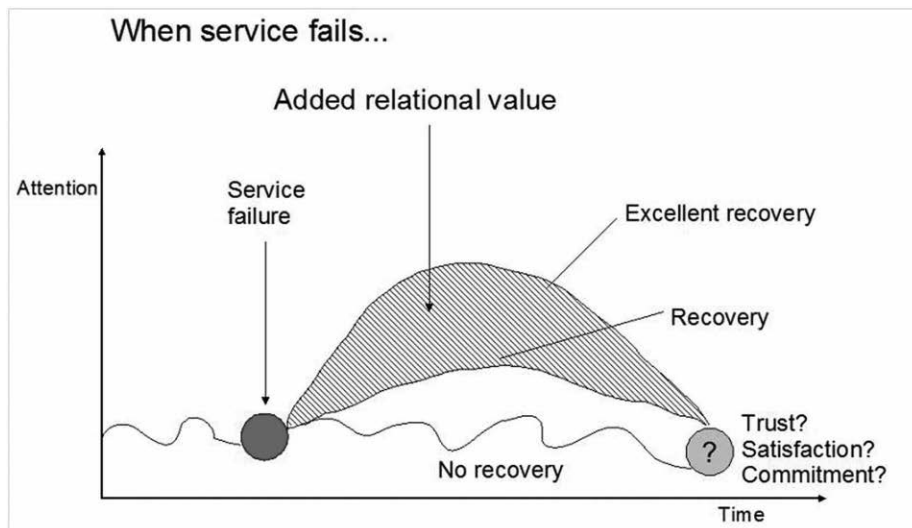
Figure 2.2. Development of perceived value from service recovery (from Gustafsson et al 2010)



The key element in handling recovery situations lies in maintaining trust in such a way that the issue threatening the agreement is seen as external to the relationship. If, on the other hand, the event is handled badly then the customer is likely to see the supplier as a threat to the agreement/ transaction and will take mitigating actions. Gustafsson et al (2010) argue that the customers will discount any future relationship based on present and past experience. If the critical event is handled well the value of the project or installation increases as the customer expects future problems to be handled equally well. If, on the other hand, the critical event is handled badly the value of the project or installation decreases as the customer expects a poor performance when a problem occurs in the future.

Similar ideas applied to services are presented by Rekola and Haapio (2009) in Figure 2.3, which illustrates the impact of recovery procedures and increased attention to customers as regards relational value.

Figure 2.3. Added relational value (adapted from Rekola and Haapio 2009)



When there is a problem, the customer is immediately focused not only on the service element that failed, but on everything else the service provider does or does not do. The customer expects immediate attention and a quick return to business as usual. Thus, it is vitally important for the service provider to succeed in service recovery. If the failure is resolved to the customer's satisfaction, it is possible that they are so impressed with the service provider's actions and recovery procedures that they are happier in the end than before the failure.

This added relational value is presented in Figure 2.3 as the difference between the higher level of attention of more successful recovery procedures and the lower level of attention of less successful recovery procedures. Both models show that relationship can create added value through increased attention to customers' problems. The main question for the supplier is then: what are the real benefits from a careful approach to relationships with customers? How can monetary and non-monetary value be derived from an investment in the development of relationships? In other words, what should the supplier pay additional attention to as regards the customer's problems, and how can this be reflected in the pricing of these additional efforts related to maintaining customer relationships?

The relationship is not only built upon 'intangible' elements, such as trust, satisfaction, and commitments. Price is an important element of relationships that affect the customer's attitude and is directly connected to the perceived value; it can also impact mutual commitments. A suitable pricing model can enable further relationship, and, in contrast, an inappropriate pricing can prevent further developments of the relationship; customer will buy only the most necessary services if the supplier does not consider investments that can improve customer performance (Lukassen and Wallenburg 2010).

2.6 Pricing

1 % price improvement leads to 12.5 % profit improvement for most firms (Hunt 2011).

Pricing as a concept and term is understood by everyone but is used by practitioners, academics from marketing, and management researchers in a different way.

Companies perform pricing research within the scope of market research in order to discover what customers are willing to pay and how to maximize profit, or revenue, or market share, by employing the optimal price. There are several approaches to pricing research performed by practitioners in order to improve pricing. For example, the Gabor-Granger technique, a mature pricing technique by which a respondent is asked how likely he/she is to buy the product at a stated price. Another is the traditional van Westendorp Price Sensitivity Monitor technique, where respondents are asked four price-related questions that are then evaluated as a series of four cumulative distributions. The Brand price trade-off method offers a simple way of assessing the relative value of the brand by ranking customer preferences. Conjoint analysis is a method of

dividing a product or service into elements and then testing combinations of these elements to observe what customers prefer. All these methods, reliable and proven on consumer markets, have little if any application in an industrial service context. The main assumption underlying these methods is that respondents (actual and potential customers, market specialists, sales force, etc.) are able to envision the pricing landscape and that price is an intrinsic measure of value and quality (e.g. Van Westendorp 1976). However, this is often not the case in highly complex and customized industrial projects. Customers are not able to evaluate an industrial offering and cannot compare it with competitors' proposal because there is no market yet for certain industrial services (for example, those related to the newest technological breakthrough). Another problem might be that the feedback loop is too long, for example, with a 30 year equipment life cycle solution. Using a conjoint analysis method in order to discover how the customer values different modules and functionalities of the service, will, most likely, not increase the transparency of the pricing in a manufacturing context. This is due to the fact that the content of industrial service packages are very much predefined by industrial project delivery, including equipment and basic services such as installation maintenance and support. Therefore, it is difficult to assess the value of modules and functionalities of advance service packages separately from the basic offerings.

Traditionally in academic research, the main goal for pricing has been to establish a monetary equivalent to complex combinations of sacrifices, to find a maximum monetary sacrifice that customers are willing to make for the service (Avlonitis and Indounas 2006a), and, therefore, pricing reflects the ability of a firm to generate rents (Dutta, Zbaracki, and Bergen 2003). There are different approaches to pricing in the modeling of modern service-system ecology that come from the different discipline clusters. Marketing and behavioral science focuses on the customer's perspective on service systems and takes a value-based view on pricing and quality as a measure. Operations and management science represents the provider positions and measures productivity by cost-based pricing methods. Strategy and learning science perceive the matter from a competition perspective and apply strategic pricing in order to achieve sustainable innovation (Spohrer and Maglio 2010).

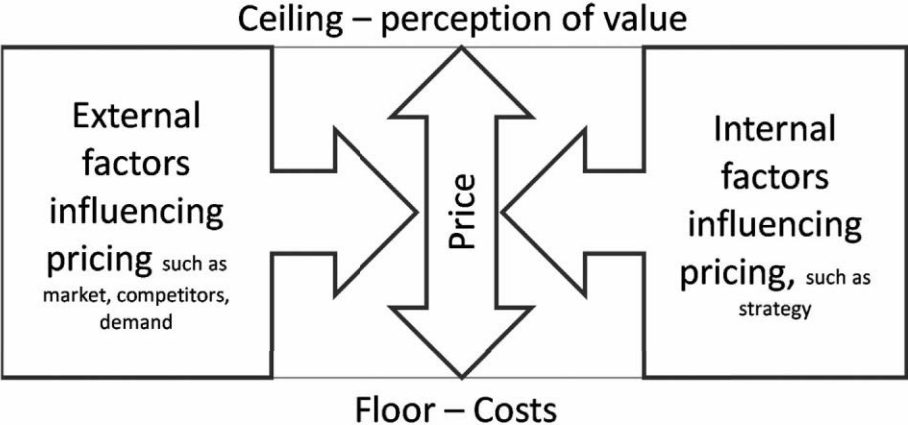
2.6.1 Strategic and marketing view

The researchers from the strategic and marketing fields approach pricing as an element of the marketing mix (e.g. McCarthy 1964, Bennett 1997, Grönroos 1994, Kent 1986, Möller 2006). The researchers examine different methods of

pricing and their applicability, the models and frameworks that shape and feed pricing method selection, the customer’s perception of pricing and willingness to pay, the relationship between prices and costs, the role of pricing for other elements of the marketing mix, and the role of pricing as a quality indicator. In general, the strategy and marketing researchers recognize the crucial role of pricing in economic performance as it is the only element of the marketing mix that generates revenues, but they seem to neglect expenditures and efforts related to price setting (Shipley and Jobber 2001). Pricing research in marketing is focused on normative strategies, consumers’ price, and value perceptions; some studies are focused on the practices through which organizations arrive at price settings (Ingenbleek et al 2003).

According to Kotler and Armstrong (2010, p.59) price is the ‘amount of money charged for a product or service, or the sum of all the values that customers concede in order to gain the benefits of having or using a product and service’. The researchers admit that recently non-material factors affecting customer choice are of great importance but the price remains the most important element for market share and profitability. As mentioned already, price is the only element in the marketing mix that produces revenue, all other elements represents costs (Armstrong and Kotler 2009). One typical problem in pricing is that price setting is too cost - oriented instead of being customer-value oriented, ‘smart managers treat pricing as a key tool for creating and capturing customer value’ (Armstrong and Kotler 2009). Armstrong and Kotler (2009) suggested a framework for price setting (see Figure 2.4), in which they define the ‘floor’ for price as the supplier’s costs and the ‘ceiling’ for price as the customer’s value perception.

Figure 2.4. Framework for price setting (adopted from Armstrong and Kotler 2009)



The authors refer to pricing as a marketing task i.e. to set prices in between the floor and the ceiling taking into consideration a number of internal and external factors, including strategy, market nature, demand, and competitors. According to this framework, customers will not pay more than the perceived value, and supplier will not sell for a price below the costs level.

Relational factors can extend this framework for service pricing in an industrial context. In a complex industrial world with importance being placed on relationships, and because of the high level of bundling of products and services, and difficulties of finding similar technological solutions, customers might pay in advance for future benefits, long-term relationships, and expected higher performance. This basically means that a pricing model should reflect the level of customer trust and commitment. The significant shifting of the 'ceiling' can be achieved by customer value management through a differentiated and clear value proposition. Though the costs are the floor for pricing, the industrial companies often sell some services and products below cost level in order to enable sales growth for other products, or for expansion and entering purposes (Reen et al 2011, Oliva and Kallenberg 2003).

2.6.2 Importance of the process approach for pricing – pricing is a capability

"To develop the ability to set right prices, a firm must invest in resources and routines" (Dutta et al 2003)

Another approach to pricing is to describe and study actions, routines, and decisions that lead to price setting, in other words, to focus on the process of pricing. This approach is used in management disciplines and often contributes to a resource-based view and theory of organizational behavior (Cyert and March 1963, Dutta et al 2003). The researchers from managerial domains argue against the commonly shared opinion (e.g. Rao, Bergen, and Davis 2000) that pricing is relatively costless or a simple process, and that it is the only element in the marketing mix that does not require expenditure. They argue that the price-setting process may be a sufficiently complex process, especially in value driven strategies, where pricing should take into account value allocated to the different players (Dutta et al 2003).

According to the resource-based view, companies should combine their resources and capabilities in a way that other companies cannot easily imitate, and consequently enjoy a competitive advantage (Barney 1991). Firms are continuously looking for means to increase the quality and functionality of their offerings, as well as ways of decreasing the costs of production

and delivery, in order to create additional value for customers (Peteraf 1993, Montgomery and Wernerfeld 1988). Although the way to create value is of paramount importance for companies, the manner in which companies capture value leads directly to their financial performance. Created value does not always generate adequate financial return; in order to capture potential rent, a company should establish proper pricing (Dutta et al 2003). Pricing processes and routines affect a company's ability to set prices and capture values. Additionally, pricing processes can be seen as a firm's capability that is difficult to imitate due to time compression diseconomies (Dierickx and Cool 1989), which can lead to a competitive advantage. Despite the fact that high technological and innovative companies are indeed able to create value, they often have difficulties to transform this into material benefits for themselves and their customers due to simplistic pricing approaches. The majority of companies have pricing managers and pricing processes in place; however, companies fail to achieve the full benefits from created value due to a lack of attention, and low investments in pricing processes. This is especially true in the case of setting changes in pricing mechanisms caused by the development of new offering or changes in the business context.

Following a behavioral theory for firms, an evolutionary theory and resource-based view in addressing how routines influence what firm do, Dutta et al (2003) argue that the pricing process, as a capability, affects essential output – actual price-setting. The authors describe the pricing process as a capability including associated actions, routines, skills, and coordinating mechanisms. According to Dutta et al (2003) a price-setting capability consists of a pricing-setting capability within the firm and price-setting *vis-a-vis* customers. A pricing-setting capability within the firm includes identifying the competitor's price, establishing a price strategy, performing an analysis of proposed prices, and gaining commitment to the new prices. Pricing-setting *vis-a-vis* customers includes convincing customers of the price change logic, and negotiating price changes with major customers. The authors argue that developing the capabilities mentioned above takes time, attention from top management, and effort by the firm.

The consecutive pricing method was proposed by Alfred Richard Oxenfeldt in the 1960s as an alternative to fuzzy pricing decisions involving divergent numbers and lack of consensus on price setting (described, for example, in Oxenfeldt 1973). The long-term and policy-oriented pricing method or, actually, process, consists of successive stages: selecting market targets, choosing a brand "image", composing a marketing mix, selecting a pricing policy, determining a pricing strategy, arriving at specific price. According to Oxenfeldt

(1973), the number of influencing factors and decisions related to pricing is so large that in order to take into account all of them simultaneously a computer is needed. This is why he suggested the consecutive stages (as time has shown that even super powerful computers cannot often resolve all the problems and complexities related to pricing and help business manager to make the right decision). This fundamental description of the pricing approach had two main advantages: it ensures a long-term enduring approach to pricing, and enables consecutive and logical decision making.

2.6.3 Service pricing

Unlike product pricing, service pricing research, especially industrial services pricing, exists on a much smaller scale. Two ultimate views on service pricing can be summarized as below:

- Service pricing follows the same trends as product pricing, and therefore, the same rules can be applied; a key factor distinguishing the services from physical goods is the human element and it can often be included as a new parameter in the services marketing mix (Bitner and Booms 1981, Cowell 1984, Melewar and Saunders 2000, Grove et al 2000). The human factor emphasizes the personal nature of the services marketing; for example, the personnel of a service provider are an important tool for customer persuasion, and a major influence affecting the customer's perception of the service quality (Constantinides 2006);
- Service research (and pricing as part of it) has nothing to do with product research and therefore requires a separate science and a new service-minded approach to pricing (Vargo and Lusch 2004a).

Donald W. Cowell in his fundamental basic book "The marketing of services" (1984) described the complexity related to service pricing, and studied the characteristics of services and their influence on service pricing. In his book he also suggests a classification of services for pricing purposes, and examined pricing, and marketing strategies and methods. However, he finally arrived at the conclusion that the complexity of the problems related to the pricing of services is no different than to the pricing of goods. According to Cowell (1984) the classical multistage approach for pricing that has been known since 1960 appears, with respect to existing conditions, costs, demands, competition, service characteristics, and market state to be a suitable framework for dealing with the different aspects of complexity. He concluded that pricing of services, as for goods, is a combination of proper management, experience, trial and error, intuition, and good luck.

On the other hand, Vargo and Lusch (2004a) argue that the whole marketing theory, the concept of value creation, distribution, and therefore pricing, requires restructuring i.e. to be moved from being a product perspective towards a service perspective. This view is becoming increasingly popular - a recent study by Arizona State University's Center for Services revealed that the diverse group of participants cited service-dominant logic (described, for example, in Vargo and Lusch 2004a) as the most common theory and framework in the service field (Ostrom et al 2010). This indicates that service-dominant logic will continue to be a catalyst for important research in the future.

This view is also supported by a recent development in a sub-area of the service engineering division "distributed service engineering". The "Goods dominant" approaches assume that a service can be created from scratch as with goods, and the client's inclusion into the development process can be omitted (Spath et al 2007). This creates a major problem, since the inclusion of the client in the development process is viewed as crucial for success in services (Breidbach 2009).

Despite different views on service marketing, researchers more or less agree that the fundamental difference between services and goods lies in the relationship between the supplier and the customer. According to Sampson and Froehle (2006), services often require more direct value co-creation while production processes for physical goods do not; Bowen et al (1989) notice that services imply "relational markets" (). Authors of service dominant logic do not oppose goods and services; rather they contrast goods and service dominant logics. Sixth foundational premise (FP6) of service dominant logic develops the relational aspects by stating that the customer is always a co-creator of value (Vargo and Lusch 2004a).

The service marketing and management processes, such as service pricing, are relatively new areas for manufacturing companies and, therefore, manufacturers might examine pricing mechanisms implemented in organizations from the perspective of long service traditions. However, service researchers believe that pricing mechanisms of most of the traditional service organizations are not based on a sophisticated understanding of the specific customer value they deliver, but instead, are based on more general approaches such as cost-based pricing plus considering the competition's prices (Zeithaml, Bitner, and Gremler 2006, Monroe 1989, Tung, Capella and Tat 1997). Due to the complexity of service pricing and the importance of cost, organizations often apply simple methods of pricing, in most of the cases, cost-based methods. Although cost-based methods of pricing offer some advantages, the simplistic nature of

cost-based pricing is not effective in a complex and competitive business world (Tung et al 1997, Shipley and Jobber 2001).

What makes the pricing of services more difficult than pricing goods? Service researchers suggest a number of reasons why the pricing of services differs from the pricing of goods. Pricing services requires separate and different approaches as opposed to product pricing because of the atypical (for the good's market) nature of these services (Mitra and Capella 1997). For example, in the case of services, the customer is not acquiring a product or ownership rights, but is spending money to acquire a right of usage (Berry and Yadav 1996). The intangibility factor inherent in services complicates pricing (Dearden 1978, Lovelock 1981, Thomas 1978, Berry and Yadav 1996). Another challenge is that services are irreplaceable; they do not lend themselves to replacement (Docters et al 2004). The separation of purchase and consumption of services can make buyers uncertain about their future valuations and, therefore, this affects their willingness to pay (Shugan and Xie 2000). Pricing in the service sector is a complex issue due to multiple service characteristics: specialization, heterogeneity, inseparability, perishability, intangibility, technology (Cooper and Jackson 1989). Cowell (1984) suggested that these service characteristics should be considered in addition to the main forces influencing price: costs, competition, and demand. He suggested that the influence of service characteristics vary depending on the type of service and market. Cowell argued that perishability may cause a reduction in price, a lack of customer ownership, and may lead to greater competition or price stability in the short term. Intangibility makes service prices very dependent on the negotiations between buyer and seller, while service uniqueness creates a strong dependency between price and quality, and this inseparability may place different limits (such as geographic or time) that will influence the prices charged.

In contrast, Vargo and Lusch (2004b, p.324), call such prototypical characteristics (intangibility, inseparability, heterogeneity, and perishability) of services "the four service marketing myths". They argue that these characteristics do not distinguish services from goods, but that they only have a meaning from a manufacturing point of view and involve strategy, which does not reflect a service-dominant view.

Malleret (2006) suggested that cultural aspects produce difficulties when pricing services. The word "service" comes from the Latin "servitium", which means slavery, and the work of a slave or of a serf in the Middle Age did not receive monetary compensation.

The literature shows that service researchers tend to describe service pricing through complexity as a distinctive service characteristic. Complexity is often

described as a system attribute, a complex system being one that consists of many parts that interact in a non-simple way (Simon, 1962). This holds true for both technical and social systems. Industrial services are typical socio-technical systems with many inputs and outputs. The performance and behavior of such systems may be difficult to fully control due to their inherent complexity.

Researchers suggest a number of approaches to pricing in the service sector. Zeithaml et al (2006) take the customers' view of service pricing and have found three key differences between customer evaluation of pricing for services and goods: customers often have inaccurate or limited references of prices for services, price is a key signal to quality in services, and monetary price is not the only relevant price for service customers (time costs, search). Lovelock (1992) describes the idea of the "pricing tripod", which suggests that cost, competition, and customer-based characteristics are the most important ones when setting prices for services. According to Morris and Fuller (1989), the cost of the service was found to be the most important characteristic followed by the difficulty in completing the service and the customers' price elasticity policies; these characteristics are varied across different service industries, given the unique structural characteristics of different service sectors. Shipley and Jobber (2001) have underlined that it is of paramount importance to place the emphasis on a combination of services, and both organizational and environmental characteristics in order to make effective pricing decisions.

From the literature on pricing of services, Avlonitis and Indounas (2006a) derived a set of service, organizational, and environmental characteristics that influence pricing decisions (see Table 8.5, Table 8.6, and Table 8.7). By analyzing data from 170 service companies in Greece the authors observed that the cost of the service is considered to be the most important service characteristic, followed by the quality of the service, and the type of the service. The most important organizational characteristics influencing pricing decisions are related to the corporate strategy and the corporate objectives, which indicate the need to incorporate pricing strategy into the overall corporate strategy (Kurtz and Clow 1998). The most important environmental characteristic is the competitors' prices, followed by the intensity of competition among the existing companies; this reflects the competitive environment of service business (Avlonitis and Indounas 2006a). Later on, through an empirical study of existing pricing approaches of service companies, Indounas (2009) analyzed these characteristics and concluded that both company- and market-related characteristics affect pricing objectives, methods, policies, and information. He observed that the most successful pricing methods were developed by system-

atized adaptation of market-based pricing objectives and methods with respect to profit and cost related targets.

According to Bolton, Grewal, and Levy (2007) a “customers’ willingness to pay for service is inextricably linked with their perceptions of service quality and value, which is part of what makes pricing especially complex”. The authors suggest customized pricing approaches in order to increase profitability and successfully compete through services.

Cowell (1984) proposed a classification of services for pricing purposes. Such services as communications, education, health, and transport are subjects of public regulation. For these services the price element cannot be controlled by the marketer as the price is affected by public regulations and tax systems. There are services where prices are affected by different institutional pressures, such as airfares, freight, and stockbrokers. For these services recommended pricing or fixed prices are usually implemented. The pricing ‘complicator’ for these services is that the price is often calculated based on the costs of low performing providers. Moreover, for the services that are subject to regulation of the marketplace the price depends on economic conditions, customer’s feelings, competition, demand, and needs. Industrial solutions might include services from all the above categories. Although the prices can be market driven, customer solutions can, however, be very much affected by different institutional pressures and public regulations, such as tendering, public services fees, and long-term agreements.

Lusch et al (2007) argue that Service-Dominant logic provides the conceptual tools that can advise on how to compete more effectively within the pricing dimension. Service-Dominant logic links pricing with a firm’s value proposition, collaboratively developed by value-network partners. By value proposition, the authors mean a promise as to how the value-in-exchange will be linked to value-in-use. Lusch et al (2007) argue that gain-sharing or risk-based pricing links the value-in exchange and the value realized by customer. These types of value-based pricing could be a part of service development strategy, which links financial and quality targets. However, to be successful the value-network partners should co-create the value proposition.

Thus, the literature review for service pricing could be summarized into the following main observations:

- Researchers agree that building of comprehensive pricing for services is a challenge for the firm.
- Many authors associate the challenges in service pricing with different aspects of *complexity*.

- In order to overcome the challenges researcher suggest developing a systematic approach including a pricing process with respect to costs, objectives and other service characteristics.
- Lusch et al (2007) suggest a link between pricing and value proposition.

2.6.4 Industrial service and solution pricing

Researchers admit that industrial service pricing did not receive much attention in the academic world for a long time (Lukassen and Wallenburg 2010, Indounas 2009, Beverungen 2010). Table 8.8 (in Appendix) shows the statistics on published articles in the area of industrial service pricing, collected by Lukassen and Wallenburg (2010). With some exceptions, for example, articles from Avlonitis and Indounas (2005a; 2005b; 2006a; 2006b; 2007a; 2007b), Avlonitis, Indounas, and Gounaris (2005), Reen et al (2009), Lukassen and Wallenburg (2010), Bonnermeier, Burianek, and Reichwald (2010), there was no systematic approach to studying existing and future pricing models for services in an industrial context. This was despite the increasing needs from industry to develop new innovative pricing methods for industrial services.

Pricing of industrial services seems to have a context specific challenge – although developing of industrial services has become a universally accepted factor for company growth and competitiveness, some authors argue that no research has proven the profitability of services developed by manufacturing companies (Malleret 2006). According to Gebauer et al (2005), the paradox of industrial services is that manufacturing companies make large investments in the development of services without generating adequate return on them. Not all industrial services are billable; some of them have to be considered more or less “good customer service” by the customer (e.g. Grönroos 2000, Malleret 2006). Often such services are not invoiced (Oliva and Kallenberg 2003) or pricing policies are not thought through properly (Anderson, Narus and van Rossum 2006). Additional challenges for industrial service pricing come from relational aspects. Services bundled to industrial solutions usually involve long-term relationships with customers, and therefore, pricing for the solutions should take into account duration and strength of the relationship and it should be possible to adjust pricing approaches during this relationship lifecycle (Cornet et al 2000). Many companies in the industrial service sector do not take full advantage of the opportunity to use creative pricing due to a lack of customer orientation, high cost-orientation, and inflexibility of pricing schemes (Jobber 2004, Morris and Fuller 1989).

According to the research performed by Anderson and Narus (1995) that covers 22 large manufacturing companies the main challenges related to charging for industrial services are:

- A badly designed offering; the services are standardized; offerings have little flexibility, and not designed according to customer needs. Therefore, it is difficult to apply differentiated pricing according to customer value.
- The difficulty of assessing the value created for the customer by the service provided; industrial companies use customer satisfaction to access customer value, which is poor indicator of value for what customer is ready to pay.
- Industrial firms being too focused on their products rather than on the services.
- The primary goal established for sales staff is to sell products, therefore they can offer “free” services to enable the deal.

Sharma and Copalkrishnan (2010) refer to the McKinsey and Company studies that reported that around three-fourths of the firms that developed service solutions have failed to recover the costs. The authors suggest a number of reasons, including the wrong customer’s groups being targeted, failing to offer superior solutions, uneconomic decisions, and a lack of understanding that selling of solutions requires different non product-centric models for pricing.

Recent research states that that pricing models for industrial customer solutions can either emphasize a cost-based or value-based perspective (Bonnermeier at el 2010, Sawhney 2006, Harmon et al 2009). In the case of the value-based approach, the price of the solution is determined by the utility of the solution for customers and their willingness to pay. In a cost-centric approach, the supplier’s costs and desired margin are the main price shapers. Researchers (Bonnermeier at el 2010, Bolton et al 2007) suggest applying a ‘customized pricing’ approach to selling customer solutions as a step toward a value-driven service management approach that requires assessing the economic consequences associated with providing (provider’s point of view) and consuming (customer’s point of view) customer solutions. From a supplier’s point of view, costs have to be compared with the customer’s willingness-to-pay for the solution. From the customer’s point of view, the willingness-to-pay must not be less than the total costs of ownership or acquiring the solution.

The importance of pricing has recently increased in industrial markets due to a number of reasons, including rising customer demand for price transparency, the increased sharing of price information by customers with each

other, and the improved negotiation skills of customers in dealing with industrial sales representatives. Today, it is very important to consider pricing and price setting as a strategic process and not as a series of quick decisions; a short-term perspective of pricing will result in lower sales, lost customers, lower market shares, and decreased profits (Lancioni 2005). For industrial companies pricing is a complex process that involves the full range of forces which affect pricing (Shipley and Jobber 2001), and requires cooperation from a number of departments. There are a number of market tendencies that have recently changed the influence of different departments on pricing decisions. One recent trend is the increasing customer demands for value-added services and products. Intelligent pricing for value-added service can result in attracting more customers to higher value services and products, and make customers are easier to trade. The importance of costs to the possibility of losing customers is another factor that influences the pricing processes. As mentioned by Lancioni (2005) the axiom (which is very much in line with Murphy and Murphy's (2002) statements about customer retention, see section The role of relationships in services) that it "costs 1 dollar to get a new customer and 5 dollars to get it back if it is lost" is nowadays widely acknowledged by industrial firms. International competition has increased the importance of pricing processes, and requires that an understanding of the competitors' business models and cost structure has to be included. The shortening of supply chains and product development cycles give the companies the opportunity to reduce costs and increase revenues, therefore the pricing processes should be adjustable and be able to reflect these changes. The recent trend of making long-term contracts with customers also influences the pricing committees and processes, and requires a number of responsibilities and actions to secure contract pricing. Lancioni (2005) suggests approaching the pricing process through a detailed pricing plan that includes: a summary of the pricing strategies and recommendations of the company; an overview of the current market-pricing situation; a SWOT analysis of the markets the firm is a part of, the pricing strategy (s) that the firm is currently employing in its market segments; the pricing objectives that the firm has established to guide its overall pricing strategy; the pricing programs that will be used to accomplish the pricing objectives, and the monitoring mechanism that will be used to review the results of the executed pricing strategies.

Thus, the general research approach to pricing is to reassemble the processes of pricing from routines, actions related to price-setting, and contexts coming from organizational resources, strategy, and the market state.

The researchers aim to describe subsequent, iterative, dynamic processes for price-setting using theoretical based empirical data. For example, by the combining of literature research and semi-structured interviews of senior managers Bonnermeier et al (2010) defined the 6 steps of a generic pricing process for integrated customer solutions that were comprised of a pricing strategy, a pricing analysis, a pricing definition, an internal price enforcement, an external price enforcement, and price controlling. It seems as if the researchers grasp different practices or parts of business processes related to pricing and 'glue' them together into a pricing framework. This indicates that in practice organizations usually do not have a pricing process that is a well-established and institutionalized official process, involving different units (for example R&D and production) and capabilities. Even the appointment of dedicated pricing managers does not guarantee the existence of a comprehensive and systematic pricing process. However, the importance of pricing is reflected in the recent tendency of industrial companies to create special pricing committees that facilitate communication and help pricing processes (Lancioni 2005).

The pricing process is equally important to both parties; service providers define, set up, and bid a certain price, and customers evaluate and bargain. Since customers in the industrial sector are heavily involved in value creation process, they influence the choice of pricing methods through, for example, the tendering process, requests for proposals (RFPs), or requests for quotations (RFQs) (Lukassen and Wallenburg 2010); they 'co-create' price by participation in the pricing process.

2.6.5 Importance of costs

Cost management is not within the scope of this thesis, but it is necessary to emphasize the role and importance of costs for pricing because of the following reasons. According to Rynänen, Salminen, and Pekkarinen (2009) pricing of industrial solutions requires a deep understanding and the ability to communicate the cost structure of the solution. Cost is indeed a major business driver in many industries. For some companies, successful cost management allows mastering a competitive advantage and therefore business growth. Others suffer from a lack of understanding about the process of estimating, managing, and controlling costs across the lifecycle of a product (Rajkumar 2003). For many companies reducing costs is a matter of survival. Furthermore, customers expect higher quality and better functionalities at decreasing cost. Cost has become an important factor of success. Research demonstrates that those com-

panies that are unable to make detailed and precise cost estimates in the early development phases have a significant slippage of schedule than those that can provide completed cost estimates (Hoult et al 1996). Therefore, it is important to understand costs even before a service development project starts.

As the literature indicated (see section Service pricing), the majority of services are priced based on costs (e.g. Zeithaml, Bitner and Gremler 2006, Monroe 1989, Tung et al 1997, Shipley and Jobber 2001). Though the selection of such pricing method is not justified, this is state of the art, therefore the suppliers should know well the cost of the production of their service and be able to communicate their costs to customers in order to explain their effort and justify pricing.

Selling customized service-enriched solutions is more cost-intensive than selling of standardized products and services (Bonnermeier et al 2010). Thus, the companies selling industrial solutions should pay additional attention to their own cost management techniques and see it as a primary marketing task to build higher customer value at lower solution costs.

One popular methodology for forecasting and estimating costs is cost engineering (Stewart, Wyskidsa, and Johannes 1995). Cost estimating and cost engineering are separate but strongly connected disciplines. Cost estimating refers to a business process that provides the company with an estimate of a product or service. Cost engineering is concerned with design trade studies and is less connected to estimates for commercial proposals (Roy et al 2001). Cost engineering is also concerned with cost control, business planning and management science, project management, and profitability analysis of engineering projects and processes (Stewart et al 1995).

A cost engineer should estimate and manage the total costs over the life cycle of a project, facility, operation, product or service, including the possibility of forecasting, analyzing and managing technology and legislative changes and their implications for the costs. There are two main approaches to estimating costs: a 'first sight' estimate, which is done early in the cost stage and is often based upon existing statistics from similar projects and on the experience of the personnel who are responsible for costing - or a detailed estimate that calculates costs more precisely (Rush and Roy 2000).

A costing process involves a number of qualitative inputs, such as input from people, and quantitative inputs, such as financial data. However, modern cost conscious culture is oriented more towards quantified and justified estimates; for detailed estimates it is necessary to have an understanding of the product, the methods of manufacture/process and relationships between processes (Rush and Roy 2000). Detailed estimating goes through several iterations, re-

quires feedback from the relevant departments, and involves a review and an improvement processes. Thus, precise estimating can be achieved only when a product or service is clearly defined and understood (Rush and Roy 2000).

Many companies employ an activity based costing (ABC) technique that is based on a process for measuring the cost of the activities of an organization (Dean 2003, Cokins 1998). It is a quantitative technique to measure the cost and performance of activities, for example, in certain production processes. Each activity within an organization is first identified and then an average cost is associated. It is then possible to estimate the amount of activity needed to make a product or a service and calculate the relative costs. The drawback is that the ABC technique is not useful during the conceptual phase of service development, because it needs a good understanding of the service, which does not always exist at an early stage of product/service development.

A widely used method to estimate costs in the early stages of development is parametric estimating (PE). PE uses a statistical relationship between historical data and other variables, for example, square footage in construction, lines of code in software development, mass of aircraft and other variables that influence mainly the final cost of the product, the so-called “cost drivers” (Cavalieria, Maccarroneb, and Pinto 2004). This method is mainly used in large projects such as aircraft building and NASA projects.

The growth of CAD/CAM¹ technology has supported the development of feature based costing (FBC) that describes a product or service as a number of associated features i.e. holes, flat faces, edges, folds (Nair and Saji 2011, Wierda 1991, Catania 1991, Ou-Yang and Lin 1997, Bronsvoort and Jansen 1994). This method is one of engineering approaches that requires detailed analysis of the product manufacturing process or service development process, and of the features of the product and service. The estimated cost of the product is calculated as the sum of its elementary components, based on the value of the resources used in each step of the product or service development and production. Therefore, it can only be used when all the characteristics of the production and development process and of the product and service are sufficiently known (Cavalieria, Maccarroneb, and Pinto 2004).

Over the last few years, a new approach called neural networks, based on the use of artificial intelligence, has become popular (Cavalieria, Maccarroneb, and Pinto 2004, Rush and Roy 2000). Similar to the known human brain function-

¹CAD/CAM - computer-aided design and computer-aided manufacturing, the term is used for a software toolkit that is used for certain engineering operations.

ality and structure, it represents a network of densely interconnected elements called neurons. Many researchers and practitioners are investigating the use of artificial intelligence systems and applying them to cost estimating situations (Bode 1998, Smith and Mason 1997, Hornik, Stinchcombe, and White 1989, O'Rourke 1989). The basic idea is to collect data and arrange it in such way that intelligent software systems can 'learn' which product attributes mostly affect the final cost. This is achieved by using past case examples. The research has shown that the neural networks approach produces more precise cost estimations than other costing methods (Bode 1998).

The selection of a suitable method for cost estimations from those described above is predefined by data that is available and the stage of product or service development. However, services have additional challenges in cost estimation related to the uncertainty incorporated into availability (or life cycle) contracts that are built on certain performance criterion and recently seem to be a trend in industrial service business (Erkoyuncu et al 2009). After a literature review and interviewing industry representatives Erkoyuncu et al (2009) concluded that uncertainty is caused by the lack of information or incorrect timelines in information availability, and lack of knowledge required for the development of new services. The customers are often involved in the value creation process and this allows them to focus less on intermediate deliverables, such as, for example, technical services and tools, but more on overall outcomes, as, for example, value added by the service through improved asset management and reduced risks. However, such increase in customer involvement can introduce additional sources of uncertainty. The researchers (Erkoyuncu et al 2009) suggest identifying and describing the main uncertainty sources, such as equipment reliability, repair time, the demand rate for spares, long duration of contracts, common understanding between supplier and customer, and managing uncertainty in a systematic way.

To summarize, it seems that cost estimation is very important, almost a business critical activity for many of the industrial services because of the general tendency in industry to compete through cost optimization, and due to the fact that the majority of industrial service providers build their pricing based on costs. Due to the complexity of industrial services, customers are not always able to understand the value of the service; that is, the way in which they would like to add transparency is usually to see and understand the structure of costs of the service. The general tendency in services is to shift from transaction based contracts to availability or life cycle contracts, which increases the impact of uncertainty on the cost estimations. There are two major steps proposed to

handle uncertainty: to identify all the possible sources of uncertainty, and find methods of cost estimating that will handle these problems. At the moment, the most comfortable cost estimate methods are parametric or analogical estimates that do not require a detailed description of the product and service elements and can be efficient at early stages of service development. More details to improve estimates are added later on by clarifying and elaborating on the requirements of the service together with the customer, for example, by involvement in a value creation process or active processing of customer feedback during the post-delivery phase.

2.6.6 Value-based pricing

Surely there comes a time when counting the cost and paying the price aren't things to think about any more. All that matters is value - the ultimate value of what one does. James Hilton, English novelist (1900–1954)

Recently, the idea of outcome-based pricing has been discussed in the service context. Ng, Williams and Neely (2009) have studied outcome-based pricing for B2B services as one form of performance-based pricing. The authors have defined the main benefits and challenges of such pricing methods and discussed outcome-based contracts for different types of services. Outcome-based pricing, or an outcome-based contract (OBC), is the mechanism that allows customers to only pay for delivered outcomes. The potential benefits for customers are increased efficiency and predictability through more accurate cost projections, direct total contract cost reduction, transaction and monitoring costs reduction by better alignment between customer and supplier interest, and increased motivation from the provider for high quality due to this link to pricing. The potential benefits for the service provider are greater internal effectiveness and as a result greater internal and customer satisfaction, opportunities for greater control and efficiency through closer relationships between the service provider and customer, an opportunity for innovation enabled by the new processes required by OBC, and sustainable competitive advantage through customer value management. Ng et al (2009) believe that OBC is the future of business to business contracting and can even be applied to B2C services.

The authors admitted there are challenges to implementing OBC. Implementing of such a method requires a balance between the customer, the service provider, and external conditions. The customer and the service provider must specify the outcome and how it can be measured. Since value for the supplier is dependent on the value the customer can create, metrics that capture value cre-

ation for both the supplier and the customer are needed. Such metrics require a dyadic approach (and a network approach), which complicates even more the accessibility to the needed data (Grönroos in Ostrom 2010).

The service provider should be able to provide a specified outcome when changing the business environment that may affect the delivery of the outcomes. The authors specified general requirements for implementation of OBC. Implementation of OBC requires understanding value-in-use, e.g. all the needed “processes, competencies and assets required for the customer’s ‘usage’ of the service to achieve outcomes under different conditions” (Ng et al 2009, p.6). In order to deliver value, OBC should have “a service system value architecture that includes resource integrators, people in service provider and customer organizations, integrating resources, such as equipment, materials, knowledge and skills; co-creating value and innovating in service offerings that affect both the customer and the service provider’s systems” (Ng et al 2009, p.6). OBC requires significant changes in the supplier’s business models, related to increased complexity, cultural changes, perceived loss of control, uncertainty arising from lack of traditional boundaries between organizations, and coordination of all suppliers.

According to Kim, Cohen and Netessine (2007) performance-based contracting is replacing cost-based approaches and fixed pricing in supply chain services in capital-intensive industries. In their study of the defense and aerospace industries, they argue that performance-based contracts improve product availability and reduce the cost of ownership by linking a supplier’s compensation to the output value of the product generated by the customer. In order to analyze incentives provided by three commonly used pricing approaches, fixed-price, cost-plus, and performance-based, the authors introduce a multi-task principal-agent model when a single customer is contracting with a number of suppliers. The authors focus on two important issues of contracting in service supply chains - performance requirement allocation and risk sharing.

Lusch and Vargo (2006) suggest that value-based pricing is the way to overcome difficulties that companies face while pricing their solutions. The general logic behind such pricing is a mapping of value captured by the supplier to value created for the customer (Roegner, Seifert, and Swinford 2001). The value-based pricing process consists of two major steps: a value assessment study, a linking of the customers’ payment, and the customer actual realized value. According to Lusch and Vargo (2006), value assessment should estimate the monetary value of the customer’s benefits from the solution. However, it is unclear how non-monetary value, such as increased customer satisfaction, loyalty,

and trust should be reflected in value-based pricing mechanism as components of customer value. Though it can be difficult directly to measure monetary value of such 'intangible' factors as satisfaction, trust, and commitments, the researchers and practitioners are, however, unanimous in the opinion that customer satisfaction, loyalty, and trust lead to increasing supplier performance through increased sales, improved image, higher competitive advantage, and value of brand. In recent years, companies have invested in different tools to measure relational value. Regular monitoring and assessment of customer satisfaction gives possibilities to analyze trends in customers' behavior, and in that way manage customers' value, which in turn leads to sustainable competitive advantage (Ng et al 2009).

Lusch and Vargo (2006) describe different methods of value-based pricing, such as quantity of usage, quality of customer outcomes, the previously discussed outcome-based approach, gain-sharing (risk and reward sharing) methods, and the gain to collaboration approach. The basic level of the value-based approach, quantity-based pricing, includes such methods as subscription pricing (based on duration of solution), utility pricing (based on quantity of usage) and time-and-material pricing (based on resources usage). More advances, in terms of the linkage of value created and the value captured approach, is outcome-based pricing.

In a high level classification of pricing methods, i.e. cost-oriented pricing, competitor-oriented pricing and marketing-oriented pricing, the most difficult one is the marketing-oriented approach, which needs to take into account many factors simultaneously, such as value to customer, marketing strategy, price-quality relationships, product line pricing, negotiating margins, political factors, costs, effect on distributors, competition, and explicability (Jobber 2004). The marketing-oriented approach is indeed value-based pricing, or a broader view on value-based pricing, which is built on different aspects of value, including different value receivers. Such an approach requires careful examination of the value created and used by all involved parties – supplier, customers, and partners, external and internal stakeholders.

The researchers recognize several strategies behind value-based pricing: satisfaction-based pricing with service guarantees promising delivery or return of money, success-fee pricing when the pricing is linked to some agreed performance formula, relationship pricing applied in order to develop long-term relationships with the customer, efficiency pricing when the supplier understands, manages, and reduces the customer's costs (Kasper, Helsdingen and Gabbott 2006, Docters et al 2004, Berry and Yadav, 1996).

Value is a critical factor for the selling strategy; however, there is no clear method to translate the value into pricing strategies (Sharma and Copalkrishnan (2010). Despite this, the implementation of value-based pricing has become a high priority for the pricing policy of industrial service providers and suppliers. However, the assumption that the ability to build value-based pricing itself leads to an additional competitive advantage by mastering a more market-oriented way of pricing (Kasper et al 2006) too often remains a theoretical one.

2.6.7 Tribute to a contingency approach

Though marketing pricing literature suggests that companies set prices by assessing the customer's elasticity, and the prices of competitors, and then setting prices to maximize profits (Pashigian 1998), in organizational practice; however, pricing is far more complex (Diamantopoulos 1991). Researchers from a resource-based perspective (e.g. Dutta et al 2003) see pricing as a complex process that requires resources and coordination. Researchers describing value-based pricing approaches (Ng et al 2009) also emphasize complexity and challenges related, for example, to a need for performance measurements for output-based contracts. In order to manage complexity, often associated with service pricing, the researchers study the means through which firms arrive at price decisions (Ingenbleek et al 2003). This changes the focus of pricing research from the actual pricing methods, like cost-based, competition based, value-based to pricing practices that define factors that affect pricing decisions. Researchers also emphasize differences between pricing practices and strategies; pricing practices refer to the use of information in a pricing process that leads to price decisions, and pricing strategies refer to goals that the firm tries to achieve with its pricing approaches (Ingenbleek et al 2003). It is important to use different types of information (customer value, competition, and costs) for pricing decisions; by basing a pricing decision mostly on cost information the firm ignores market information in their price decisions. It is important to find factors that affect pricing decisions; however, they might be of different importance and relevance for each concrete decision. For example, analysis of mutually exclusive categories (Coe 1990, Piercy 1981, Udell 1972) might not provide the diversity in the types of information used for pricing decision. Though the firm might consider different sources of information, managers tend to justify prices in terms of costs e.g. for creating an image of a "fair" pricing practice (Pearce 1956, Foxall 1972). All the above emphasizes a need to develop a multiple-item approach to pricing decisions from the concepts of cost-informed, value-informed, and competition-informed pricing, that show the degree to

which different sources of information are used to make a price decision (Ingenbleek et al 2003).

The example of how to manage complexity, related to multiple factors with different impact levels, can be found in the contingency theory.

According to the contingency theory, from the organizational, ecological point of view organizations interact with the environment and they are affected by their environment. The main ideas underlying contingency are (Galbraith 1973, Morgan 2007):

- Organizations are open systems; they need management of internal organization's needs and adapting to environmental circumstances;
- There is no one best way of organizing. The organizational form depends on the tasks and environment;
- Organizations of different types are needed in different types of environments.

The purpose of mentioning contingency theory here is not to expand the scope of the present thesis toward behavioural theories, but to illustrate the main principles of managing complexity of situations on pricing decisions. When considering pricing decisions through the lens of the above statements of contingency theory, the following statements can be derived:

- There is no one best way to create pricing (universal and rigid model is not needed and, perhaps, not possible to be developed for pricing);
- Pricing approaches are not equally effective for different tasks and different environments (selection of pricing method depends on multiple internal and external factors that are of different importance and changing over time).

For the present research this means that the actual method of pricing of industrial services are important, but that it is more important to make the correct decision and establish the correct processes to arrive at such a decision. This directs pricing towards open systems where the internal features best match the demands of their environments (Scott 2003), and rational and natural perspectives identify different pricing models that can be adapted to different types of environments (Lawrence and Lorsch 1967).

2.7 Summary of literature review

A growing share of services in national economies poses the questions of how to describe and manage services and reveals that existing product-orient-

ed theories and models are not precise enough for services (Egan 2001). Despite the increasing attention from the researchers to the service phenomena, service research still lacks such fundamentals as an univocal definition of service (Edvardsson et al 2005, Vargo and Lusch 2004a, Grönroos 2000), and a common understanding of the actual relationship between the concepts of services, products, goods, processes, and customers (Laine et al 2004). However, there are two widely accepted statements about services:

1. Customers play a crucial role for value creation in services (e.g. Brady, Davies, and Gann 2005, Ulaga 2003, Lapierre 2000, Walter, Ritter, and Gemünden 2001, Grönroos 2000);
2. Services should be studied using a multiple discipline approach (e.g. Spohrer and Maglio 2010, Ostrom et al 2010).

Engaging customers and value network partners in co-creation and co-production activity increases a firms' competitive advantage and emphasizes the importance of a relational perspective to value for the services (Lusch et al 2007, Barry and Terry 2008, Liljander and Roos 2002, Möller and Törönen 2003, Anderson and Narus 1990). The key success factors in order to establish, develop, and maintain relationships are trust and commitment, 'not power and its ability to condition others' (Morgan and Hunt 1994, p.22). Commitment and trust encourage marketers to preserve investments in relationships by cooperation with partners, as well as to resist attractive short-term alternatives in favor of expected long-term relationships with existing partners. In order to establish a trustful relationship and build up commitments, a firm should maintain service quality through an ability to relate and interact with the customer, and manage customer satisfaction. This is because these play a crucial role in the customer's choice when buying services.

The present thesis considers industrial services as a process of value creation that has its background in the company's technology and knowledge base, and requires close interaction with customer. Complexity of relationships, technologies, and organization in industrial service systems requires a systematic approach to the industrial service development process that can provide a detailed view on several factors. These factors are: the key actors in the service systems; the different phases of service development; the inputs and outcomes to the service process; and the required capabilities in order to create value. The recently developed and discussed concept of New Service Development (Cooper et al 1994, Edvardsson and Olsson 1996, Perks and Riihela 2004, Kindström and Kowalkowski 2009, Fitzsim-

mons and Fitzsimmons 2000) sheds light on these issues and provides a framework for value creation activities.

Research in the field of industrial services has not yet developed a stabilized terminology, e.g. the term 'industrial services' might have different meanings depending on the author and context (Paloheimo et al 2004). A significant effort in the field has been invested into the development of different classifications of industrial services (Mathieu 2001, Frambach, Wels-Lips and Gundlach 1997, Boyt and Harvey 1997, Paloheimo et al 2004, Vaattovaara 1999, Cook 2004, Oliva and Kallenberg 2003, Aarto et al 2009). Researchers emphasize the significance of the investments and effort that industrial companies are making while developing services, but there is no univocal opinion about whether companies obtain an adequate return on these investments (Malleret 2006, Gebauer et al 2005, Grönroos 2000, Oliva and Kallenberg 2003, Anderson and Narus 1995). One of the reasons why there is not enough evidence of the profitability of industrial services is that the research field of pricing of industrial services is underdeveloped and lacks empirical studies, as has been shown in the introduction (Indounas 2009, Lukassen and Wallenburg 2010). Service research has for a long time focused on trust, commitment, satisfaction, loyalty, and the perceived quality effects of service strategies, however, the monetary effects and metrics required to make the related measurements have not been developed (Grönroos in Ostrom et al 2010).

There are different approaches to pricing in the modeling of modern service-system ecologies coming from the different discipline clusters. Marketing and behavioral science focuses on the customer perspective in service systems and takes a value-based view on pricing and quality as a measure. Operations and management science takes the provider's positions and measures productivity by a cost-based pricing methods. Strategy and learning science assume the competitor's perspective and apply strategic pricing in order to achieve sustainable innovation (Spohrer and Maglio 2010). Since service research requires a multi-disciplinary approach, it makes sense to combine different approaches to pricing in order to study the problems of pricing in the industrial service sector.

Ideas of value-based pricing for services are discussed by researchers in terms of output-, performance- and result-based contracts (Ng et al 2009, Kim, Cohen, and Netessine 2007, Roegner et al 2001, Lusch and Vargo 2006). The general logic behind such pricing is to describe value created for the customer using different KPIs in contracts. The value-based pricing process consists of two major steps: a value assessment study and the linking of the customers' payment and the customer actual realized value. However, customer in-

volvement in the value creation process (value co-creation, co-production), the complexity of the relationship and the importance of relational factors of value, make such a pricing approach challenging, and therefore, a relatively unpopular method for services (Ng et al 2009, Sharma and Copalkrishnan 2010).

The focus on pricing research should be shifted from actual methods of pricing to the factors that affect pricing decisions, and pricing activities that help to arrive at the correct decision (Ingenbleek et al 2003). A successful pricing model can be seen as an open system (Scott 2003) where internal features best match the demands of their environments.

Thus, Table 2.3 summarizes the literature review and suggests input from the literature for further research into the pricing of industrial services.

Due to the multiple labels that are used to describe the development of services for manufacturing companies and the relative novelty of ‘servitization’, research should use a collaborative approach that allows researchers not only be in continuous contact with industry representatives, but also participate in business processes and see the picture ‘from inside’. For example, researchers should see what are the norms and factors that affect management decisions in order to select the services for further development and sales, to set up pricing, and to process customer feedback.

Table 2.3. The summary of literature review

Finding	References	Implication for the present study
1. Following the convention for service research, pricing should be studied from multiple discipline views;	e.g. Spohrer and Maglio 2010, Ostrom et al 2010;	A pricing model should aggregate marketing, strategic, and managerial views;
2. The researchers agree that building a comprehensive pricing method for services is a challenge for firms; many authors associate the challenges in service pricing with different aspects of complexity;	Mitra and Capella 1997, Dearden 1978, Lovelock 1981, Thomas 1978, Berry and Yadav 1996, Docters et al 2004, Cooper and Jackson 1989, Cowell 1984, Mitra and Capella 1997, Dearden 1978, Lovelock 1981, Cooper and Jackson 1988, Bolton et al 2007;	The empirical study should analyze the challenges with the pricing and suggest how to resolve complexity issue;

Finding	References	Implication for the present study
3. In order to overcome the challenges of service pricing the researchers suggest developing a systematic approach including the pricing process with respect to costs, objectives and other service characteristics;	Zeithaml et al 2006, Lovelock 1992, Avlonitis and Indounas 2006a, Cowell 1984, Dutta et al 2003, Bonnermeier et al 2010	The empirical part should elaborate the process and verify for the different cases;
4. It is essential for service pricing to establish a link between pricing and value proposition;	Lusch et al 2007	The pricing model should be developed from value point of view; the link between value and pricing should be described and concretized;
5. The importance of relationships in services necessitates the inclusion of relational value components, i.e. trust and commitments, into pricing;	e.g. Selnes and Hansen 2001, Eifenbein and Zenger 2009, Cornet et al 2000;	The importance and positioning of the elements of relationship for pricing model should be verified, explored and concretized using the real empirical data;
6. Managers should abandon the widely applied simplistic cost-based pricing methods if they want to fully benefit from service developments, and receive adequate compensation for the investment that are needed in order to develop and sell services;	Tung et al 1997, Shipley and Jobber 2001, Gebauer et al 2005, Jobber 2004, Morris and Fuller 1989, Anderson and Narus 1995;	Losing of benefits due to cost-based pricing should be illustrated using empirical case, and more beneficial alternatives to be proposed and evaluated;
7. Value-based methods are difficult to design and implement unless the entire logic for pricing of services is changed to a created by services value;	Ng et al 2009, Roegner et al 2001;	New pricing logic needs to be described and justified.

Chapter 3. RESEARCH APPROACH

3.1 Case study as a research method – state of the art

“The interaction between a phenomenon and its context is best understood through in-depth case studies,” Dubois and Gadde 2002, p. 554

The selection of a case study as a main research approach for the present problem is almost self-evident, since it was the main approach in the collaborative programs connected to the present research, and due to ‘disciplinary convention’ (Piekkari, Welch, and Paavilainen 2009) – the great popularity of case research in the management area. However, it is worth adding some justification for the usage of such an approach.

The strategy of building theory from case studies involves one or more cases to create theoretical constructs, propositions, and/or theory from case-based, empirical data (Eisenhardt 1989). Case studies are rich descriptions of particular instances of a phenomenon that are typically based on multiple data sources (Yin 1994). Recently, many studies have employed a case study research approach in order to analyze behavior of groups and individuals and organizational relationships in industrial research (Dubois and Araujo 2004, Dubois and Gadde 2002, Halinen and Törnroos 2005). The researchers employ a case study approach for complex problem analysis in order to reach an understanding of the problem and generalize the understandings into some conclusions; they also use it for identification of possible implications in a theory building (Borghini, Carù, and Cova 2009). A case study can focus on different objects, for example, on a process, on humans, on animal, on the organization, on a group, the industry, the culture, and nationality. The essential aim is to explain relationships between events and factors (Woodside and Wilson 2003, Gummesson 2003), to understand behavior and the relationships between the actors through deep examination of one case study or cross comparison of several cases. The results can be represented in different forms of persuasive arguments and visualizations that contribute to a certain theory or try to develop a new one. According to Siggelkow (2007), the conceptual part of a case study is very important and although the theory can be free-standing he does, however, emphasize at least three important uses for case research- motivation, inspiration, and illustration. By giving real life example, a case can be a persuasive way to illustrate why this phenomenon is important to study, can generate new ideas,

sharpen existing theories, and illustrate the theory with concrete example (Siggelkow 2007). The present thesis uses case research for all the above-mentioned purposes – to illustrate the importance of pricing, evaluate existing pricing approaches, and design a new pricing model.

Though case studies have become increasingly popular among researchers, there has also been continuous discussion about the validity and the ways in which the case study is undertaken (Eisenhardt 1989, Dyer and Wilkins 1991, Easton 1995, Dubois and Gadde 2002, Woodside and Wilson 2003, Dubois and Araujo 2004, Eisenhardt and Graebner 2007).

The discussion starts from the different answers to 'what is a case study' and 'what is not a case study'. The answer varies depending on the science, time period, context of the research, philosophical underpinnings, research design (including scope, number of cases), data sources, and the purpose of the theory building. Another popular topic in case method discussion is multiple versus single case studies. Some researchers believe that single-case studies can richly describe the existence of a phenomenon (e.g. Siggelkow 2007). Others argue that single-case research should be used to explore a significant phenomenon under rare or extreme circumstances (Eisenhardt and Graebner 2007) and that multiple-case studies employ replication, contrasting, eliminating, and alternative explanation and thus provide a stronger base for theory building (Yin 1994). The main arguments challenging the validity of case studies as a scientific method are related to generalization (Yin 1994); i.e. case studies are too situation specific. However, acceptance of case studies as a scientific method is increasing. For example, initially, Weick (1969, p. 18) expressed the opinion that case studies are too situation dependant, and cannot be generalized. However, in the second edition of his book, he referred to the opinion of 'noted investigators' that case studies "are better tools than first imagined" (Weick 1979, p. 37). According to Dubois and Gadde (2002, p.553), the reason for this change of opinion was an understanding that "findings are unstable over time" and researchers should "try harder to make interpretations" (Weick 1979, p. 37). As rightly said by Dubois and Gadde (2002, p. 560), "what was previously regarded as a problem was now recognized as an opportunity". Thus a particular case described and conditioned by the specific context and situation is a rather good opportunity to study phenomenon.

According to Lauckner (2012), the approach to case studies depends on the philosophical tradition of the researcher. For example, Yin's (2003) approach to case study is based on positivist or post-positivist paradigm and is built on the ontological belief that reality can be apprehended. On the other

hand, the case study approach described by Stake (1995, 2005), belongs to the interpretive/constructivist paradigm. Stake's case studies check and interpret multiple perspectives and attempt to construct reality based on collectively agreed upon and diverse opinions of what occurred (Lauckner 2012). However, some researchers (Baxter and Jack 2008) argue that both Stake and Yin base their approach to case study on a constructivist paradigm, mainly by emphasizing the importance of the subjective human creation of meaning and stressing pluralism. They see the advantages of this approach in the close collaboration between the researcher and the participant, and in the possibility for participants to express their personal views. Nevertheless, Yin, who is one of foundational authors in the area of case study research, has acknowledged the value of the interpretive perspective (Brown 2008).

Such diversity of approaches created different categorizations for case studies. For example, Yin (2003) categorizes case studies as exploratory (explore phenomena in the data, often used as pre-study), explanatory (examine the data closely in order to explain the phenomena), and descriptive (describe the phenomena, describe the events; can be narrative). Each of these types can be single (holistic), and multiple-case studies. Stake (1995) defined case study approaches as intrinsic (the case does not necessarily represent other cases or illustrates a particular problem, but the case itself is of interest), instrumental (the case is supportive, it provides insight into an issue or helps to refine a theory), or collective (as in Yin's multiple case study). The general criteria for categorization are the goals of study, the way in which the data was collected, the role of the researcher, the level of generalization, the depth of analysis, the importance of context, and the level of details. In particular it can be, for example, the way in which the research construct is defined, and its role for the research.

Scientific techniques, methods, and other instruments used by scientists are interpreted, accepted, and performed within a specific scientific community, e.g. among scientists within a discipline (Derksen 2000). Following this perspective, Piekkari et al (2009) posed a question about how the case studies have been implemented in the management discipline (which the present thesis work mainly contributes to). Reviewing methodology used in altogether 157 articles, published in four major journals of international business from 1975 to 2005, Piekkari et al (2009) found that a very narrow range of case study approaches are used in managerial studies, compared to the variety of choices available in the methodological literature generally (Piekkari et al 2009). The authors introduced the term 'disciplinary convention' to refer to the commonly accepted methods and norms of case studies within a single discipline. Empir-

ical evidence shows that the disciplinary convention in management science is to use exploratory, interview-based multiple case studies, built on positivistic assumptions and cross-sectional design (Piekkari et al 2009). Thus, alternative perspectives on the case study, such as explanatory approaches for theory building, innovative designs for multiple case structure or usage of a single case, and ethnographic and interpretive methods, still seem to have had little impact in the management field.

The research approach used in this work follows a ‘disciplinary convention’ of management science in some parts. For example, a significant part of the data has been collected by interviewing people; the elements of the initial research construct have been explored from the data and literature findings. However, uniformity in pricing approaches for industrial services necessitated the usage of data collected for other cross-sectional studies, and development of interpretive methods for data analysis, and, thus, the research attempts to circumvent the conventional methodological boundaries as will be described in the following chapters.

3.2 Case study approach – systematic combining

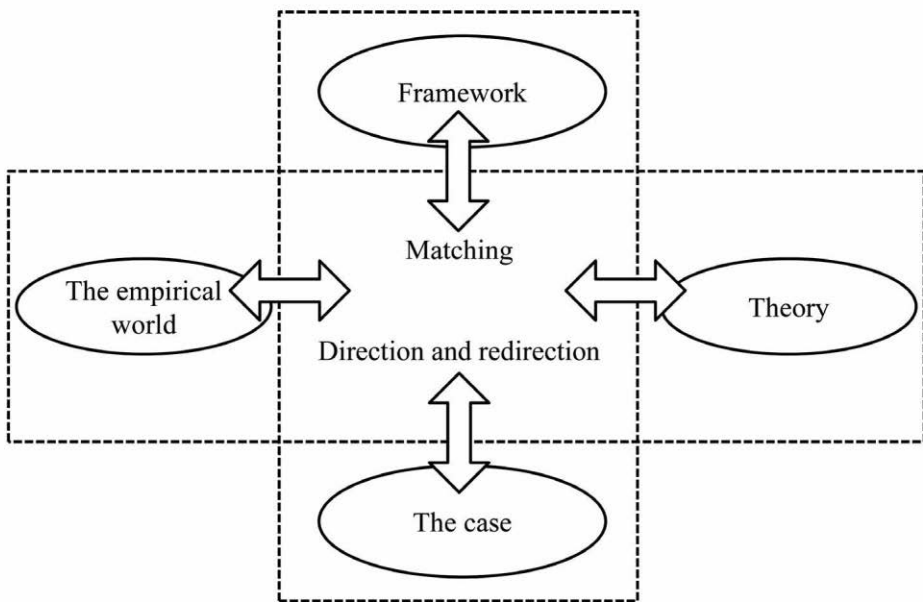
The case study approach used in this thesis can be referred to as a systematic combining of, “non-linear, path-dependent process of combining efforts with the ultimate objective of matching theory and reality,” (Dubois and Gadde 2002, p.560). Systematic combining employs the following fundamental principles:

- Abductive matching, i.e. going back and forth between the model, analysis, and data. For example, if a current theory does not explain the empirical observations, systematic combining assumes the search for better theories, simultaneously with the data collection;
- Directions and redirections as a means of achieving matching. For example, triangulation of data sources can contribute to a redirection of the research by discovering aspects unknown to the researcher;
- The boundaries in the empirical world are defined by decisions concerning what actors, activities, and resources to include, and which dimensions can be further expanded, but the initial focus remains. For ‘abduction’ the most important choice is not between single and multiple cases. Expansion of certain boundaries and redirection might result in non-linear case study design patterns, for example, when the main case has several dependent subcases.

- Case design should evolve during the study. At the beginning of the study, data can look like pieces of a jigsaw puzzle, but finally the case will create a 'product' with no extra pieces left.
- The role of theory in systematic combining is different from that in a confirmatory study. It is not possible to identify all theory beforehand, meaning that the need for literature is clarified during the process (Dubois and Gadde 2002).

Figure 3.1 describes the main principles of systematic combining.

Figure 3.1. Systematic combining (from Dubois and Gadde 2002)



The abductive matching or systematic combining can be regarded as a suitable approach for the present study for the following reasons:

- As was stated in previous chapters, the literature about industrial service pricing exists on a very small scale, compared to, for example, general service pricing literature. There are no clear views, nor widely accepted models on pricing in industrial contexts (see, for example, the section Development of services by industrial companies, p.9, and the section, Industrial service and solution pricing, p.22). In order to define theoretical domains and perform a literature study, first, a preliminary literature review was

done (section Introduction to service research). Later, the concepts, their meaning for pricing, and their connections were defined by observation and analysis of empirical evidence and literature, and, depending on the result, redirecting of research. The example includes relational factors affecting pricing. Current pricing literature does not have models that would include relationship in the pricing mechanism. However, during the literature review, it became evident that relationships are crucial for services. Therefore, the empirical part should show evidence of how relational aspects might affect pricing, and further analysis might require expanding the previously defined theoretical domains;

- Direction and redirection of the research, multiple data sources, and methods are important characteristics of the present study. Combining different data sources while switching between analysis and interpretation contributes to those aspects previously unknown to the researcher. It also reveals new dimensions of the research, and often leads to redirection;
- There are no natural boundaries in industrial service pricing, meaning that initially a number of factors affecting pricing, their severity, and relationships were unknown. During the research period, when the intermediate results were presented, there were questions as to why these particular elements were included in the model. Some of the initial framework elements were expanded further; others were moved from the pricing framework to the concepts of theory developed. If at the beginning of study it was important to define the key dimensions of the research framework, the later focus was moved to their interrelationships.

As abductive matching suggests, the amount of data for analysis (number and selection of cases) cannot be defined at the beginning of the research. Expansion of boundaries, redirections, and newly-discovered evidence, might require new types of data for further analysis.

In sum, an abductive approach was chosen as a study approach since it is fruitful for discovering new things, variables, and relationships that are achieved through a mixture of established theories and new concepts derived from a confrontation with reality (Dubois and Gadde 2002).

3.3 Quality criteria for the research

The strength of the abductive approach employed in this research is in the continuous dialog between the empirical and conceptual investigation. How-

ever, there are also risks related to unexpected empirical evidences and novel theoretical concepts. Such risks can be mitigated by openness and transparency of the research process (Dubois and Gadde 2002); thus, openness and transparency are important criteria for the present research.

There are numerous criteria used to assess the accuracy of the research, depending on the scientific standpoint adopted by authors. The criteria, often used for case studies, are: internal validity, construct validity, external validity, and reliability (Yin 1994).

Internal validity needs to be considered during the analysis phase. Yin (1994) suggested three measures to assess internal validity:

- Formulation of a clear research framework that shows dependencies between variables;
- Pattern matching;
- Theory triangulation that helps to verify findings from different perspectives.

Construct validity refers to data collecting phase and is usually measured in two dimensions:

- Establishing a chain of evident that allows the following of how the researcher develops the work from the research questions to the results;
- Triangulation of data sources and collection strategies (Stake 1995).

External validity for case studies has meaning in terms of analytical generalizability (Yin 1994) that, according to Eisenhardt (1989), can be achieved by cross-case analysis of 4 to 10 cases, or, according to Yin (1994), by several studies within one organization (nested approach). The requirements for external validity also include the rational of the case study selection and sampling (Gibbert, Ruigrok, and Wicki 2008).

Reliability often refers to the possibility of repeating the research process and arriving at the same results (Gibbert et al 2008), and this requires transparency and replication. It can be achieved by, for example, producing case study protocol with the description of how the case study has been performed, and the case study database that include notes, documents, narratives, and interviews.

From the methodology point of view, the goal of the present research is to fulfill the criteria mentioned above (transparency, openness, internal and external validity, construct validity, and reliability) and thus achieve methodological rigor and relevance in the research.

3.4 Research process

The chronological view on the research process is depicted in Figure 3.2. The research started at the beginning of 2007. The data used for the present research has been obtained from several companies and different research and consulting projects. There are four stories, or cases, in the empirical chapter with their own goals, methods, scope, and outcomes (see Table 3.1). They do not follow a typical multiple case study scenario, where the researchers perform a with-in case and cross-case search in order to discover patterns, similarities, or differences in the studied objects. Usually, the choice for multiple case studies is driven by the expectation of literal replications of outcomes that can be further generalized and can contribute to theory building (Yin 2003, Eisenhardt 1989). In the present study each case study aims to provide a part of a holistic explanation of how processes and causes “fit together” (Ragin 1997), and to contribute to a certain part of the model and concept created.

The different parts of the study are connected by an exploratory approach of loosely defined questions and hypotheses that are suggested as outcomes from the previous case, and developed in the next stage of the study. Thus, the theory has been developed in an iterative and abductive way by using several case studies for each of the theory building blocks, as is shown in Figure 3.3.

The investigation started with the case study of five manufacturing companies that diversify their business into the area of industrial services (Case 0). Three of the case companies are part of the same enterprise; the goal for sampling was to compare the problems and practices of industrial services between these enterprise divisions. In order avoid possible company bias, and to make the sample more heterogeneous, two more companies, from different industry segments and different in size, have been added.

The shift toward services, the effort to define, to sell, and to price services has been reported by the managers interviewed as challenging. Case study 0, analyzes the nature of these challenges, suggests a way to manage the challenges, and discusses possible shifts toward innovative methods in industrial service pricing. The research sub question RS1 defines two directions for the research, i.e. to find the reasons behind reported challenges with pricing and to find a way to overcome them.

The analysis reveals that the issues with pricing are caused by relational problems (such as a lack of trust, low customer concerns) and functional (or operational) factors (such as a lack of competence, incorrect strategic decisions). The results of Case 0 confirmed the ideas on how to proceed from a relationships

perspective - previously defined in the second sub question (RS2). The empirical data for Case 1 is gathered from various studies of one large international manufacturing company diversifying its business into the industrial service market. The literature review defined components of relationships, i.e. trust, commitments, and satisfaction and described how service failure and quality affect service value. The following assumption has been elaborated on in order to examine the links between the relational components and in order to contribute to the answer on the more general second research sub question RS2:

Low satisfaction, if temporary, does not lead to the end of commitment if the customer continues to trust in the service provider's willingness and ability to recover from failures and to eventually continue to provide satisfactory service quality. Successful service recovery can even lead to increased trust, which can lead to stronger commitment and increased satisfaction, thus creating a positive cycle.

At this point, the research emphasizes the importance of the relational component of value in industrial services by an analysis of the 'building blocks' of relational value, such as trust, commitments, and satisfaction. From the transactional or monetary perspective, the failure of a service generates extra costs for the supplier and the customer, and therefore, negatively affects added value. However, the companies can minimize negative impacts from a service failure and even increase value by developing trustworthy relationships through an effective and proper handling of problem cases. The effort to build and maintain relationship should be rewarded, and therefore, added relational value should be taken into account in service pricing.

Industrial companies make significant efforts to develop and sell industrial solutions; this raises important questions about the profitability of the solution. In order to answer research sub question RS3, Case 2 describes a life cycle approach that industrial suppliers employ for building solutions and assessing the impact of life cycle services to relationship and profitability. Case 2 reveals the positive effect of advanced services on relationships and profitability. It also suggests that a lack of value-driven earning logic and the simplistic nature of widely applied cost-based pricing methods does not allow the potential of value created by life cycle industrial services to be fully exploited.

Adopting value driven logics for industrial services requires processes for the practical implementation of service development activities, including pricing. The practical results from Case 0, Case 1, and Case 2 have been developed into a model of value driven pricing for industrial service solutions. Case 3 applies a value driven model for service development - a concept, which includes

both the process of pricing and methods of pricing. The main goal for Case 3 is to test, falsify, and refine the developed model.

Table 3.1 summarizes the methods, goals, scope, and outcomes for each of the studied cases.

Table 3.1. Description of Cases

CASE	Case 0	Case 1	Case 2	Case 3
Goal/Role	Problem identification, initial construct for the research, process of pricing	Role of relational value, construct re-shaping	Value of relational components	Testing of model, practical application, tuning pricing model
Companies	3 companies, 5 business units, 3 industries	1 company	1 company	1 company
Research Approach	Exploratory case study	Variable based study, explanatory	Variable based study, explanatory	Collaborative research
Unit of analysis /Variables	Industrial service, reported challenges	Customer, customer satisfaction, commitments and strength of relationship indexes	Customer, customer satisfaction, commitments and strength of relationship indexes, sales and earnings	Industrial service solution
Data	Constructed sample from 51 interviews, 74 customer interviews, 11 workshops, internal documents, public materials; purposive sampling	Quantified surveys, open comments, database of 1063 customer records	Quantified surveys, financial data, database of 1063 customer records	9 interviews, 14 customer interviews, 5 workshops, documents, financial and project data

CASE	Case 0	Case 1	Case 2	Case 3
Methods	Narrative inquiry, grounded theory, recursive abstraction	Statistical methods of data processing, qualitative content analysis	Statistical methods, Student-tests	Participatory action research
Outcomes	Major pricing factors connected to a model: trust, maturity, complexity, competence, role of relational value, pricing process	Model for relational value connecting trust, commitments and satisfaction	Linkage profitability and relationship	Pricing model and process

The empirical chapter includes the detail description of the research approaches and used methods for each case. However, some important concepts that have been mentioned earlier need additional definition and explanation of how they are interpreted and used in the thesis.

All collaborative orientations, including the action and participatory research, follow the approach when the research effort is performed by the internal and external actors of the organization that performed the work together, and applies methods that are scientifically based. Collaborative research aims at dual objectives when an organization is adopting new models and processes, while researchers attempt to increase fundamental understanding in management science and create new knowledge (Pasmore et al 2008).

Collaborative management research is focused specifically on the influence of behaviors, actions, and designs that are intended to manage the organization towards the desired outcomes (Pasmore et al 2008). Following these dual objectives, collaborative management research adds to collaborative approaches the additional value that is gained when managers and researchers also take some responsibility for the other partners' learning and knowledge. This mutually shared responsibility brings benefit to the practitioner if the researcher succeeds in developing new management models that provide an advantage over competitors. The researcher will benefit when the practitioner tests the

suggested novel models and new scientifically interesting observations can be made (Pasmore et al 2008).

In the present work, a collaborative research approach has been achieved through several research and consulting projects where at least one or more managers and specialists of the studied company were involved together with one or more researchers from academia. A typical collaborative management research objective was to discover how management behavior and processes influence pricing decisions and to move towards new pricing models.

Another approach widely applied in this thesis research is the narrative method, which has no overall rules about suitable materials and stories, and no clear accounts of how to analyze the data (Squire, Andrews, and Tamboukou 2008). Small-scaled narratives are created in a way when the speaker's intentions are met by the analyst's interpretation, and this depends on context, history, and politics (Salmon and Riessman 2008). Unlike many qualitative interviews, when the discourse is in the form of a question–answer, narratives are often in the form of stories that the speaker relates about certain event that he or she has experienced (Riessman 1993). In order to strengthen the validity of narratives, several types of triangulations have been used in the present research: mixing data sources (e.g. the same problem with pricing is described by two or more interviewees from different parties, e.g. customers and suppliers), methods (e.g. qualitative data from free form comments are used to complement the results of the statistical report), and researchers (several researchers with different background from different research projects).

The methodology employed in Case 0 is influenced by ideas from grounded theory. The way in which the main reasons for obstacles to pricing were derived from the narratives, and the researcher's ideas and interpretations have been recorded and grouped can refer to such important methods of grounded theory as coding, memoing and sorting. Though observations extracted from data that were coded and sorted did not create a complete theory after first case, they did contribute to the formulation and clarification of further hypotheses and research directions. Referring to grounded theory (originally based on pure induction) does not contradict with main case study approach defined for the present thesis (systematic combining based on abductive matching) since later grounded theorists (e.g. Bryant and Charmaz 2007, Kelle 2005) have argued that abductive reasoning is an essential component of grounded theory and methodology.

Figure 3.2. The research roadmap

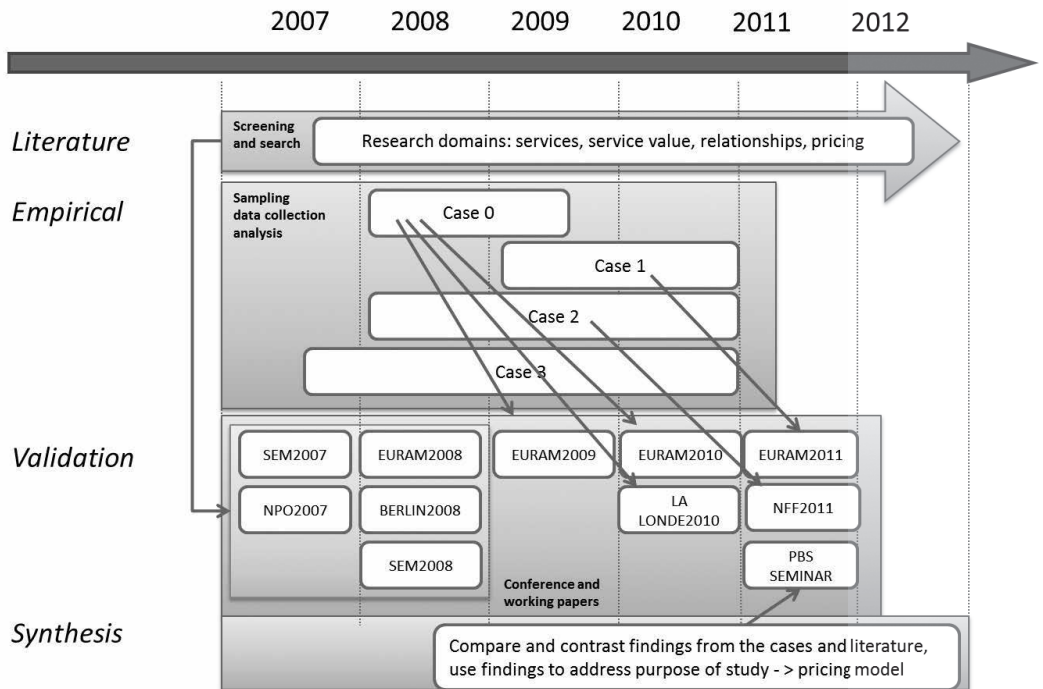
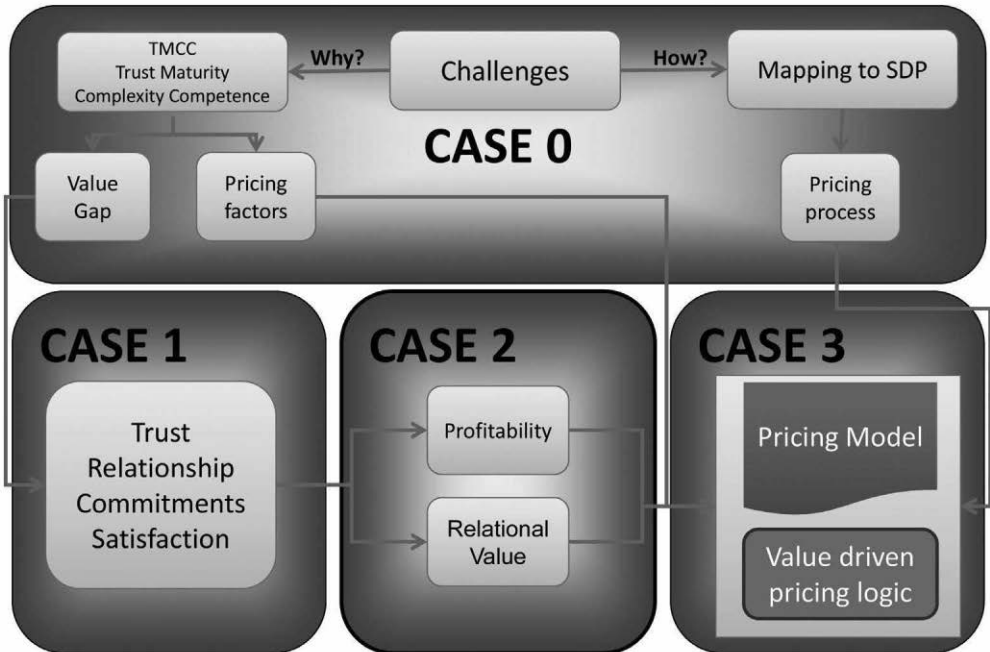


Figure 3.3. Research Flow ⁷



⁷ Acronym SDP means Service Development Process; concept explained in New service development process – systematic view on value creation process

Chapter 4. EMPIRICAL CHAPTER

As a part of answering the main research question (see section Research questions and goals, p. 22) the reviewed literature provided several important suggestions and inputs for the future pricing model and for the empirical and discussion sections (see Table 2.3, p. 22). These suggestions have been kept in mind and utilized during the empirical work. The point of departure for the empirical work became the complexity and challenges of pricing, as noted by the researchers (see Table 2.3, p. 22, it. 2). In order to create a comprehensive pricing model, it is logical to start from the close examination of the problems of existing approaches, reveal the reasons behind these problems, and suggest how to improve the pricing approaches for industrial services. Another important field for empirical study is the relational elements. The authors (see Table 2.3, p. 22, it. 5) state with confidence that relationships are crucial for service businesses, however, it needs to be shown by practical examples how such elements as trust, commitments, and customer satisfaction can be taken into account when pricing, and how they affect a company's service business and profitability. The service researchers (see Table 2.3, p. 22, it. 6) are of the same opinion that the cost-based approach is not the best solution for several reasons for service pricing. However, there were not many suggested or well-defined alternatives. Value-based pricing models are considered too complicated. The empirical part should reveal the disadvantages of a simplistic cost-based method, and describe a practical value based pricing mechanism that would be possible to apply for industrial services and that is a good alternative to the widely used cost-based approach.

4.1 Case 0: Challenges in pricing of industrial services

In Case 0, which can be regarded as a pre-study in this thesis, attention is drawn to the difficulties that industrial suppliers face during the development of service strategies. Challenges with regard to pricing are in particular focus in this case.

4.1.1 Description, purposes and methods

The approach in Case 0 is, first, to discover the reasons for the difficulties in pricing industrial services, second, to possibly identify patterns and then to create initial input for building a comprehensive pricing mechanism for indus-

trial service solutions. The aim of the case is to enable a systematic approach to pricing from the identified problems and therefore to contribute to the research sub question RS1:

Why is pricing of industrial services difficult and how can the difficulties be overcome?

The study is based on the analysis of challenges with pricing that have been identified from the reports, interviews, and documents of five industrial suppliers developing service strategy (see Table 4.1)

Table 4.1. Description of sample, Case 0

	Company A	Company B	Company C	Company D	Company E
Data	2 workshops, 6 interviews, 22 customer interviews, internal documentation, public data sources	2 workshops, 4 interviews, 5 customer interviews, internal documentation, public data sources	2 workshops, 19 interviews, 23 customer interviews, internal documentation, public data sources	2 workshops, 7 interviews, 12 customer interviews, internal documentation, public data sources	3 workshops, 15 interviews, 12 customer interviews, internal documentation, public data sources
Company's background	Supplier of metal components and integrated systems to the construction and engineering industries	Engineering and consulting services, contract management for marine industry	Provider of decentralized energy production solutions for the marine industry	Engineering design, consulting, information and document management for marine industry	Provider of decentralized energy production solutions for energy markets
Business context	Company is approaching a new developing market and looking for new pricing methods for the services. Aim is to improve competitiveness on new market	Company packages existing services into solutions so as to better match the customer's needs. Aim is to reduce exposure to cyclicity	Company packages existing services into solutions to increase sales. Aim is to improve margin	Company develops business over customer's equipment life cycle. Aim is to improve margin and achieve steady profit	Company systematizes development of training services by closer cooperation with customers. Aim is to improve margins by implementing value-based pricing
Service	Logistics management	Contract management, information Management	Remote monitoring and support services	Information and document management	Operator competence management
Time	Nov 07 – Mar 2008	Mar – May 2009	Jan – Oct 2008	Oct – Dec 2008	Nov – Dec 2008

The original data is comprised of the qualitative data from interviews and workshops with employees and customers of the case companies (see Table 8.3 in Appendix), archival data and company reports, business cases, development plans, quantitative data from surveys and checklists, and financial data. The workshops with the supplier's employees have been organized separately for top management, strategists, executives, and specialists, such as sales managers, R&D professionals, and business development engineers. The agenda was constructed around the main idea – how to develop and sell industrial services. The discussions with the top managers concerned what the service strategy should be, how to integrate the new services into the current portfolio, and what the performance targets for the service business were to be. Specialists were approached with more tactical issues, such as the availability of services offering, marketing plans, pricing, competence, and capabilities of the company to develop and deliver services. The lists of the suppliers' and the customers' employees, who were interviewed separately, have been compiled for each company. The top executives, pricing managers, heads of marketing, heads of business development, specialists, engineers, financial controllers, and the heads of R&D units of the companies-suppliers were interviewed in order to examine service development from different perspectives. Semi-structured interviews allowed the focus of the discussion to change depending on the interviewee's competence area and responsibilities (see templates and questionnaires in Table 8.1 and Table 8.2 in Appendix). There were two main categories of employees of the customers interviewed in the scope of this research: the CEO or the owners (in case of small and medium companies), and the supply/procurement managers and specialists, who have experience with the supplier.

The research analyzes the different challenges and problems with industrial service development as reported by the interviewees or found in the documents and interprets them from a pricing perspective. Such an approach can be referenced to narrative methods described earlier.

At the beginning of the case study, the suggested research design was a multiple case study with the aim of revealing the origins of the reported difficulties with service pricing, and creating propositions as to how to handle the difficulties. The rationale for multiple-case design and the selection of the cases were theory-driven to some extent and derived from the expectation of literal replications of outcomes (Yin 2003, Eisenhardt 1989), such as exemplary failure with industrial service pricing. However, the with-in case and cross-case search and analysis performed in order to discover patterns, similarities, or differences related to pricing did not emphasize any specific dependencies between, for

example, technologies, costs, or other characteristics of the service offering and the problems of pricing it. The selected companies represent different industrial segments; companies A and D are small to medium in size as regards market share; companies B, C, E are large international players; therefore, the companies pursued different strategic goals. However, there was no relationship observed between the challenges that the companies faced with pricing and the companies' profiles. Surprisingly, quite similar problems with the pricing of services were found in all five companies.

The first step of the analysis used the recursive abstraction method and revealed 21 general issues that cover a wide range of reported problems. These issues, connected with the empirical evidence and the context of the difficulties, formed a great body of data for analysis. Following the narrative approach that there is no one truth, and in order to strengthen reliability, the study contrasted the statements from the service providers with their customer's statements.

Later on, the identified issues were analyzed using a method of qualitative content analyses for the concepts reviewed in the theoretical part, such as trust, relational value components, knowledge (as set of existed competences), maturity of service (through service development phases). Qualitative content analysis, "a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns", (Hsieh and Shannon 2005, p.1278) was used in two directions. The directed content analysis was performed for the themes described in the theoretical part, namely, trust and commitments, complexity, competence, and knowledge, with the purpose of validating these concepts in an empirical context for industrial services pricing. The conventional qualitative content analysis directly and inductively derived relevant themes from raw data. Capability and maturity themes were developed from data inductively. Finally, four recurring themes were selected to describe the difficulties with industrial service pricing: complexity, trust, maturity, and competence. These concepts were used in a construct enabling analysis. Each of 21 general issues with pricing were assessed according to the construct. Since qualitative content analysis allows the assigning of a unit of text to more than one category simultaneously (Tesch 1990), some of the difficulties were assigned to more than one theme (see Table 4.2, Table 4.3, Table 4.4, Table 4.5, Table 4.6, Table 4.7).

Table 4.2. Challenges with pricing on service Start-up phase

Issue N	Challenge	Details		Example Cases								
		Supplier View	Customer View	Trust	Maturity	Complexity	Competence	Trust	Maturity	Complexity	Competence	
1.	Customer is unwilling to pay for provider's intended offering because of lack of faith in the supplier's ability to provide it - although supplier has the competence, but it is not known to customer.	The supplier diversifies into providing new services that are not associated with its regular business activities. Company B is struggling with the challenges on the way to productify internally used Information Management service. The firm has experience with providing the essential parts of the service but lacks marketing, packaging, and pricing of such services; the supplier does not have competence in selling of services.	Customer does not recognize the supplier's competence in the service that is offered. Customers of Company B are not convinced to buy Information Management service as a separate service; they don't recognize Company B as a provider of Information Systems as well as a service provider .	X	X			X	X			X
2.	Customer is not willing to pay for provider's intended offering because he lacks faith in the supplier's ability to provide it - supplier has little present competence in service.	Similar as above, but the provider's experience and technology base for the information management service exists only within a small unit of the company, it is just being tested, and is not known to most of its customers and business areas. Company wants to provide complex maintenance management solution based on the information management service.	Customer knows the company well, recognizes their potential to handle information management because of their systematic approach and experience. But customer clearly says the provider has no competence to do with maintenance management and doubts they could provide it.					X	X			X
3.	Lack of faith within supplier's organization that service can be provided successfully, and therefore it is preferred to provide it free of charge in order to avoid commitments and disappointing the customer.	Supplier's employees feel that service should be free of charge because they expect problems in selling it due to lack of confidence that their organization is able to train their staff and dedicate sufficient resources for providing what has been promised to the customer. Employees doubt each other's ability to change their mindset from a product – to a service company, and thus they rather want to provide the service for free because if they would charge for it they would have to take more responsibility in delivering what the customer had paid for.	Customer would in fact pay for the service if it would be organized better; the supplier should have dedicated personnel and obtain needed competence .					X				X

4.	Difficulties in value proposition and unclear scope of service do not allow pricing the offering. The supplier's value proposition is not something what the customer sees as valuable, fitting to the customer's business model).	B C E	Company B uses the service internally; however, when they have tried to market the service for customers, they failed to pronounce value of this service. Supplier think that for selling internally developed tools and services they only should develop marketing and pricing strategy. Supplier plan to sell the same standardized offering to all possible customers.	The solution should resolve concrete customer problems, such as risk management, asset management; in order to clarify value for customer, a solution should have a distinctive name or it should be branded. Customer don't see value in technical service of Company B, they see it as set of tools .	X	X	X
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Table 4.3. Challenges with pricing on phase of service Definition

Issue N	Challenge	Cases	Details								
			Supplier View			Customer View					
			Trust	Maturity	Complexity	Competence	Trust	Maturity	Complexity	Competence	
1.	Customer does not know their own cost of doing what is offered by supplier as service	E	Customer only knows their cost for work and parts, but not their overhead costs.								
2.	Pricing of services is more complex than traditional products	A B C	Supplier consider service pricing as a complicated task and applies simple methods of pricing, in most of the cases cost-based methods. Companies' pricing approach is traditionally built as compensation of labor cost and resources.								
3.	Pricing of industrial services is different from professional service pricing due to relations to goods' manufacturing and marketing process	A B C E	For tightly bundled to the equipment services the suppliers consider giving some service as a "free-of-charge" to the customers, in order to achieve certain strategic goal, for example to establish new types of relation with the customer, instead of struggling with complex 'decoupling' pricing.								
4.	Requirement for high level of customization makes pricing work intensive	A C D	Requirement for high level of customization causes high costs of service delivery. Company A had to close those operational services, which were customer-specific, as non-profitable.								

Table 4.4. Challenges with pricing on service Concretizing phase

Issue N	Challenge	Cases	Details								
			Supplier View			Customer View					
			Trust	Maturity	Complexity	Competence	Trust	Maturity	Complexity	Competence	
1.	Service insufficiently matches what customer is looking for and therefore customer is not willing to pay for service	D C	Supplier is offering service for information management, which includes providing up-to-date documentation and maintenance planning based on this information. Supplier is only willing to take charge of their own scope but not to become responsible for managing the input of other suppliers. Supplier wants to charge a fixed fee for their service.	Customer is not looking for documentation but for a larger information management concept that allows managing key processes based on accurate and real-time information and access to it, and where supplier functions as gatekeeper to all other subcontractors and the information they provide to the project and final installation. Customer would pay supplier a fixed premium for taking that integration function.	X						X
2.	Customer expects transparency the supplier cannot provide; lack of transparent performance measurements makes performance-based pricing difficult.	C D E	The supplier has used the documentation service internally, rather extensively, but without using internal pricing. Now the supplier wants to pro-ductify it and offer it to external customers but lacks clear specification, such as detailed description of service components and deliverables.	Customer would like to know the content of service offering for more detailed evaluation and in order to compare with competing solutions. Customer is interested but they need more information about company's strategy, development, core competences, and available solutions.			X				X
3.	Value-based pricing requires elaboration of measurable performance criteria	B C D E	It is difficult to develop quantifiable criteria for measurement of customer satisfaction, performance. It requires deep knowledge of customer business logic, business processes.	Customer has to cooperate very closely with supplier, to be "bundled" into the same value-creation network. On the way to implement value-based pricing customer should suggest and accept measurable performance criteria, such as increased sales, profit, and savings.			X				X

Table 4.5. Challenges with pricing on phase of Formulation of marketing strategy

Issue N	Challenge	Cases	Details								
			Supplier View			Customer View					
			Trust	Maturity	Complexity	Competence	Trust	Maturity	Complexity	Competence	
1.	Service cost is priced into product price which increases perceived price of product.	C	Supplier has developed a product-service package, and plans to invoice the customer by only showing it as product price. Service is a combination of remote monitoring and consulting service built on sophisticated technology; it provides advices how to handle the installations. Goal is to strengthen brand image by giving it 'free of charge'.	Customer does not see the benefit of the service but compares product price with competitor's standard product offer. Customer does not use the service and therefore perceives product as too expensive, and asks supplier to exclude it from the offering and lower the price.					X		X

2.	Service is somewhat taken for granted and does not justify premium price	C D	Company offers documentation management to customers, which includes access to documents and performing maintenance based on up-to-date documentation of installations. Many customers are using this service already in its present form, informally, it is not charged extra. Supplier does not know how to develop it further to the commercial ends.	Customer is interested in the service but their plans to use it are not extensive enough to justify paying extra, and instead they want a smaller scope, which they see as being part of the supplier's customer service. Customer see the service rather as a supplier's high quality customers support work than distinctive competence and competitive advantage.						X
3.	Service is new and needs unconventional pricing mechanism customers are not used to	C D E	Supplier offers remote installation monitoring combined with consulting and risk management but there are no established pricing mechanisms for this type of concept in the industry yet. Supplier aims to charge for it based on fixed fee combined with performance-based premium.	Customers cannot easily understand content of new service, and would prefer to pay based on annual fixed license because they associate remote monitoring with other management systems and tools for which they pay based on software license.	X					X
4.	Supplier does not present pricing in customer's language and parameters	C D	Supplier developed for their service clear key performance indicators and benchmarks for comparing prices and effectiveness of the service (for example cost of service per MWh of produced energy). However, customer fails to recognize the cost advantage the service is offering.	Customer is interested in the service and received information about scope of the service, benefits, KPIs and pricing. But performance indicators and pricing are based on generic measure while they would need to know the service price calculated in USD/Produced tons of copper.	X					X
5.	Industrial companies' current goods' pricing methodologies have no means for industrial services	A B C D	Marketing of industrial services requires designing of new comprehensive pricing mechanisms, supporting service pricing strategies. The supplier looks for the mechanisms that help to achieve economy of scales, and at the same time needed for industrial services customer orientation.	Customers don't understand new pricing mechanisms - how services are priced , therefore, they don't understand for what they have to pay. Customers might prefer competitors due to better and more transparent prices and longer service experience.	X				X	X
6.	Value-based pricing involves higher risks and requires close cooperation between customer and supplier	B C D	Supplier needs to be involved deeply and at early stage into customer processes. For example, to offer financial services already on planning phases in order to optimize customer project. Supplier does not have a suitable business models for that. Suppliers do not have experience in innovative service pricing approaches.	Customer should select supplier on the early stage; customer should trust supplier and be ready for long term relations.	X				X	

Table 4.6. Challenges with pricing on Follow-up and measurement phase

Issue N	Challenge	Cases	Details							
			Supplier View		Customer View		Supplier		Customer	
			Trust	Maturity	Complexity	Competence	Trust	Maturity	Complexity	Competence
1.	Performance enhancing effects of services difficult to prove and measure within due time.	C D	Supplier offers monitoring the competence of installations operators and wants to sell this as separate service, based on fixed fee plus a premium based on value and performance. However, supplier finds it hard to provide statistical proof and performance measurements that are transparent and reliable, and have been collected long enough to make statistical calculations.	Customer is interested in the monitoring service but in order to make the initial investment, customer requests a return-on-investment calculation that shows the services' benefit for improving the performance of operations. Customer is willing to start service based on faith but with reduced fee as long as link to performance is not proven.	X	X	X	X	X	X
2.	Benefits of the service are difficult to measure because of complexity of the application	C D	Supplier is aware the performance monitoring of installations requires knowledge and measurement of a number of different inputs , and a high number of variables can affect the performance. This creates a problem in establishing performance-based pricing and providing guarantees because supplier has not found out how to formulate the offering and which takes into consideration that supplier has no control over a number of input factors that affect the performance and outcomes.	Customer would like to receive a performance guarantee and pay based on performance. However, customer doubts that supplier is able to measure some of the inputs that are essential for providing a reliable assessment of the installation's performance and prediction of maintenance needs.	X	X	X	X	X	X

Table 4.7. Development and change management phase

Issue N	Challenge	Cases	Details							
			Supplier View		Customer View		Supplier		Customer	
			Trust	Maturity	Complexity	Competence	Trust	Maturity	Complexity	Competence
1.	Lack of pricing logic can be as harmful as sudden changes in current pricing practices	B C D	It is difficult and expensive to change organizational processes. Supplier lacks process approach for development of pricing methodologies for industrial services, grounded on service development process.	Customers, indeed, require more justification on changing of pricing methods. However, it was observed that they are opened to new, innovative pricing suggestions.	X	X	X	X	X	X

4.1.2 Results: beyond the challenges

4.1.2.1 Complexity

Complexity, one of the most mentioned challenges with service pricing in the literature (see section Summary of literature review, p. 22), has been reported abundantly and almost synchronously by the customers and the suppliers in all five companies. There are several ‘types’ of complexity: technical issues, related to bundling (inseparability) (issue 2 Table 4.3) and high level of customization (issue 4 Table 4.3), performance or other impact measurement issues (issue Table 4.6), transparency issues (issue 1 Table 4.3), including the possibility of comparing the offering with competitive solutions. Some of the complexity challenges can be explained by organizational immaturity in service business, in particularly those which concern new pricing methods. For example, the service of equipment monitoring requires measurement of a number of different inputs, since many variables can affect the performance of equipment. A high number of performance factors and complex dependencies between them complicate development of performance-based pricing, resulting in the supplier not being able to discover how to formulate the offering in terms of increased performance, and consequently the supplier had no control over a number of input factors that affect the performance and outcomes.

Such accounts as issue 2 (Table 4.6), issue 6 (Table 4.5), issue 1 (Table 4.6) refer to the need for the companies to develop and adopt new business models, and processes, as well as implementing innovative pricing mechanisms due to the inability of the present systems to derive and measure value from service enriched solutions.

4.1.2.2 Trust

From issues 1 and 2 (Table 4.2) and issue 3 (Table 4.3) it was obvious that the customers lack faith in the supplier's ability to provide concrete services or the ability to implement service-driven business models, both of which are necessary in order to become an industrial service provider. The supplier's competence was not known to the customers and the customers were not convinced that they would buy a new service. Some reports concern the readiness of the customers to develop relationships with the supplier at a qualitatively new and higher level. Implementation of innovative performance-based pricing methods implies risk and information sharing, which implies strong cooperation between the supplier and the customer, and in some cases involvement of the customer in the early stage of service development. The above observations al-

low a link to be made to trust issues, which are widely discussed in the business literature (see section Commitment and trust, p.22).

In several accounts (e.g. issues 1, issue 2 Table 4.6, issue 1 Table 4.7), the customers demonstrated a lack of trust when the supplier reported complexity. This is an obvious link - high complexity in technology requires a high level of trust due to the limited transparency of the offering and therefore the difficulty of evaluating value. In two accounts, lack of trust from the supplier has been interpreted as immaturity in the service offering and has been handled by the supplier through a marketing type of action; the supplier thought that after packaging the services into the offering and pricing the offering, customers will accept it and buy it. However, customers are skeptical of such 'ad hoc' offerings, they need to recognize supplier competence and strategy related to the offered service; they want to know which of their particular needs and problems will be resolved by the delivered service, and how this will be done. Some cases illustrate the opposite situation: the customer does not believe in the supplier's capabilities and competences even though they do exist. These problems can be partially resolved by co-production of value propositions when the supplier's capabilities and objectives are linked with the customer's needs and wishes.

4.1.2.3 Organizational Maturity

Issue 3 (Table 4.2) refers to the situation where the supplier's employees that were interviewed believe that the service should be given free of charge. This is because they expect problems in selling a product due to a lack of confidence in the fact that their organization would be able to train their staff and dedicate sufficient resources to providing what had been promised to the customer. The customer does not recognize value in technical services (issue 4 Table 4.2); in order to clarify value, a solution should have a distinctive name, a brand. It should resolve concrete problems for the customer, such as risk management or asset management. These challenges resonate with a process theory for the transition from products to services described by Oliva and Kallenberg (2003). They describe how an organization needs to go through a series of stages in order to deliver high quality services that are valuable to customers, and among other activities, develop new pricing mechanism, for example, an equipment availability based approach. The challenges that the organization faces during the transition time are associated with organizational maturity. Another, related, maturity path is the one moving from a product centric to a customer centric organization (Galbraith 2002, Shah et al 2006). In this sense, maturity may constitute a barrier for including ser-

vices in the business model of a company (Wikström et al 2009) and thereby influence pricing.

Both the customers and suppliers belong to manufacturing sectors and might underestimate the significance of changes related to the 'servitization' of their business relationships and business models. This explains the relatively small amount of reported issues that can be interpreted as maturity. In practice, the interviewees might explain difficulties caused by organizational immaturity as, for example, issues with complexity or competence, which in this case are very much interrelated topics. Maturity is not so clear-cut and not very easy to utilize. Initially the analysis distinguished between 'organizational maturity' and 'maturity of the service offering', which, however, is a symptom-cause relationship, e.g. if the service is 'immature' for the customer, it is to a considerable degree due to the organizational inability to manage services. It is remarkable that there are no challenges that the supplier and the customer explain simultaneously as maturity issues. It might seem as if this is a problem with construct and data interpretation. However, such reported problems as: 'a need to change mindset from service to product', 'earlier involvement', 'readiness to share risk', 'ability to recognize customer needs and resolve customer problems' require understanding and the adoption of new ways of creating value and therefore are related to organizational maturity.

4.1.2.4 Competence in performing a service

From the resource-based perspective of the firm, when firms perform business activities they develop task-specific capabilities (Wernerfelt 1984). Indeed, customers doubt whether they will receive value for money if they are not aware that the supplier possesses these task-specific competences. Issues 1 and 2 (Table 4.4) cover the situation where the customer considers the value proposition as worth paying for – but the customer is unaware of the supplier's competences, either because they were simply not communicated although the supplier had them, or the supplier lacked those competences. There are also issues where the supplier's strong core competence somehow excluded them, in the customer's mind, from having competences in other areas. This was because the customer regarded these competences as contradicting each other or they were not seen as complementary enough.

Some difficulties seem to be related to the supplier's technology, knowledge base or the supplier's identity as a provider of a certain product and the owner of the certain knowledge. These difficulties have been mainly reported when the supplier enters a new field, for example, develops new services that are

not associated with its regular business activities. The issue is tightly bundled with the customer's trust and the supplier's maturity as a service provider, but often seen by the supplier and interpreted by the customer as a competence or capability issue.

Trust, however, relates to capability and context in terms of being convinced that the other party has the capability required by the context. If the degree of challenge in the context is low, then not much capability will be needed and therefore not that much trust is required. If the degree of challenge is high, then it is much more important that, for example, the customer is convinced that the supplier has the required capability. Here it is important to note that capability is not the same as competence. Capability includes judgment and ethics because when a situation is complex it becomes important to know that although you do not know what kind of specific competence will be required the right kind of behavior and attitude is nevertheless certain. Capability refers to a company's ability to create new knowledge rather than a company's existing knowledge (Nonaka and Takeuchi 1995). Therefore, focus has been put on trust and competence.

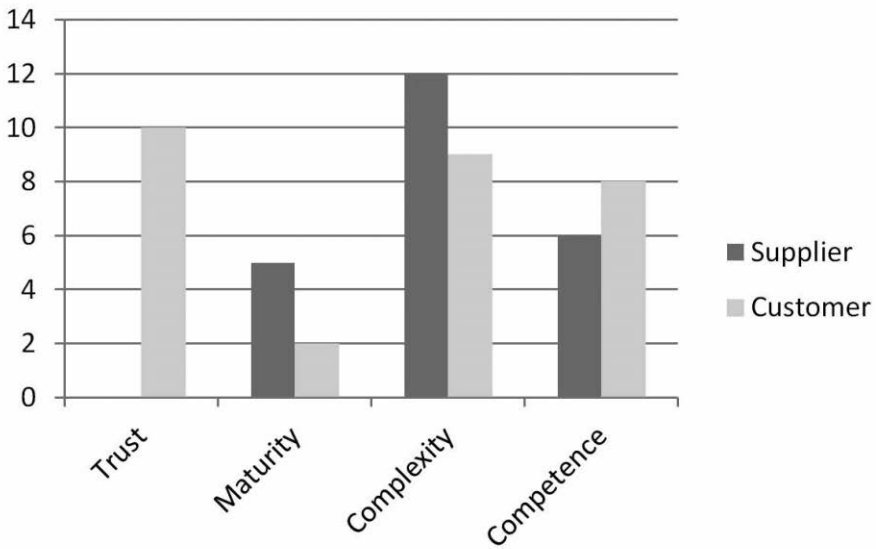
Thus, an initial construct that provided the dimensions for further analysis of the reported difficulties is formed from: issues with trust in customer-supplier relation, low organizational maturity as a service provider, high complexity associated with service offerings and insufficient competence for providing or consuming services.

4.1.3 The Value Gap

The same problem is often viewed very differently by the supplier and the customer. Therefore, it makes sense to continue the analysis from both perspectives. Identified challenges have been assessed according to the dimensions of the developed construct. Some of the challenges appear to be complex issues and have to be classified with several dimensions. For the majority of the challenges the supplier and the customer give different interpretations. For example, a supplier explains the inability to apply value-based pricing methods by the lack of their own competences in service marketing techniques and by low maturity as a service organization. The customer, in turn, argues that value-based methods require first of all trust between the supplier and the customer due to the high risks involved and the high level of collaboration.

In order to visualize the intervening results, the customers' and the suppliers' interpretations of pricing challenges for each dimension of the construct have been summed up as shown in Figure 4.1. The vertical axis shows

Figure 4.1. Suppliers' and Customers' view of the reasons behind the difficulties



the number of issues assessed in each category (trust, maturity, complexity, competence) from Table 4.2, Table 4.3, Table 4.4, Table 4.5, Table 4.6, and Table 4.7.

Such visualization reveals the distance between the customers and the suppliers that can be called the ‘value gap’. Before attempting to overcome the challenges (complexity, immaturity, lack of trust, low competence) companies need to understand, interpret, and possibly dissimilate the ‘value gap’, in other words, to elaborate on a common understanding of pricing problems with customers.

Using the name ‘value gap’ emphasizes the fact that nearly each of the difficulties with service pricing is caused by an incorrect value proposition (e.g. communication, co-creation, and co-production) or failures in the value creation process. Thus, the basic reason behind the ‘value gap’ is a lack of collaboration between suppliers and customers.

4.1.4 The next step of the analysis: towards a service pricing process

The above-mentioned findings describe pricing of industrial services as a complex issue and partially explain the persistence that the companies demonstrate when employing cost-based pricing approaches. In order to overcome challenges with pricing and to diminish the ‘value gap’ companies should take a systematic view on pricing by developing a pricing process that can be, for example, linked to the service development process (NSD) (see section New

service development process – systematic view on value creation process, Table 8.9). To guide the development of the service pricing processes the identified issues concerning pricing have been further categorized by assigning them to distinct phases of the service development process (see Table 4.8). The phases of the service development might vary among service types and company practices. However, the main steps of service development comprise of start-up, defining the service, concretizing and testing, deciding on marketing strategy, following-up and measurement, and continuous development and change management.

Table 4.8. Summary of challenges with pricing

Development Phase	Pricing Challenges	
	Supplier View	Customer View
Start-up	The supplier has experience with providing the essential parts of the service but lacks marketing, packaging, and pricing. Lack of faith by the supplier’s own organization to provide service worth charging for. Needed competence exists only within a small unit and it is not known to most of customers. The supplier is unclear about the customer target group for the service. The supplier is not sure what the concrete goal is that the pricing should support.	Lack of faith in the supplier’s ability to deliver commitment. The service is not associated with core supplier competence. The supplier does not have the needed capabilities. The supplier underestimates the effort needed to complete and deliver the service. The supplier’s strategy as regards service development is not known.
Scope definition	Customers evaluate the price of services and underestimate the effort since they ignore overhead costs. The service requires too much customization which makes the pricing complex. It is difficult to reflect, in pricing, such service characteristics as innovativeness, creativeness.	The scope of the service is ill-defined and unclear. The customer does not see value in technical services – the supplier should communicate the benefits in both technical and commercial terms. Difficulties in comparing pricing due to an inability separate out the product costs. Customization makes it difficult to compare prices.

Concretization and testing	The supplier does not want to become responsible for managing input of other suppliers required for the service, e.g. to take integration role. Lack of specification limits any possibilities of applying innovative output-based pricing.	The customer expects that there is a single service provider who is a gatekeeper for all other subcontractors. Customers expect transparency for detailed evaluation and comparison of service.
Setting marketing strategy	Some services should be given free-of-charge. There is no market yet for certain types of solutions. Current product pricing approaches have no means for pricing services. Value-based pricing requires deep knowledge of the customer's business and also sharing risks.	The supplier does not present the pricing in the customer's language and parameters. The customer prefers familiar pricing mechanisms, such as a fixed license. The customers regard some services as part of the supplier's customer support and do not want to pay extra.
Follow-up and measurement	Performance enhancing effects are difficult to prove. Benefits from the service are difficult to measure.	Lack of sophisticated data gathering and measurement techniques. Lack of control of essential inputs that affect performance of the service.
Change management	It is difficult and expensive to change the pricing process presently existing in a supplier organization.	Customers require clear indication of pricing, including possible future changes.

Although some difficulties may not only occur during a single phase, this mapping of the difficulties according to distinct phases of the service development process allowed for an examination of the difficulties from the service maturity perspective.

The results show that problems with pricing are encountered along the entire development process, although they are different in nature (see section Results: beyond the challenges). Each stage of service development has been examined in order to find the common reasons for the difficulties of each group; six main obstacles for pricing of industrial services have been summarized, and recommendations on how to overcome the difficulties suggested.

During the *Start-up Phase*, the supplier's strategy for the service and the intentions of each customer buying this service is unclear. A lack of faith by the supplier to deliver on promises, and by the customer to offer commitment, and a lack of faith by the supplier's own organization to provide services worth charging for, all contribute to making it unclear to suppliers and customers what is being offered and, as a result, what should be charged for. Therefore, the pricing mechanism, which should support a certain strategic goal, lacks input

data for further development. There is a need to clearly define goals for selling certain services to certain customers (why do we want to/need to/can sell this service to a certain customer), and to defined and communicate a competence base and scope for the service to internally and to the customer.

The *Definition of the Service Scope Phase* deals with the complexity related to the nature of industrial services, pricing of services, and perceived value. Suppliers often have problems, balancing between high customization and reasonable standardization. This complicates pricing and companies often make decisions in favor of cost-based approaches. The customer often does not know their overhead costs and therefore has difficulty recognizing service value. In this phase, it is important to identify major service characteristics such as costs, innovations, risks, availability, modularity, customization, standardization, and to define service deliverables, as well as to communicate value in terms of customer's needs.

In the *Concretizing and Testing Phase*, the supplier fails to communicate the value of the service to the customer due to a lack of transparency in the offering, and unclear performance measurement mechanisms. It is of paramount importance for the supplier to understand the customer's business logic, and yet, still create transparency by inviting the customer into the process of designing a pricing mechanism. The supplier and customer define together measurable performance targets by identifying what affects performance and what can be measured. The supplier can also identify which benefits the customer is willing to accept without measuring them.

In the *Setting Marketing Strategy Phase* the actual design and shipping pricing mechanisms take place. The origin of the problems here is a lack of knowledge and experience in service business in general, and innovative service marketing methods in particular. The manufacturing context brings specific challenges - service cost is hidden in the product price, and the customer often has difficulties when comparing offerings with other suppliers. Industrial services need unconventional pricing mechanisms, which include strategic objectives that the service should achieve for the supplier.

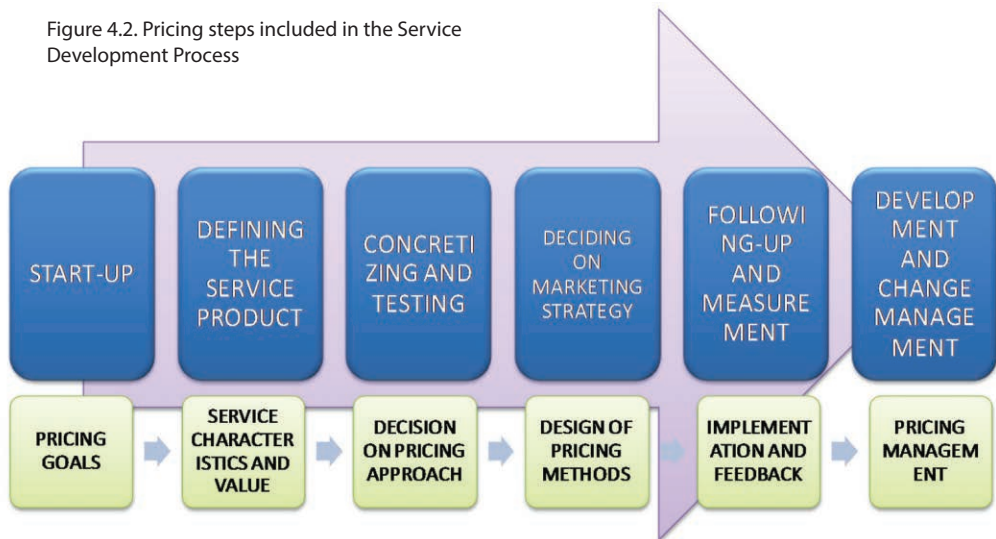
During the *Follow-up and Measurement Phase*, the supplier should collect performance data, the results of the applied pricing methods, and revise the results with the customer. Performance enhancing effects are difficult to prove and measure due to complexity, and lack of sophisticated data gathering and measurement techniques.

The *Change Management Phase* is often ignored in pricing issues, which makes the pricing outdated in terms of the changing business environment,

such as new strategic objectives, new competition, changing service scope, or overall market conditions. A desired pricing model enables changes and corrections to be made to the pricing solution, based on environmental and performance signals, tracking competition and the market, and keeping the pricing model dynamic. Such pricing management is carried out through the open interfaces implemented in the pricing mechanisms and made accessible to all participants in the value co-creation.

Thus, in order to resolve these problems the following multistep pricing process has been suggested in this thesis (see Figure 4.2).

Figure 4.2. Pricing steps included in the Service Development Process



The pricing process comprises of the following phases and covers the following activities:

1. Establishing pricing goals, when the supplier should clearly state what is the purpose of selling the service to the particular supplier;
2. Definition of service characteristics, which affect pricing and value proposition, when the supplier should decide on the service content, therefore, its cost, level of modularization, standardization, customization, availability, and other relevant characteristics. This is also the phase when the supplier give details of the value proposition to the potential customers;
3. A justified decision on pricing methods should be made based on multiple factors, such as strategic intentions, service characteristics, business environment, customer needs and customer perceived value; the decision often

- requires customer involvement, for example, for elaboration of measurable performance targets;
4. Design of pricing methods, when the actual design of the pricing method is performed and a pricing solution delivered to business process;
 5. During the implementation and feedback phase the supplier should collect performance data and results of the applied pricing methods;
 6. Pricing management is carried out through open interfaces implemented in pricing mechanisms, which allow for making changes and corrections in the pricing solution, based on environmental and performance signals.

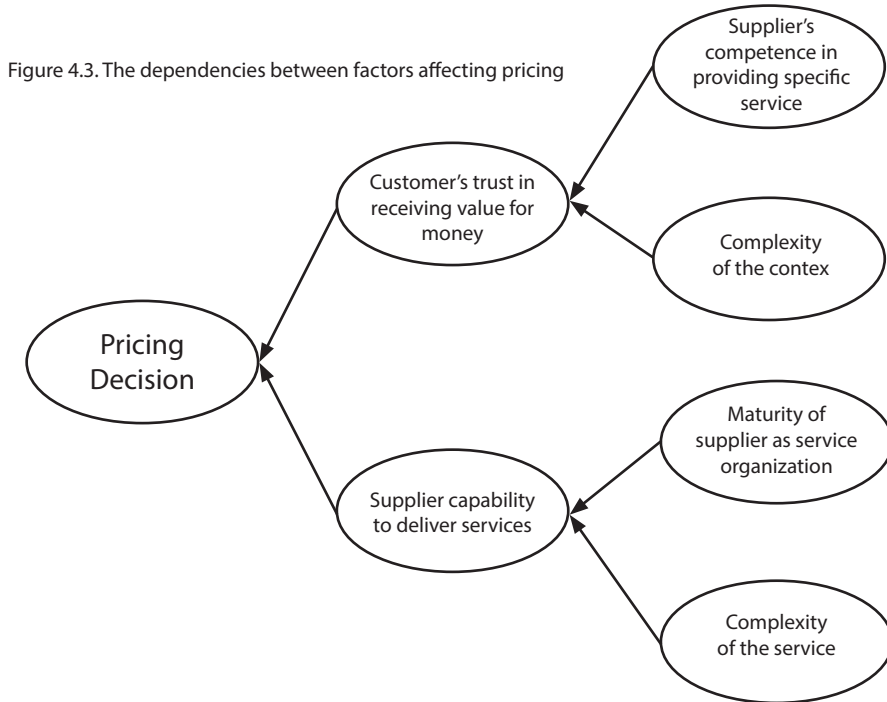
4.1.5 Summary of Case 0

A significant number of the problems with industrial service pricing occurred because of the distance between the customers and the suppliers, indicating a lack of understanding and collaboration between them. As a result, the relationship between the supplier and the customer created a 'value gap', which arose from a situation where the supplier cannot properly communicate and deliver value and the customer cannot recognize and utilize the value of the industrial service offering. Increasing collaboration and raising the relationship to a higher level through, for example, value co-creation, value-proposition co-design, co-production, and innovative risk- and performance- sharing pricing approaches require major changes in the companies. These changes include an alteration in the general mindset and business models, since new business logic does not fit into the present product-driven and technology-dependent organizational forms.

Systematic combining of the results from data analysis with the theoretical findings revealed four general reasons behind the reported pricing challenges: issues with trust, different aspects of complexity, organizational immaturity as a service provider, and lack of the necessary competences and capabilities. The analysis revealed certain dependencies between these reasons. For example, often when customers associate the problem with a lack of trust, the suppliers explain the same issue by complexity. There is also a link between customer trust and the supplier's capability to provide a certain service. Whether the customer trusts that the supplier is able to perform the service depends on a number of factors, such as, the organization's experience and knowledge as regards the performance of the service, and the complexity of the context in which the service is performed. On the other hand, the

supplier's capability to develop and deliver a service depends on the maturity of the organization as a service provider, and is also related to the complexity associated with service itself.

The observed relationships and dependencies allowed the researchers to suggest further developing the construct, based on an intuitive view of the dependencies between factors affecting pricing decisions (see Figure 4.3).



Companies have difficulties in deriving benefits from their industrial services. The research revealed that there are challenges in both an outward and inward directions. Companies are not able to commercialize properly their knowledge and technology base, and therefore they cannot testify to the value of their integrated solutions. Customers, on the other hand, have limited references for the prices of industrial services and as they cannot recognize the value of industrial services are not, therefore, convinced as to the necessity of paying for the industrial services. Understanding and practicing of value co-creation might become a foundation for an exhaustive process of service pricing.

Current service development and service pricing literature have treated pricing as an issue for later phases in the service development process, for example, for the marketing phase (see also section New service development process –

systematic view on value creation process, p. 22). The analysis showed that the problems with pricing are encountered along the entire development process, although the nature of the difficulties varies from phase to phase. Service pricing requires attention from the starting phases; it is a multistep process that handles different aspects along the entire service development process.

Pricing of industrial services is more than finding suitable pricing methods. The origin of the problems with service pricing in general, and industrial services in particular, is far more than managerial inexperience or a company's immaturity in service business. It is also important that it is regarded as more than a systematically managed pricing process. Competing through services requires adaptation of a new pricing logic, which is based on an understanding of value and driven by value. In essence, a new logic for managing value is needed.

Value has been recognized as a key success factor for a company developing services (see section Value and value creation in services, p.22), while pricing, or price management, is seen as a 'key determinant of performance' by the company (Shipley and Jobber, 2001) (see also section Pricing, p.22). Connecting the value and pricing of services (see section Service pricing, p. 22, Lusch et al 2007) should become a foundation for a successful service pricing mechanism.

Since the issue with industrial service pricing has not been widely addressed in literature, the relationship between value and pricing remains vague. An abductive approach has allowed a new relational variable to be discovered and included into the study of pricing issues. The next step of the research will attempt to "reconnect and redirect theory" (Lee 1999) on the role of relational value when building a pricing approach.

4.2 Case 1: Service failure as a golden opportunity – a relationship perspective on value

Case 0 revealed the 'value gap' between the customer and the supplier, which is partly caused by a lack of service-oriented logic in pricing and posed the question: why do industrial companies continue to apply goods-dominant logics while developing service offerings? One of the reasons for choosing a less service-oriented strategy might be the new challenges and problems that may arise when focusing on services. The provider should be able to deliver the service smoothly and without problems, in many ways having to start from scratch every single time for every single service encounter, no matter how well the service process has been designed and streamlined for problem-free delivery. A service relationship can succeed or fail depending on how well problem

situations and failures– and they do occur, no matter what – are handled. An irate customer can perhaps become eternally grateful and loyal in an instant if a problem is taken care of smoothly and impressively by the service provider's organization.

4.2.1 Context and purpose

The results of Case 0 confirmed that the customer – supplier relationship, cooperation, and mutual understanding of each other's interests and problems are very crucial for the development and pricing of industrial services. Lack of trust was mentioned as one of the major challenges to pricing industrial services according to their value. The role of trust and its links to satisfaction, commitment, loyalty, and quality have been discussed in the literature. However, there is no agreement on how these factors influence performance, or which relationship strategies are the most effective; it is also not clear how these factors can be utilized for pricing.

The second research sub question (RS2) has been formulated on a general level:

What is the role of the customer-supplier relationship in service value?

The literature review revealed that the main elements of relationships are trust and commitments, which in turn depend on satisfaction and service quality. Expected and consistent quality of delivered services nurtures satisfaction. Unfortunately, sometimes there are failures in services and problems with delivery, which lead to dissatisfaction and can eventually ruin the customer-supplier relationship. What can the service provider do to sustain the relationship and restore satisfaction, or perhaps even increase it? Can service value be sustained or even increased if the service provider is able to promptly take action and impress the customer? Is it possible to diminish or prevent the negative effects of service failure and turn the situation into an opportunity through successful service recovery? The literature suggests that there is a golden opportunity created by failure, an opportunity to increase relational value through enduring commitment based on trust in spite of temporary dissatisfaction (see section Service failure and service recovery). The approach of this study is to find empirical evidence supporting this idea in order to proceed with finding systematic, practical approaches to sustain a mutually satisfactory service relationship and to draw together concepts of relational value and pricing. Thus in order to answer RS2 the following assumption was formulated:

Low satisfaction, if temporary, does not lead to the end of commitment if the customer continues to trust in the service provider's willingness and

ability to recover from failures and to eventually continue to provide satisfactory service quality. Successful service recovery can even lead to increased trust, which can lead to stronger commitment and increased satisfaction, thus creating a positive cycle.

One possible implication concerning pricing is that if this statement is true then satisfaction can be used as an indicator of project success. However, it perhaps makes sense to employ trust and commitments into the pricing mechanisms since they define relationships over the longer term. Nevertheless, the overall goal of Case 1 is to find the implications of relational aspects for industrial services.

The service relationship is an essential element and source of value in industrial services. Relationships are based on commitment, which requires trust. The level of satisfaction is an indication of whether or not the service provider is failing. Managing service quality is a way to manage satisfaction, poor quality being one element in failure. Proceeding from the standpoint that the link between service value and service recovery has essentially a relational profile, the research looks into different concepts described under the umbrella of relationship marketing in order to find explanations for the phenomenon of how service recovery affects relational value, and to suggest a systematic approach to manage it.

4.2.2 Methodology: data description, two dimensional construct for analysis

The empirical data is drawn from several research and consulting projects and ongoing business diagnostics activities for one large international manufacturing company (hereafter referred to as “the Company”) diversifying its business into the industrial service market. In fact, the Company is one of the companies in Case 0, but the business unit in Case 1 is specifically focused on development of industrial services and organizationally it is a separate company in the enterprise group. The Company has considerable experience and recognized competence in providing industrial equipment - it is a major supplier of flexible base load power plants and ship engines. The company’s knowledge and technology base is recognized by the customers.

The analysis is performed on combined data from two sources. The first source is qualitative and quantified data from the CROL® system, which implements a number of methods for managing business relationships. CROL® is used globally by a number of industrial companies and is operated by the Research Institute for Project-based industry (PBI) as an independent re-

search institute. CROL® can be described as a relationship monitoring process that has been implemented within a number of international companies as a management process, and used for managing the relationships with customers, suppliers, and other stakeholders; it is also used for ensuring that the company's personnel is aware of the strengths and weaknesses in the company's performance (Gustafsson et al 2010).

The second source is data from research into customer needs and growth opportunities that the Research Institute for Project-Based Industry (PBI) conducted for the Company in 2010. The data consists of customer mappings done by the Company's account managers where they identify the needs of customers, the complexity of dealing with the customers, the potential for increasing business with the customers, the strength of relationships, and dialogue between customers and companies. The complete data consists of thousands of customer mappings that can be divided into different customer segments for more detailed analysis.

The initial theory-driven construct for data analysis, explained later in more detail, consists of two elements that appear to be the key determinants of the way value is created: the strength of the relationships between the customer and the supplier, and the opportunity for growth (turnover for this customer, new offerings the supplier offers for the customer).

The development of the construct proceeded from the generally advocated idea that relationships are built on trust and commitment (e.g. commitment-trust theory of relationship marketing by Morgan and Hunt 1994, see section Commitment and trust, p. 22). The main concepts in the construct are relationships and commitment, because they are easier to measure and assess in a data sample than, for example, trust.

The strength of customer-supplier relationships is related to the concept of relational and transactional value. This dimension of the construct assesses customers according to the type of their relationship. Some customers maintain long-term relationships, are willing to invest in relationship development, ready to share risks, and accept temporary failures and decline in output. These customers make long-term agreements and extended service contracts, they are therefore more relationship oriented in value creation. Others look for satisfaction in their current needs and lower prices, and are not willing to invest in relationships with suppliers and therefore value is created in each transaction with the supplier.

The second dimension of the construct aims to reflect the customers' commitment. Researchers (Hennig-Thurau and Klee 1997, Dwyer et al 1987, Wilson 1995, Mowen and Minor 1998) describe commitments as the desire to con-

tinue a relationship, which is based on both emotional and commercial bonds (see section Commitment and trust, p.22). Commitment is a factor that leads to enduring relationships and therefore can be used to measure the future of a relationship (Grönroos 1996, Dwyer et al 1987, Wilson 1995) and the willingness to invest effort into maintaining the relationship (Morgan and Hunt 1994). Thus, commitment is measured here by assessing future business opportunities for the customer with this supplier, i.e. their opportunity to grow. Growth opportunity is very much a customer and market specific characteristic. The possibility to expand business with a certain customer typically depends on the type of installation and equipment, the customer size and purchasing potential, as well as the market and industry trends. Customer assessment in this dimension requires 'normalization' methods that help to bring small and large customers, different markets, and different types of installation to the same scale. Thus, measurement of growth potential reflects customer needs, the supplier's awareness of the customer's strategy and possible expansion, and the customer's willingness to continue with a certain supplier.

In practice, customer assessment of these two dimensions has been performed by processing of data from customer mapping, as described above. The answers given by account managers are numbers scaled from 1 to 10. For the dimension that measures the strength of a relationship the following questions have been selected:

- What does the customer choose to buy from the Company? (1 = only equipment services and support, 10 = different kind of services, like automation, boiler, propulsion, ship services, reconditioning services, agreements, projects);
- Does the customer make decisions based on the current situation or in terms of long-term strategy? (1 = current situation, 10 = long-term strategy);
- What is the level of interaction and communication between the Company and the customer? (1 = formal dialogue, transactional relationship, 10 = open and trustful dialogue and relationship, collaborative relationship);
- On what level is the dialogue with the customer? (1 = mainly operative level, 5 = mainly middle management (superintendents etc.), 10 = decision makers, top management).

For the dimension that measures commitment, the following questions have been selected:

- What is the overall potential for increasing business with customer, e.g. an ongoing new build program, acquisitions, future customer growth? (1 = little possibility, 10 = high potential);
- What is the potential for selling service agreements to this customer? (1 = customer strategy is to keep competence and operations in-house, 5 = customer prioritize local sourcing, 10 = customer is ready to outsource);
- Is there a potential for the Company to expand an offering to this customer? (1 = only equipment services and support, 10 = a lot of potential for different kind of services, e.g. automation, boiler, propulsion, ship services, reconditioning services, agreements, projects)

The answers have been normalized and the average is taken for each dimension. Customer assessment according to the described dimensions allows customers to be categorized into four groups; these groups reflect the customers' present value creating systems, and can be used for different value management related tasks (see Figure 4.4).

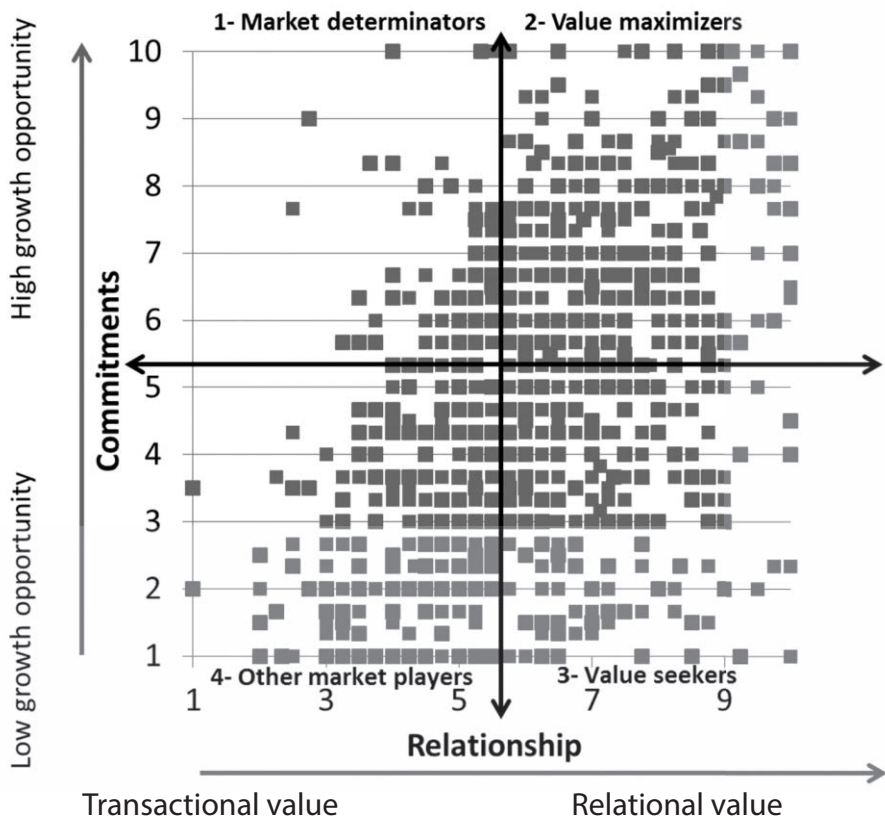


Figure 4.4. The customers' assessment according to relationship and commitment – whole sample

The following assumption has been made in order to examine service quality, in particular service failure and recovery issues, using this construct. The amount of failures/success in service projects, which is indeed the main criteria for service quality, is strongly correlated with customer satisfaction. In other words, the level of customer satisfaction is considered to be an indicator of service quality. The assumption is supported by the reviewed literature, which states that satisfaction is usually measured by the post-purchase evaluation of a service's actual performance with respect to the customer's expectations (Bolton and Drew 1991). Indeed, if a supplier failed to deliver the expected quality of services, the customer will indicate it in a post-purchase evaluation, and it will be visible in satisfaction indexes for the particular period.

This logic is constrained by the available data in the sample – there were no statistics about project failures and success rates, but there were customer satisfaction indexes in the data that are measured several times in a year (consolidated index from CROL®). The whole population has been divided into several samples by the level of satisfaction, and each subset of customers with different satisfaction levels has been examined separately. An understanding of customer relationships and commitment for different levels of satisfaction should provide insight into how failures and recovery in service projects affect service value.

4.2.3 Analysis

The data processing starts by downloading a customer's characteristics into the two-dimensional relationship-commitment construct described above. Consequently, the customers have been assigned into four value groups as it shown in Figure 4.4.

Customers in group 1, the so-called 'market determinants' have high growth potential, for example, due to the expansion of their business, but they use market criteria for supplier selection, usually looking for the best price and availability. Since they do not invest in long-term partnerships, a shift to another supplier is a relatively easy decision for them.

Customers in group 2 maximize their own as well as the supplier's value by expanding their own business and through strong relationships with suppliers. They see the supplier as a preferred partner and rely on the supplier in their business development.

Customers in group 3 also have a strong commitment to the supplier, but they do not see opportunities for growth. There could be 'physical' and financial reasons for this. The customers might have financial difficulties or techno-

logical limitations. These types of customers make it necessary for the supplier to apply innovative methods of customer value management in order to increase value, for example, by applying innovative value-based pricing methods.

The customers in group 4 also require attention from the supplier. Though their business potential is not visible at the moment, this customer group also needs to be analyzed; customer relationship specialists should decide what kind of actions and to which customer they can be applied in order to move them to some other customer group. As the cost of customer retention is considered to be lower than the cost related to the engagement of new customers, it is important to invest in existing relationships, to retain the existing customers and to develop such relationships.

The sample reveals a correlation between relationships and commitment, which can be a case of "correlation implying causation", meaning that the customers with a high relational value are continuously looking for growth and expansion opportunities. Another reason for the correlation is the practical difficulty of creating a questionnaire that would clearly distinguish between the strength of the relationships and the opportunity for expansion and growth. Both possible reasons contribute to the limitation of the present research. Nevertheless, the customers are distributed along both dimensions and presented in each quadrant.

The next step of the analysis was to load data from the customers with different levels of satisfaction into the model. Proceeding from the assumption that satisfaction is positively correlated with project success and negatively correlated with project failures; such data processing reveals the distribution of value for customers with different project success/failure rates. Customer satisfaction is measured by a consolidated index from the CROL® database, which can have meaningful values from 1 to 10, where a score of 10 reflects the highest level of customer satisfaction. Using the quartile function of Excel the data set is divided into 3 groups that represent customers with different levels of satisfaction.

First, the 25% of customers with the highest satisfaction are examined (see Figure 4.5).

The most remarkable result is the considerable number of customers with a weak relationship (transactional value) and low commitment (low growth potential) (see Figure 4.5 in oval) in the group of highly satisfied customers. Practitioners provide several causal explanations for this effect (the results have been discussed with the Company managers and consultants). Some customers might have low expectations; they do not expect proactive and supportive behavior demonstrating interest into the customer's needs, an awareness

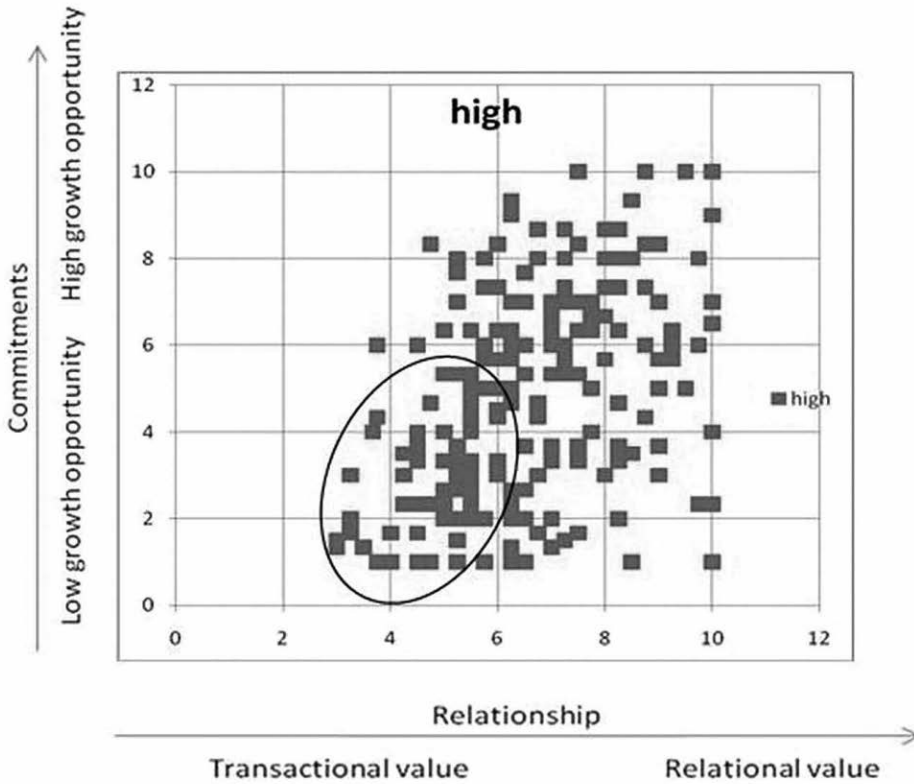


Figure 4.5. Customers' assessment according to relationship and commitment – high satisfaction index

of the customer's problems, or flexible pricing approaches from the supplier. They are satisfied with the current state of the business relationship, but do not see potential for further business development. In some cases such customer 'indifference' can be a result of high uncertainty. The customers can also be beginners in this business segment or they do not have experience with new equipment, and therefore, they do not have a clear picture of their own needs and are not aware of the supplier's competence and capabilities.

The data contains free text comments given by the supplier's account managers regarding most of the customers in the sample. A further analysis of the comments about the customer group with a high satisfaction index reveals that according to the supplier's experts this group contains many customers that can be characterized as savers, and who select their suppliers based on the best price. Quality is not the primary criteria for them. They are often regulated by certain authorities and rules according to which they must select service suppliers, based on an open tendering procedure and in favor of the lowest

prices. These customers do not want or do not need to invest in relationships. In general, looking for lower prices and omitting service quality is viewed as a strategy to fulfill short-term benefits with a loss of opportunities to increase value by building long-term relationships.

Downloading the customers with a low satisfaction index into the relationship-commitment construct revealed that some of the customers that were not satisfied have relatively strong relationships (relational value) and a strong commitment (higher growth opportunities) (see Figure 4.6 in oval).

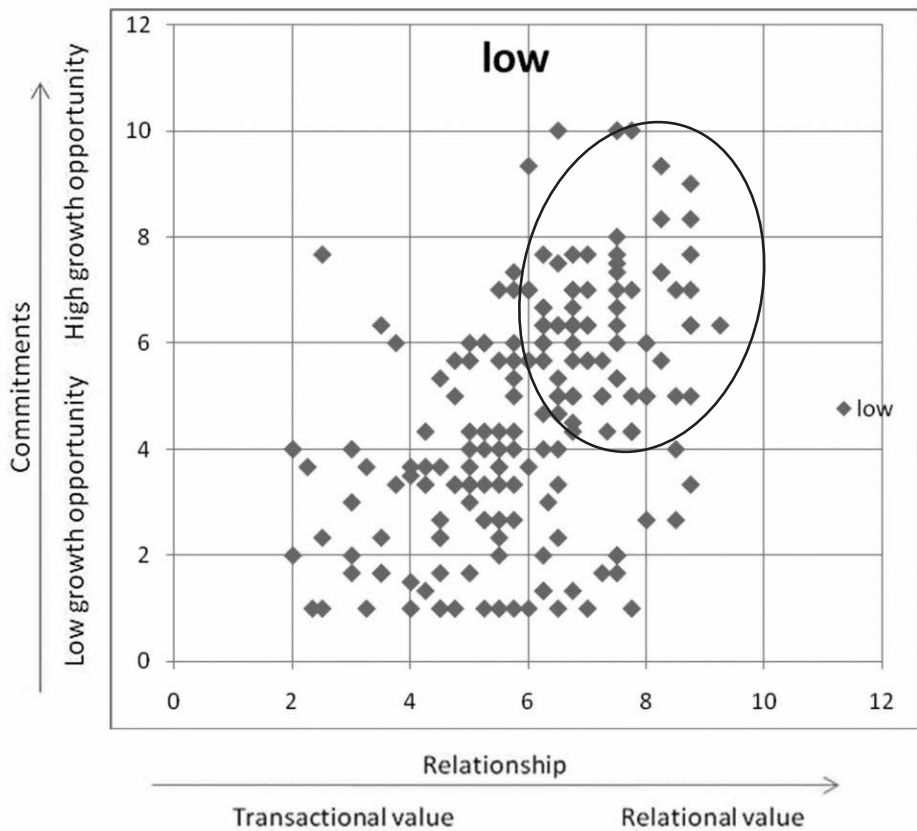


Figure 4.6. Customers' assessment according to relationship and commitment – low satisfaction index

Despite low satisfaction, these customers are looking for a new collaborative relationship with the supplier; their strategy is to build long-term alliances with mutual benefits. The supplier's account managers tend to explain low customer satisfaction in this group as being the result of low overall customer performance and difficulties in business, but their loyalty towards the supplier is high.

These customers have high potential for developing the relationship and engaging in long-term collaboration but their satisfaction level needs to be improved. A low satisfaction index reflects temporary dissatisfaction, probably caused by service failures (as suggested in the initial assumption); and high relational value and commitment can be a result of the customer's trust in the supplier and a successful and quick service recovery. Depending on the individual customer situation, the supplier might employ a wide range of methods to improve customer satisfaction. Some of these methods are proactive and preventive actions, such as getting to know more about the customers' business models and the customers' performance criteria, and thus preventing and fixing possible problems with the service value propositions. Others require quick responses to service failure and an ability to deliver a complete solution for recovery.

4.2.4 Discussion of the results of Case 1

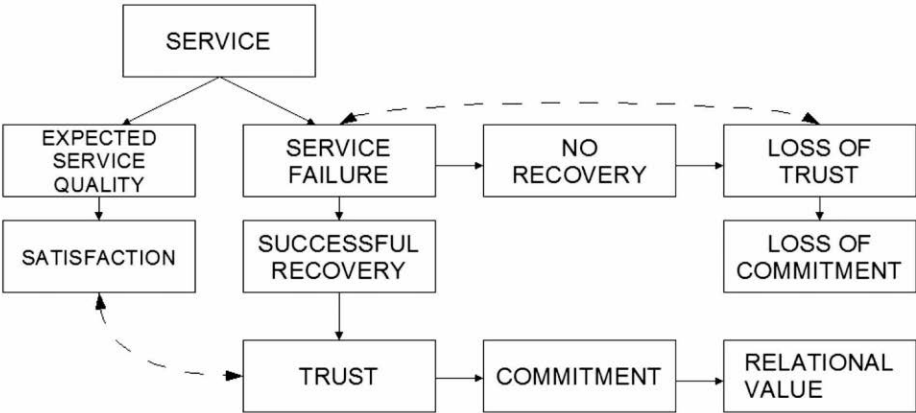
The analysis shows that high customer satisfaction alone does not lead to a strengthening of relationships and commitment. Moreover, low satisfaction does not lead to the end of the commitment and the relationship, if the customer continues to trust in the service provider's ability to recover from failures, to continue to provide satisfactory service quality, or in some other way to improve the customer's performance. Through different methods of customer satisfaction improvement, such as, for example, successful service recovery, the supplier can increase trust and strengthen commitment creating a positive cycle.

Observation of dependencies between satisfaction, relationship, and commitment using the dimensions of the construct above prompted the study to develop further with the aim to go beyond the data and find causations, as well as to start thinking about how to manage different situations in a better way. Long-term relationships inevitably involve changes in the business environment, the balance of power between the parties, the needs and requirements of customers, the capabilities of the service provider, as well as the goals of both etc. The relationship can go through several phases that cover numerous business transactions and even disputes. Flexibility and a good grasp of the changing situations is required, sometimes also legal measures and changes in existing contracts, since it is not possible to accurately foresee the future. Indeed, the longer the relationship, the higher the probability of uncertainty and instability and need for adjustments. In order to cope with uncertainty, and to cope with temporary dissatisfaction companies should develop and manage trust. Morgan and Hunt (1994) argue that in order to be an effective competitor globally a firm should be a trusted partner in its network. Case 0, which

was discussed earlier, showed that the customer's trust in the supplier's ability to deliver the service depends on a number of factors, comprising: the organization's experience and knowledge, the complexity of the context in which the service is performed, the supplier's capability to deliver services, and the maturity of the organization as a service provider. Literature shows (e.g. Cannon et al 2000, Berry 2000) that trust arises neither through cognitive calculation nor from antecedents, but that it is an essential issue in relationships. Prior research shows that the companies that invest in relationships or have a culture that fosters trust have higher rates of profit than those that do not (Gustafsson et al 2010, Chambers et al 2009). In order to benefit from the understanding that trust is essential in a service relationship and to be able to promote, sustain, and nurture trust, it is necessary to manage trust. Management of trust includes: interpretation of the situation, understanding the context and behavior of the other organization, taking into account the company's own disposition and the reputation of other organizations, adjustment of the company's own strategy toward the other party, adjustment of norms and routines when it is possible, amending the company's own behavior, and influencing the behavior of other organization (Gustafsson et al 2010).

At this point in the study, the relationship between service quality, service failure, service recovery, satisfaction, trust, and commitment can be described as depicted in Figure 4.7 (dashed arrows emphasize that there is no direct links between blocks).

Figure 4.7. The relationship between service quality, service failure, service recovery, satisfaction, trust, and commitment



Expected and consistent quality nurtures satisfaction, but there is no direct link between satisfaction and trust, similar to the initial assumption that low satisfaction does not automatically lead to a loss of trust and commitment. Service failure can lead to a loss of trust and commitment. However, successful service recovery can sustain trust and commitment, if the service provider is able to promptly take action and impress the customer, and if the customer keeps trusting in the service provider's ability to eventually continue to provide the expected quality and perform satisfactorily. In support of this argument there were no direct links found from failure to a loss of trust and commitment. Subsequently, while the results did not entirely prove the initial assumption (See section Context and purpose, p. 22), the Case 1 study found support for it, and therefore emphasized the importance of relationship.

Reality often differs from the ideal world. Service providers must consider measures that are required due to the occurrence of unpredictable failures and unforeseen events. Advice for optimizing product operations and maintaining performance is a good example of a service in which the requirements will vary according to operating conditions, capability, capacity, and preferences. It would be impossible to plan for all possible scenarios. Therefore, both parties must be prepared to deal with those situations that are fundamentally unpredictable and unknown (Markeset and Kumar 2005). Consequently, it seems clear that a plan for dealing with unplanned situations or issues beyond anyone's control (acts of God) including clear responsibilities should be discussed during contract and pricing negotiations, and this plan could then act as a practical guideline for service recovery procedures.

4.2.5 Summary of Case 1

The servitization of industrial companies has led to a renaissance of relationship orientation in the industrial market place. The focus is more on long-term relationships that need to be nurtured and sustained, and cannot survive without trust. Satisfaction is an indicator of quality and success in a relationship, but it is not always a sign of trust and strong commitment. As it is, services sometimes fail and customers are sometimes dissatisfied. However, in spite of lower satisfaction, relational value can grow through increased trust, which is a result of successful recovery from failure. Trust carries the relationship through situations that otherwise might lead to a decrease of relational value or even the demise of the relationship.

Trust plays an important role in sustaining a relationship in the face of failure and threatening disaster. The initial discussion of whether failure can in-

deed be a golden opportunity instead of just a potential disaster has practical implications for trust management.

Case 1 illustrates the importance of relational value for value driven models and tasks, and provides a practical tool for value-based customer assessment and segmentation. Gustafsson et al (2010) and Rekola and Haapio (2009) show (see Figure 2.2, Figure 2.3) that when failures are properly handled, when suppliers pay more attention to customer problems, the project value increases. Thus, when building a pricing model based on value, relational aspects should not be ignored. The customer value-based assessment described in Case 1 can be used for pricing as well. For example, different pricing mechanisms can be suggested for each of customer groups described (p. 22) in order to better support strategic goals with these customers.

Research work on Case 1 showed that measuring, analyzing, and utilizing relational factors, and furthermore the design and implementation of value driven pricing models including these factors, can be a difficult task and require extra effort for business practitioners (e.g. see Case 0 issue 3 Table 4.4, issues 1, 2 Table 4.6). Including relational components into a model will increase the complexity of the pricing model and obviously also requires a significant shift in the mindset of the customer and the supplier. The next step of the research must justify this effort in order to understand whether it is potentially profitable or really profitable to develop relationships in industrial services, and to find some evidence of dependencies between relational components and profitability.

4.3 Case 2: Life cycle industrial solutions- the aims, profitability, and relationships

The development of services by industrial suppliers has two general tendencies. They either add more services into current delivery projects, or they extend the time period of collaboration by adding services over time to support their equipment's live cycle (see Figure 4.8).

In essence, both approaches characterize general tendencies in industry transformation – industrial companies increase their scope of supply and thus change their business from delivering industrial projects to creating industrial solutions. One motivation for increasing the scope is that industrial customers often demand complete solutions to their problems instead of products that only partially fulfill their needs (Ojasalo 2007). In such circumstances, the scope of supply should be extended to satisfy the customer's needs and to create additional value.

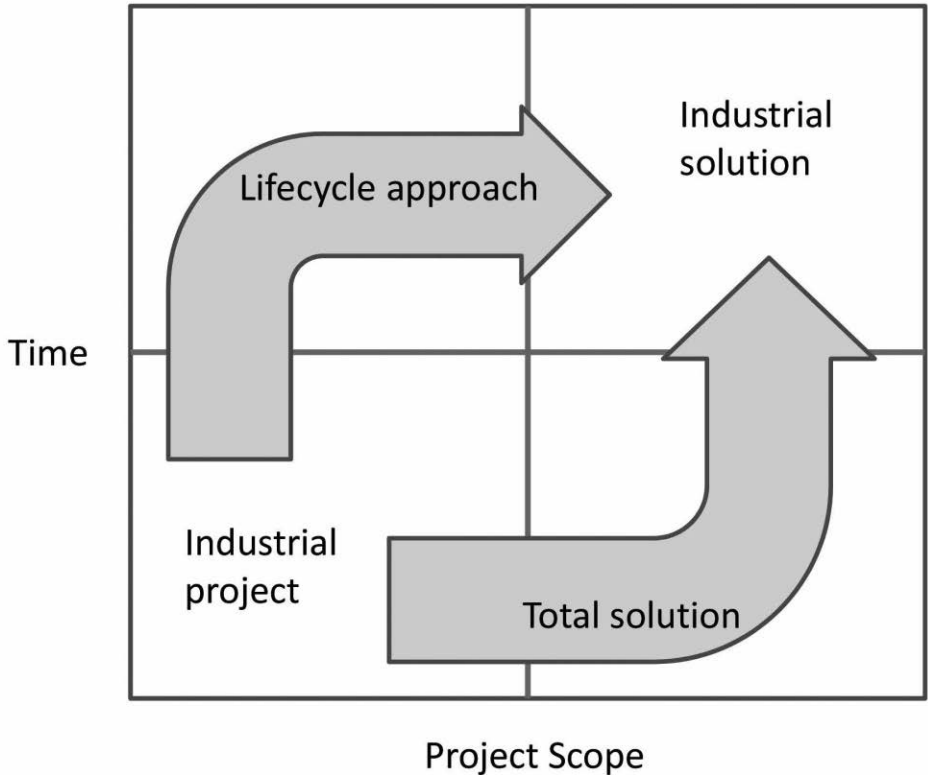


Figure 4.8. From industrial project to industrial solution

Current solutions in typical manufacturing companies captures different types of services, such as customer services, services for the installed base, process-oriented services, professional services, and operational services (Oliva and Kallenberg 2003). According to the transition concept of Oliva and Kallenberg (2003), the extension of service business in manufacturing companies can be observed through the transition line and/or the goods–services continuum. Companies can be positioned along the line: at one end the companies are product manufacturers, generating profits through their core products with services purely as add-ons and at the opposite end, products are an add-on to the services, representing a small part of the total value creation.

Case 2 shows that, in practice, the same company can provide a different scope of supply depending on the customers' needs. Some, for example, the less experienced customers, might require a total product that includes the full range of goods and services needed for their operations. Others, for example,

customers whose business is systems' integration, want to buy only equipment or components. The customer needs and experience are not the only criteria for using a differentiation approach to building solutions. Relationship aspects have a strong impact on customers' purchasing decisions. Less satisfied customers will increase their purchases only if they do not have alternative suppliers. Market-oriented, 'transactional' customers are always looking for the best prices and are often not willing to pay for extended offerings from the same supplier.

Increasing the scope of the supply requires significant effort from the industrial supplier and therefore raises important questions of the solutions' profitability. The aim of Case 2 is to answer the third research sub-question:

How does an increase in the scope of supply by adding services affect the profitability and customer-supplier relationship of industrial companies?

4.3.1 Increase in the scope of supply by developing life cycle solutions – context and examples in related studies

During the past decades, the lifecycle approach has become an essential part of the strategy of manufacturing companies. For example, companies apply the life cycle approach to their product and service design, so that all life-cycle phases, such as development, production, distribution, usage, and disposal are considered from the beginning of the product development during the design phase (Kusiak 1993). Such an approach requires deep understanding of the customers' business models including performance drivers, costs, environmental implications, and the ability to translate customers' business model elements into the engineering requirements, goals, and specifications for the product or service design. A life cycle approach changes the focus of business from project sales, which can include product delivery and installation, to a product perspective, which can include various services related to the actual usage of the product during its whole life time.

The term Life Cycle Solution (LCS), which is widely used in the industrial world, refers to the actual implementation of the life cycle approach. In essence, LCS is a customized combination of goods and services in which the supplier implements a certain life cycle approach.

In practice, LCS is often developed from an industrial project delivery by adding services that are needed for post-delivery (or after warranty) operations. In order to successfully develop life cycle solutions from an industrial project, the supplier should have, according to Brady et al (2005) the following characteristics:

- Systems integration capabilities: ability to integrate and design the customers' systems of all the external and internal components;
- Operational service capabilities: all the required capabilities to maintain the solution through its' entire lifecycle;
- Business consulting capabilities: be able to offer customers' the required business advise as to how to economically run the business plans, design and maintain;
- Financing capabilities: offer consultative finance and investment advice.

The analysis of several industrial companies performed for several research projects connected to this thesis (e.g. Salo 2011), revealed that companies employ several types of life cycle approaches. The main difference is in the actual object of the application of the lifecycle approach.

The solutions that can be labeled *as the lifecycle of customer* needs indicate cases where the supplier provides all the needed products and services to fulfill certain customer needs long-term, for example some operations. Customers might not be interested in technical solutions but rather focused on performance indicators and quality of solution. The solutions represent a cycle of such projects as new installation, maintenance, modernization, and replacement, and assume a high degree of ownership and responsibility by the supplier for parts of the customers' business. Examples of the life cycle of customer needs can be the lifting business, when the supplier ensures a customer's operation through high availability of lifting services including technical solutions, information and maintenance services, as well as customer care services up to the full replacement of equipment. Development of such a life cycle approach shifts the focus of the business from the equipment to the investments needed to fulfill certain needs or resolve problems. It is inappropriate to design pricing for this kind of solution and related services based mainly on the supplier's cost of delivery. As the customer might not be interested in technical details, the value of a solution can be assessed based on availability and customer performance indicators, and, for value based pricing it should be possible to connect the solution's characteristics with the customer's KPI.

Life cycle of equipment indicates that the services are built around a tangible product, for example an engine. The supplier sells not only equipment, but also components and services that are needed for entire life cycle of the equipment. The cycle can be described as for example "early entry-design-operate-new entry". A Life cycle approach in this case improves performance of equipment and

supports long-term relationships. Sometimes companies take a broader view of the equipment life cycle; they begin collaboration before the actual project starts, by, for example, providing financial and consulting services that help to optimize the customer's project costs or provide partial financing of future projects. Another way is to deliver post warranty services, for example, remote monitoring, and consulting that extend the customer-supplier relationship timeframe. Adding a financing service into the solution would enhance the company's life cycle approach and possibly enable sales of larger projects as well as making new agreements. For example, in the marine industry, suppliers providing financing services own some share of the installation and therefore can influence the ship owners' decisions on certain suppliers with regard to operation and maintenance agreements. Companies develop and buy lifecycle solutions for equipment when they are seeking a profitable relationship during the lifetime of a product or an installation, which can be for example 30 years, instead of a short delivery project life time. The supplier selection process, the competitive advantage and the customer's as well as supplier's entire business model changes focus from delivering the best product to developing the best solution for the product life cycle. Pricing for such solutions are often the main tool for competition. Customers are actively seeking an alternative service supplier, who can provide the needed services with an acceptable quality of lower prices than the original equipment manufacturers have established. The key service characteristics that have to be included in a pricing model are availability, outstanding quality, uniqueness, or inseparability from the equipment.

In the case where a supplier provides only some part of the customer installation, a life cycle approach can be applied for certain customer machinery. *Lifecycle of customer machinery* means that the supplier takes care of the entire customers' machinery or part of it. The solution is very problem oriented as its main goal is to prevent breakdowns and minimize down-time. The cycle has phases of idea screening and justification (conceptual design, feasibility study), design, manufacturing, delivery and installation, operation, monitoring and maintenance, repairing, restoring as well as redesign. An example of this life cycle solution is an extended service agreement, which guarantees working machinery over an agreed period of time, and enables the development of the next generation of machines with better performance and availability. Typically, the supplier provides mainly technically advanced expertise rather than bulk maintenance, which is not economically profitable. Pricing of such services should include service characteristics that emphasize the importance of the supplier's competence and capabilities. For example,

some measurable criteria for service availability, duration of down time, and a time for repair service can be included.

Some suppliers together with customers set shared targets for the development of a machine, equipment, or process, and in practice even work together at the customer's site. The supplier is responsible for the productivity and maintenance of the machines, equipment, and processes as well as management of customer assets. Such a *life cycle of customer assets* indicates the supplier's responsibilities for the customers' business performance by playing an important role in the customers' business model. Even though the supplier might not be legally responsible for the lifecycle of the solution, there is a mutual understanding between the customer and the supplier about the suppliers' informal contribution and moral concerns in the solutions they have provided. The approach highlights the relational part of the value created and increases customer commitments as well as the supplier's confidence in the value of the provided solution. Currently, almost none of the industrial suppliers and customers are able to describe their relationship in a sustainable way in contracts. The ability to translate into contracting terms such notions as trust, satisfaction, commitments, and loyalty will make value-based contracts attractive for more customers and suppliers.

The industrial suppliers develop life cycle solutions in different ways, depending on their own and their customer's business models. However, in every case, the suppliers delivering lifecycle solutions take a greater role in the customer's business through entire and complete responsibility for some of the customer's business activities. A Lifecycle solution requires changes in the supplier's and customer's current business models due to changes in value streams, changes in offerings, and changes in earning logic.

The suppliers believe that LCS can increase the value, and therefore, profitability in the following ways:

- Through strengthening the relationship with the customer, and therefore increasing relational value;
- Through increased supply scope, and
- Through productification of some existing knowledge and technologies.

The customers see the benefits of LCS in the savings on operational costs through, for example, simplified procurement, logistics, investment planning, other activities related to the suppliers' selection. Since activities previously handled by the customer functions are transferred to the supplier, customers can focus on their own core business.

From the customer's perspective, buying LCS often means outsourcing certain work to the supplier. Modern companies widely apply outsourcing for non-core activities, or even for core activities in the case of strategic partnering. In the case of industrial equipment manufacturing, the outsourcing of life cycle services is often given to the equipment supplier, who in turn can subcontract other suppliers, although they still carry overall responsibility for the equipment's functionalities and performances, and sometimes even own certain parts of the equipment.

The challenges to delivering LCSs are caused by a lack in the supplier's competences and services to build LCS, the customer's inability to recognize the value of LCS or the lack of life cycle thinking at both the company and individual level. Indeed, when designing lifecycle solutions engineers should think not only about the technical aspects of their product but also about how the solutions will be sold and used. Aspects of profitability and usability should be understood by the design team and should already be translated into technical specifications at the beginning of LCS development.

Development of the required competences and capabilities raises important questions as to the profitability of LCSs. In many cases, the need to develop new competences confronts economical restrictions, especially in cases when the required competence does not have high business potential for other customers or for strategic business development. The companies prefer to take a step-by-step approach which might delay development of the needed capabilities but helps to avoid radical changes and to minimize usage of expensive R&D services. In order to secure profitability, some companies build modularized service platforms that meet different customers' needs while relying on the same delivery processes. Other firms are continuously monitoring the costs in order to identify profit drains. In some cases, successful companies are able to exploit innovations coming from new technologies (Reinartz, Ulaga, 2008).

4.3.2 Shaping Empirical Analysis

Implementing a life cycle approach is a complex issue that affects the company's value chain, cost structure, pricing approaches, organizational structure, and knowledge base. Thus, development of lifecycle solutions often requires major changes in the company's business model, or even new business models and pricing models. In order to find general support for the belief of customers and suppliers that the development of a life cycle solution is profitable business that is built on a long term trustworthy relationship, the research focuses on the analysis of efficiency of entire business models rather than monitoring and

analyzing selected financial figures and performance indicators. A longitudinal statistical study on such variables as margins, sales, costs, customer satisfaction, and commitments that takes into account market situation and industrial context, that reveals general patterns in profitability and relationship, is not possible due to the relatively short history of the life cycle approach in industrial markets. As one of the goals of the life cycle approach is to develop long lasting relationships and to ensure steady profit through prolonged interactions, it is unlikely to see the correct dynamics of the finances, sales, and relational figures during a short period. A short period would also not offer the provision of statistical proof for economical and relational arguments for the development of the life cycle approach. However, industrial companies believe that life cycle approaches improve and strengthen their business and the aim of the empirical part of Case 2 is to find support for these beliefs.

The industrial companies understand life cycle solutions differently and implement lifecycle approaches in different ways. However, at the initial stage of LCS study it is important to understand the context of phenomenon and the dependencies between actors in the system through an in depth examination of a single case study. The data has been obtained from several research and consulting projects, ongoing business diagnostics activities, and sales data for one large international manufacturing company (hereafter called the Company) diversifying its business into the industrial service market. The rationale for the Company selection was the unique opportunity to connect data collected concerning customer relationship projects, business development, and financial documents from the same company and thus contribute to analytical generalization.

The analysis was performed on combined data from three sources. The first source was qualitative and quantified data from the CROL[®] system, which implements a number of methods for managing business relationships (see Case 1 section Methodology: data description, two dimensional construct for analysis).

The second source was data from research into customer needs and growth opportunities that the Research Institute for Project-Based Industry (PBI) conducted for the Company in 2010. The data consists of customer mappings done by account managers where they identify the needs of customers, the complexity of dealing with the customers, the potential for increasing business with the customers, the strength of relationships, and dialogues between customers and companies. The complete data consists of thousands of customer mappings that can be divided into different customer segments, and information from the industry for a more detailed analysis.

The third source was financial data provided by the observed company that

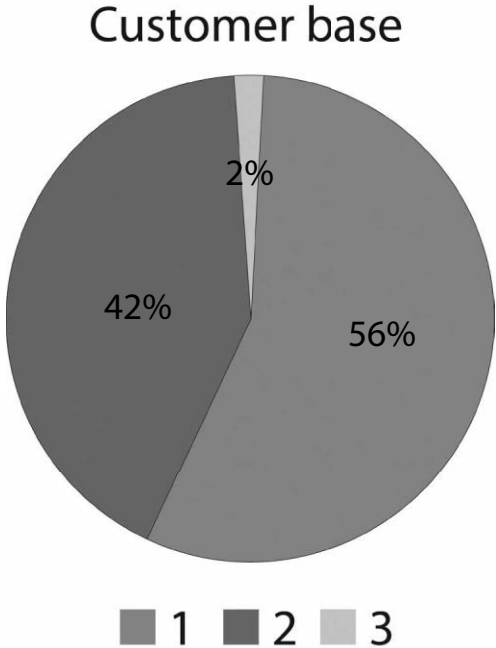
includes actual and planned sales figures for customers, margins, information about which services have been sold, types of customer equipment, and other information collected for the period from 2008 to 2010.

The Company provides both basic and advanced services to support the customers during the operations phase. The goal of the analysis was to assess the impact of the development of advanced, or life cycle services on relationships and profitability. The customer base that consists of over 10 000 customers has been divided into 3 groups in order to reflect what the customers have bought during the previous 3 years. The following groups have been defined:

- Group 1- customers that buy only spare parts or maintenance services;
- Group 2 - customers that buy a combination of spare parts and maintenance services;
- Group 3 - customer that buy different combinations of services, for example upgrades, service agreements (this group is considered to be the most advanced in developing life cycle approach).

Figure 4.9 shows that only 2% of customers have already invested in advanced services, while the rest of the customers still purchase quite basic services; 56% of the customers contact the supplier only for spare parts or maintenance support.

Figure 4.9. Customers' groups, percentage of total customer base.



Suppliers and customers believe that the life cycle approach positively affects profitability and improves relationship. Several relational and performance indicators have been analyzed in order to find support for this belief of the suppliers and customer.

4.3.3 Sales and Earnings

Figure 4.10 compares the percentage of customers, total sales, and net earnings for each customer group. The results show that even if some customers that have moved towards life cycle services represent only 2% of the customer base, however, they generate 20% of total sales and 27% of total profit.

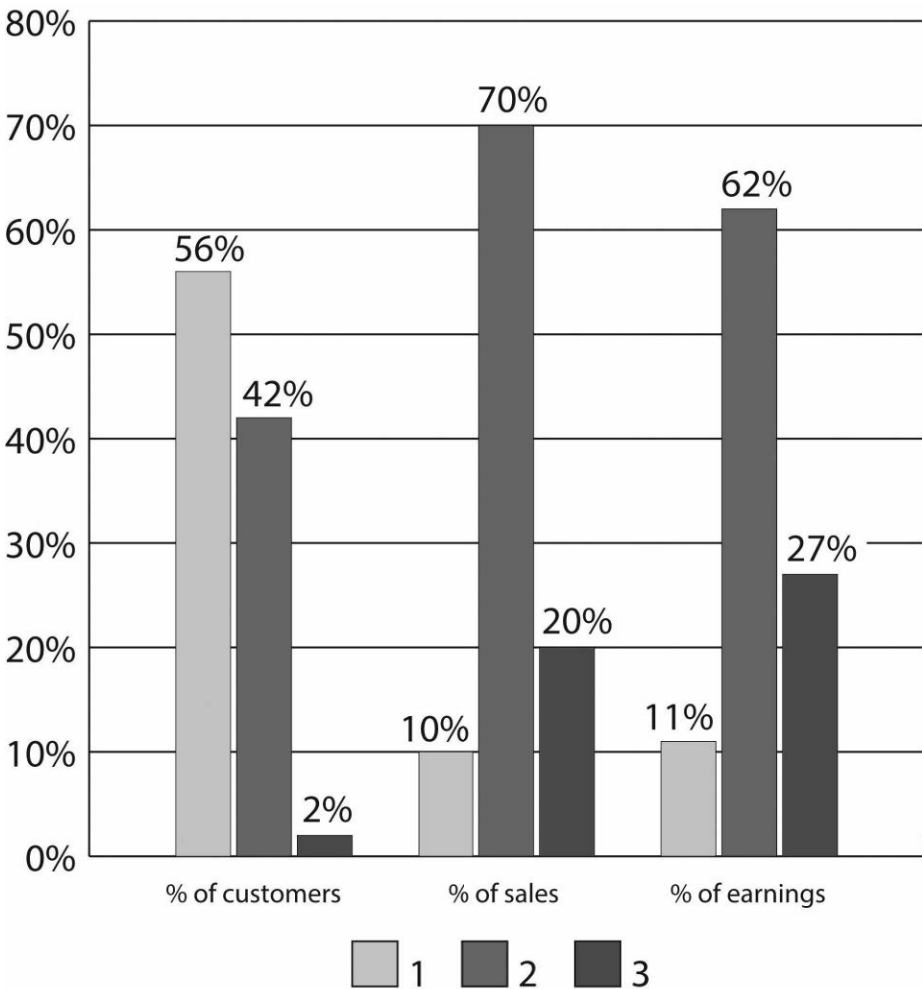


Figure 4.10. The percentage of customers, sales, and net earnings for each customer group

Figure 4.10 is a snapshot view and does not show how an increase in the scope of supply improves profitability over time and ensures steady profit in the long term. However, it supports the belief that life cycle customers generate more earnings, and raises such important questions as how to convince customers to buy additional services, which customer target group can be addressed using life cycle solutions, how development and selling life cycle solutions affects the entire company portfolio and total profit.

4.3.4 Components of relational value

Case 1 has identified and described links between trust, commitments, relational value, satisfaction, and the perceived quality of industrial services. These concepts have been connected to the framework based on the generally advocated idea that relationships are built on trust and commitment (e.g. commitment-trust theory of relationship marketing by Morgan and Hunt 1994), conceptualization of trust (e.g. Gustafsson et al 2010), the relationship between quality and satisfaction (e.g. Lam et al 2004), and empirical evidence of dependencies between them. The Case 1 study suggested that a long-term relationship, which is a part of the live cycle approach, needs to be nurtured and sustained, and cannot survive without trust.

The Company performs a regular survey of customer satisfaction that includes a large number of questions regarding different aspects of supplier performance; the answers are given in scores from 1-10, where 10 indicates excellent performance and 1 poor performance. Based on the scores, a consolidated satisfaction index is calculated for each customer. The values of satisfaction indexes in customer group 1 and group 2 are normally distributed and they have nearly the same variances 1.3; the average of the satisfaction indexes of group 1 is 8, for group 2 is 7.7; indexes in group 3 are not normally distributed. Results of a Student test performed for group 1 and group 2 show that with a high probability of 0.95 there is no difference between the means of these two populations. In other words, satisfaction indexes are not affected by customer grouping. This is in line with Case 1 findings, that satisfaction is an indicator of quality and success in a relationship but it is not always a sign of the trust and strong commitment that are needed for a life cycle approach. Trust carries the relationship through situations that otherwise might lead to a decrease of relational value or even the demise of the relationship.

In order to understand what kind of relationship positively affects the customer's purchasing attitude toward life cycle services, the supplier's sales managers were asked to evaluate the current relationship with customers using the following questions:

- On what level is the dialogue with the customer? (Scale 1 to 10, where 10 indicate that the dialogue with customer is on management/decision making level while when a 1 indicates that the dialogue is mainly on operative level);
- What kind of relationship is there between the Company and the customer? (Scale 1 to 10, where 10 indicate that relations are built on shared values while 1 indicates that the relationships are merely transactional).

The averages of these two numbers have been calculated for each customer and the three customer groups (see Figure 4.9) have formed three samples of data. The results are shown in Figure 4.11. All samples are normally distributed with variances 3.3, 2.9 and 3.3 accordingly. Student tests performed for customer groups 1 and 2, groups 1 and 3, and groups 2 and 3, for samples with equal and unequal variances, show that with high probability sample averages represent populations (see Figure 4.11).

Figure 4.11. Averages of relationship values for each customer group

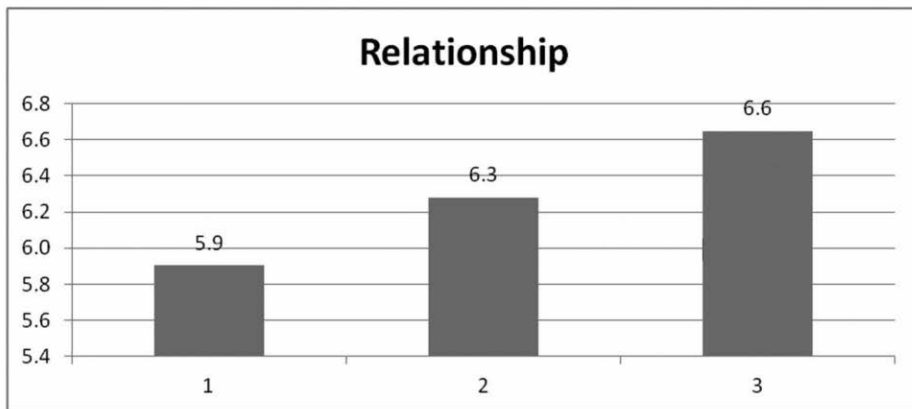


Figure 4.11 indicates that the customers that buy more advanced services maintain relationships more on a management level; for them the supplier-customer dialogue changes focus from transactional issues to overall customer value and performance. This observation supports the belief that the development of business towards life cycle approaches requires stronger and more trustful relationship between the customer and the supplier.

Another important aspect of relationships is customer loyalty which has also been measured using a scale from 1 to 10, where 10 indicates that the customers are loyal and purchase most of their basic service needs from the

supplier, while 1 indicates that the customers are not loyal and using a lot of alternative suppliers justifying their choice rather by best price than quality. Similar to study of relationship, loyalty values have been examined for three customer groups and the results are shown in Figure 4.12. Values in all groups are normally distributed with variances 5.2, 4.5 and 4.5 accordingly. Student tests performed for customer groups 1 and 2, group 1 and 3, and groups 2 and 3, for samples with equal and unequal variances, show that the samples' averages represent populations (see Figure 4.12).

Figure 4.12. Averages of loyalty indexes for each customer group



The results show that customers that buy more advanced services also prefer the same supplier for their basic services. This is another indication of the positive impact of the live cycle approach on customer – supplier relationships.

4.3.5 Discussion of Results of Case 2

The first part of Case 2 described how industrial companies increase the scope of supply, using the results from the research in the life cycle approach (Salo 2011). By reviewing a number of business models of Finnish industrial suppliers' Salo (2011) identified four different types of life cycle approaches for their solutions: lifecycle of customer needs, lifecycle of equipment, lifecycle of customer machinery, life cycle of customer assets. Though ideologically these four types are very close (they reflect supplier intention to increase participation in customer business), implementation of each type requires a different type of relationships and partnership, and different trust levels. This has a direct impact on pricing solutions. For example, in the case of the lifecycle of machinery, the supplier takes care of the customers' machinery in order to prevent and fix problems, e.g. to prevent breakdowns and minimize down-time. In this

case, result based pricing can define clear targets, such as the number of failures and the time needed to recover. On the other hand, in the case of a life cycle of customer assets, the supplier plays an important role in the customers' business model; the supplier's employees are working at the customer sites; they are coaching and managing the customer's employees and have a high level of control and responsibility for the customer's processes. There is a mutual understanding between the customer and the supplier about the suppliers' informal contribution; the relational value is built on the customer's commitments as well as the supplier's confidence in the value of the provided solution. However, currently, almost none of the industrial suppliers and customers are able to describe their relationship, in a sustainable way, in their contracts. Indeed, if the level of co-creation is so high, if the supplier and the customer share responsibilities for success and failure, in what way is it possible to provide calculations of the effort spent on developing and delivering services; how can the performance enhancing effects be mapped to a certain actor?

The second part of the research question regarding this Case, i.e. how does increasing the scope of supply affect profitability and customer-supplier relationships, has been investigated through looking for statistical evidence in sales, financial data, and other customer data. The results are in line with those of Murphy and Murphy (2002) that suggest that customer profitability tends to increase over the life of a retained customer. Case 2 shows that customers that buy more advance services that contribute to lifecycle solutions generate more earnings; they have stronger relationships with the supplier, and demonstrate high purchasing loyalty by preferring the same supplier even for the basic services. On the other hand, it was found that satisfaction indexes do not characterize customer purchasing behavior; this finding contributes to the Case 1 results that describe satisfaction as an indicator of quality and success in a relationship, rather than a sign of trust and strong commitment.

Case 2 shows relationships to be very important for long term and often complex service contracts. Customers who buy advanced services and in this way develop live cycle approaches generate more earnings for industrial suppliers even when simplistic fix price and cost-based pricing methods are used. Since price is one of the key elements maintaining profitability, and as Case 2 shows, profitability in services depends on relationships, it follows that pricing in industrial services should consider relational issues.

4.3.6 Summary of Case 2

Over the past decades, industrial suppliers have developed and integrated various services into their product offerings. Bringing an increasing number of service elements into manufacturing can result in a technological goad in industries or a search for cost-efficient business models. However, the customers have the last word on what they buy. If industrial suppliers perform certain services more cost-effectively than the customer is able to, for example, due to technological development or the economies of scale, then it makes sense to outsource these activities to a supplier. If a customer's cost of performing a certain service is less than the market or the supplier's price, the task will not be outsourced, but will be performed by the customer. Additional to these economic arguments, customers may be unwilling to outsource a service, if it does not require specialized skills, or the customer wants to stay more independent in its decision-making (Laine et al 2004).

Whatever the case may be, analysis of the life cycle potential for different solutions and different customers' groups is an important source for increasing profitability. According to some estimations of the original equipment manufacturers of certain products, the revenue generating ratio would be 4.0 during the product life-cycle (Laine et al 2004). This means that the equipment and different types of services elements, such as spare parts, consumables, maintenance, and knowledge services, generate 4 times more revenue during, for example, a ten year life-cycle than the machine's selling price. In order to implement a life cycle approach, suppliers should adopt a new mind-set and business logic that leads to a strategic responsibility for the whole life of the solution. The supplier should be aware of a customer's commitments to their investments through a deep understanding of the customer's business model including performance drivers, costs, environmental implications, and the ability to translate customer business model elements into engineering requirements, goals, and specifications for the product or service design.

In order to support the solution over the life cycle the supplier must develop certain capabilities. In order to do this in an efficient way, the supplier should employ a generic and flexible model for developing service strategy that ensures maintainability, sustainability, and competitiveness of delivered solutions on run-time, rather than focus on actual maintenance of an individual solution.

The Life cycle approach requires deep knowledge of the customers' installed bases, business situation, competition, and customers' earning logic. If any of these elements of the customers' business model were changed, the supplier should be able to reflect the change in providing value to the customers. Such flexibility

can be achieved by value driven practices in cost engineering, modularization of offering, pricing methods, and in value driven management activities.

Though it was shown empirically that the customers that buy more advanced services look more profitable (see earnings from Figure 4.10), the suppliers still forego opportunities to increase profit and fully utilize the value created by the life cycle approach due to lack of value driven logic for pricing. The companies employ mainly cost-based methods for pricing that are not able to exploit additional value created by life cycle solutions. The cost-based pricing methods offer some advantages, but the simplistic nature of cost-based pricing is not effective in a complex industrial environment and fails to reflect value created by highly relational life cycle approaches.

4.4 Case 3: Piloting of pricing process for industrial services

The pricing process described in Case 0 (see section The next step of the analysis: towards a service pricing process) and other elements of a new pricing mechanism have been piloted for one middle size engineering company (hereafter called “the Firm”). Actually, it is more a prototyping and proof of concept for the pricing process, since Case 3 helps to finalize pricing and to develop several practical methods for the pricing process. The Firm decided to diversify its business into the area of industrial services by developing new customer solutions that integrate their technological competencies and services. As there is considerable competition in the field of traditional marine engineering services, the future competitive advantages of the Firm lay in the improved and productified industrial services and sophisticated pricing mechanisms, such as value-based methods. The customers expressed a positive attitude towards result-based pricing, but as practical experience was lacking there was also some skepticism regarding finding the right criteria. The greatest opportunities for the services appeared to lie in increasing energy efficiency and capacity/lay-outs. However, the customers pointed out that result-based pricing also meant increased responsibility; liabilities should be connected to this and it would mean that the Firm would need to develop their own concepts without the customer paying for every hour.

The potential customers considered the Firm to be a reliable partner with a good reputation, capable of providing high quality services. There seemed to be good potential for innovations, as the customers placed a high value on creativity and innovative thinking, and appeared to be open to non-standard solutions. However, innovativeness was not being utilized to its full potential at that time. According to the customers, the Firm’s main competitive advantages

lay in their ability to provide a broad range of services, as well as the extensive database and references they possess. Due to this, the expectations of the customers were also on a fairly high level, and thus current fluctuations in design quality were a common cause of dissatisfaction for the customers. In order to improve quality it was proposed to systematize service development activities in the Firm through systematic application of an NSD (New Service Development) process and pricing process (see Figure 4.2).

There were three services selected by the Firm's management for further development and pricing in order to support the transition to service business: information management service, conceptual design service, and fuel saving service. The pricing and service development processes, developed within the scope of this thesis and connected research projects, were applied to the selected Firm's services. The results were analyzed by the researchers and presented to the Firm's specialists; a collaborative team of researchers and the Firm's employees were set up in order to design and implement new pricing mechanisms for the selected services based on pricing model described in present thesis. In practice, collaborative and participatory research methods were implemented in the way the researchers developed and introduced new models; practitioners provided contexts and all the necessary data, and analysis. The subsequent design and implementation of new pricing solutions was done in collaborative projects, mostly in face-to-face workshops.

Practical assessments of the services regarding their actual stage of development and readiness, market potential and strategic compliance with the overall company roadmaps, revealed that these services were at different phases of development; they required different kinds of effort to deliver them to customers and they required different pricing approaches.

4.4.1 Information Management Service – bundled pricing

The goal of an Information Management (IM) service is to capture and collect all relevant information during the entire project of building a new ship, according to well defined processes, and the storage and management of information using state-of-the-art software solutions. This then provides an easy and efficient handover of all relevant data from the newly built ship to the operations phase. The possibility of enabling visual ship-shore reporting and updating documents onboard leads to more detailed and better quality technical documentation onboard, which is readily available when refurbishment or conversions take place. The overall benefits of the usage of information management services were seen by the Firm's business developers as an improve-

ment in the efficiency and safety in the usage of the vessel through adequate and correct information, and therefore improved asset management.

In order to assess the current status of information management (IM) service development and contribute to the pricing process, several checklists were developed by the researchers and the company's employees being asked to fill-in checklists. Additionally, in order to obtain a correct picture several of the Firm's managers were interviewed (see Table 8.10 in the Appendix). The analysis revealed that employees have overestimated the maturity of the IM service. According to them the last task in order to start selling the information management service was the pricing, and they were struggling, for example, to design a cost-based model comprised of a subscription fee and a monthly fee for usage of services. However, applying the service development process (see Figure 4.2) revealed that the information management service was at the very beginning of the development process, namely, the defining of the content and process phase, mainly due to an unclear value proposition (see Figure 4.13).

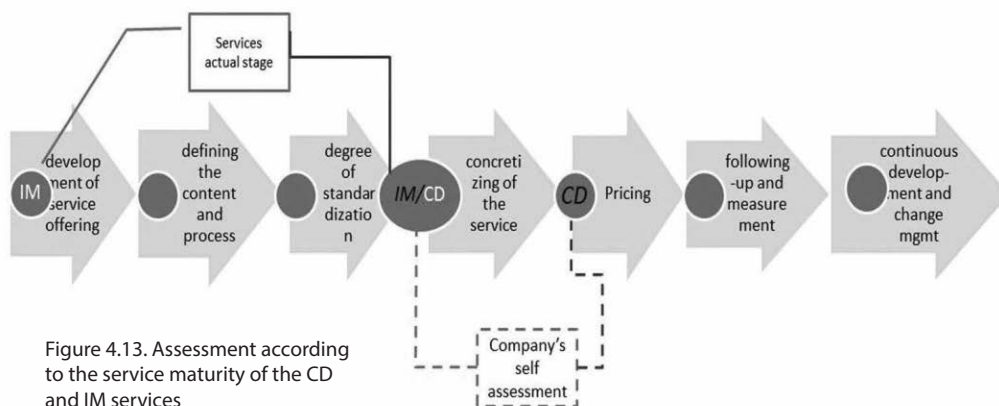


Figure 4.13. Assessment according to the service maturity of the CD and IM services

The interviewed customers appear to be rather unaware of the service's value, as at the time the IM service was considered by the customer as a relatively low value-adding set of tools, which did not belong to the Firm's core competence. The main disadvantage of the service from the customer's point of view was the lack of integration with other suppliers' information management systems. The current value proposition formulated by the Firm was unclear and focused on operational details rather than customer benefits.

In order to set the price, the service pricing process model was applied (see Figure 4.2, Table 8.11 in the Appendix). The analysis revealed what kind of activities should be accomplished in order to make a pricing decision, design pricing mechanisms, and implement them.

As a result, the researchers recommended that IM services were not sold separately, but as a part of a branded solution, which could easily be recognized and valued by customers. The current cost-based pricing approach for IM services was recognized as inefficient. Since the strategy for IM service pricing is to support and stimulate successful sales of other Company's service offerings, it was suggested that IM services were included as a 'free of charge' item in the Contracting services package that constitute the ten connected services performed before the main ship design project. The costs of the service were not very high and they could be managed as a part of the total Contracting Service Package costs.

4.4.2 Conceptual Design Services – result-based pricing

A similar analysis was also performed for a package of services under the umbrella term conceptual design (CD) (see Table 8.12, Table 8.13 in the Appendix). Conceptual design includes a different set of studies, calculations, estimations, and project outlines prior to the actual ship design project. The goal of CD is to ensure that the actual design will be performed in an efficient way, using the latest technologies, know-how, and with an optimal budget. Customers might be interested in buying CD if they are planning to use some standard ship building design project, but they would like to improve it. The analysis revealed that the service is in the 'Concretizing' phase of development, which in practice means that the service delivery process requires further description as well as development of training material (Figure 4.13). During the collaborative project, it was found that there were some problems with new personnel, who were responsible for the conceptual design work without having proper instructions, manuals, or reference material. This was a definite risk factor, since there was a potential lack of time and resources to ensure a sufficient quality control. Thus, the service needed better standardization and customization (to complete stages 2 and 3). Moreover, further development of the marketing material was needed, which should clearly present the services' added value for the customer, instead of the current practices of reporting studies. It was thought that such an approach would help to achieve modularization and customization of the service package, based on the customer's value and needs.

The Firm's expertise in the area of conceptual design was well known and valued by the interviewed customers. Evaluating the different alternatives for pricing was suggested, including the value-based pricing mechanisms. Customers were in general positive towards result-based pricing, if the right criteria and processes could be established to measure the results. One of the meth-

ods of value-based methodology is the method of shared business performance or results, where the customer shares benefits earned by the implementation of service innovations with the service provider. This method requires close cooperation with the customer, as in addition to sharing the benefits it also means sharing the risks and uncertainty. Result-based pricing is dependent upon an understanding of how customers create and measure value, which can be achieved here through a careful evaluation of customer operations or feedback of the survey. The result-based method requires establishing performance criteria together with the customer and setting milestones throughout the project. Such criteria could, for example, be an increased number of cabins, reduced fuel consumption, or any other quantifiable benefits. The initial ideas of result-based pricing mechanisms for Conceptual Design service have been outlined on collaborative workshop as they are illustrated in the Figure 4.2.

The ideas were incorporated into the report from the collaborative project and presented to the Firm's top management.

4.4.3 Fuel Saving Service – result-based pricing

Due to high oil prices, increased environmental rules on air emissions, and the management of carbon emission customers were looking for new solutions that enable a decrease in the consumption of fuel. In order to satisfy customer needs the Firm created a multistage program for the reduction of fuel consumption, based on long experience and knowledge, and new technologies. The program was then developed into a modular customer solution – Fuel Saving Service - that consists of different technical, consulting, and non-technical services to be delivered in several stages. Potential customers recognized the Firm's competence in the energy consumption area; however, despite environmental trends and customers' needs Fuel Saving Service (FSS) has not yet been successfully sold. Only some selected services have been delivered to several customers without any profit. Application of the model of service development and pricing (Figure 4.2) confirmed the maturity state of the Fuel Saving Service (see Table 8.14 and Table 8.15 in the Appendix). The solution was developed for the stage at which the Firm should create a marketing plan and start to design actual pricing mechanisms. However, there were several challenges to marketing and successfully selling the solution. The main challenges arose from direct and indirect competition. The Firm's costs related to FSS delivery were relatively high, and therefore the cost-plus pricing approach (50 000 EUR) did not allow competition with the ship yards that offer services similar to FSS components for free, as a part of ship building or renovation.

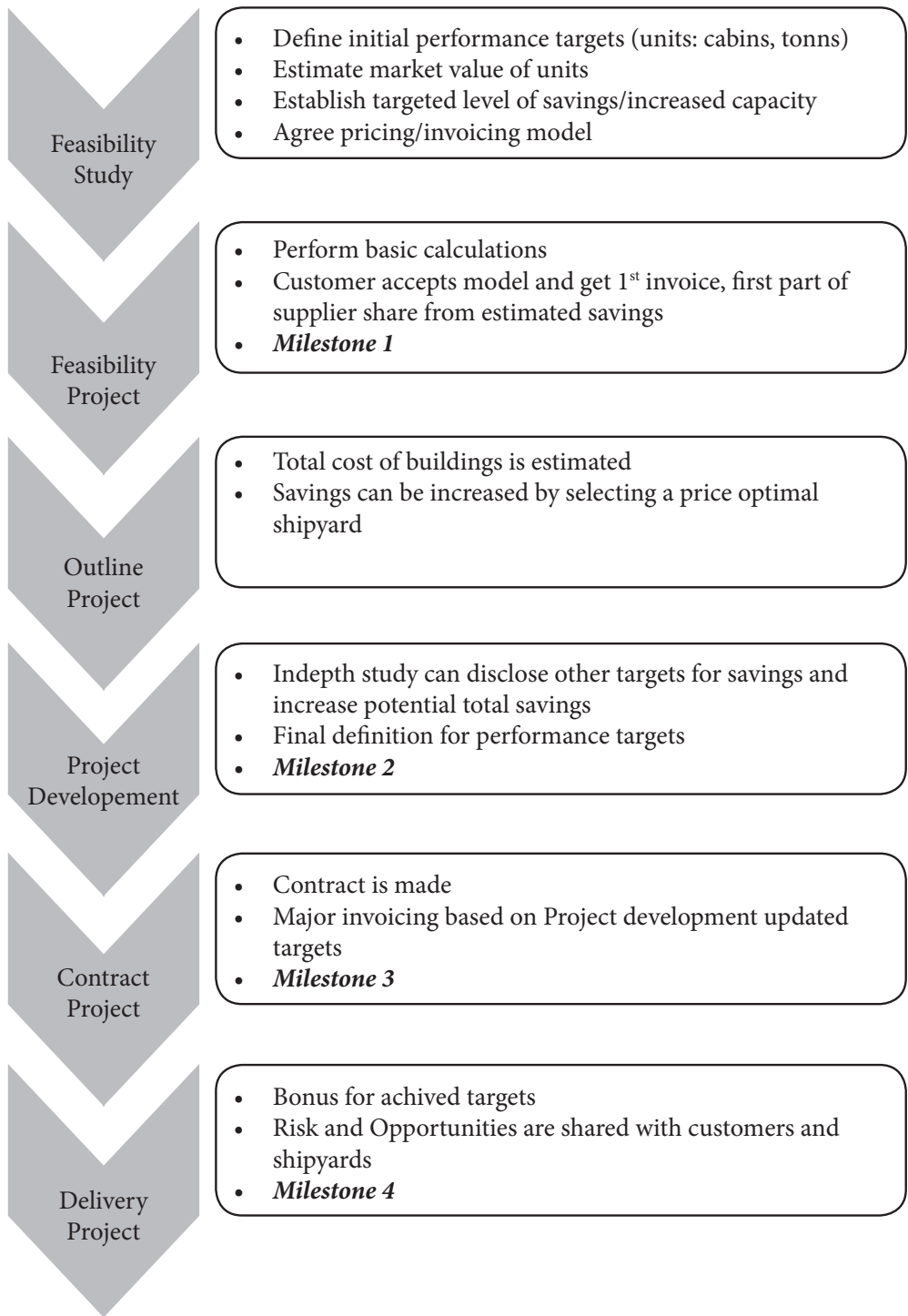
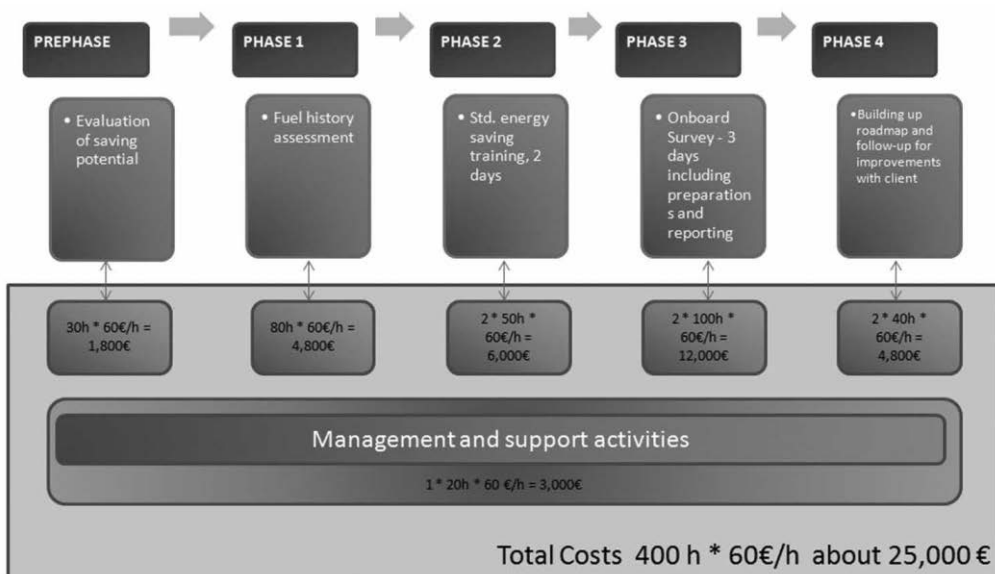


Figure 4.2. Conceptual Design service Pricing Model

Moreover, there was another group of competitors who started to develop a very similar solution and offer it at a very minimal price of around €2,000. The competitors' strategy was to enter the market and dominate it; they were large manufacturers and therefore could carry temporary losses caused by low prices. In order to overcome these challenges and create a competitive solution, developing result-based pricing was suggested and employing new innovative pricing as one of the main sources of competitive advantage. The other advantages were the richness of content of the offering, high flexibility and customization, as well as the high quality of the solution. First, rebranding of the solution was suggested, in order to emphasize the customer benefits and high potential of the FS service. The service increases the customer's performance, and in order to distinguish it from the competitors a new brand for the solution could place the focus not only on the specific task of fuel saving but also reflect the possibility of resolving more complex problems such as management and optimization of customer assets. Several new names were proposed, for example, Dxxx Energy Consumption Optimization®, (D)ECO®, Dxxx ECO® and others.

Subsequently, a new pricing method was developed. One input to the pricing model was a cost estimation for the FS service deployment for a typical customer project (see Figure 4.3).

Figure 4.3. Solution Deployment and Costs for a Typical Customer Project



Two alternatives for pricing were then developed. Alternative A suggested splitting the total service price into two parts: 10 000 EUR for partial cost recovery plus incentives that are paid based on achieved results. The fixed part of the price would cover only the Firm's consulting hours. Travelling expenses and equipment related expenses would bring direct losses to the Firm. However, in the case of a successful service delivery the Firm would obtain as an incentive 33% of the saved fuel price in the first 2 years after the Solution was delivered. This pricing method is built on shared performance goals, but it also requires a sharing of the risks between the customer and the supplier, especially if the ship does not have equipment for precise measurement of energy consumption. Therefore, the contract was made based on estimations and past statistic data. Results from Cases 0 and Case 1 show that implementation of such a pricing method requires good relationships and trust from both the customer and the supplier (see Summary of Case 0). The supplier expressed concerns about possible changes in the routes of the customer's ships and major replacements in crew, both of which can significantly affect performance or even make irrelevant some KPIs. Nonetheless, it was felt that when successful it could also generate high profits. Table 8.16 in the Appendix contains some preliminary calculations for the different business cases depending on the type of the customer ships.

Alternative B suggested establishing a fixed price of 50 000 EUR, but the total solution should include additional services for the installation of a new energy management system that allows precise measurements of energy consumption to be made, and therefore, minimizes risks and uncertainties, and allows a precise definition of the terms for the result-based contract.

The Collaborative project's decision was to offer the customers different alternatives, depending on the level of trust, the strength of the relationship, and the willingness to invest in energy management systems (see Figure 8.2 in the Appendix).

4.4.4 Summary of Case 3 – importance of multiple factors

The results of Case 3 are in line with the other empirical studies on industrial service pricing (e.g. Indounas 2009) that argue that successful pricing requires systematized adaptation of market-based pricing objectives and methods with respect to profit and cost related targets. Case 3 shows that a pricing decision cannot be made based on a number of selected criteria, such as, for example, costs and competitors' prices. Pricing requires systematic monitoring and analysis of the range of *external* (such as the customer's demands and needs, the

customers' business models, the customer's perceived value of the service, trust in relationships between the customers and supplier, availability of connected services from 3d party suppliers, market shape and maturity, legislation and authorities) and *internal factors* (such as the level of service standardization, the possibility to customize and modularize services, the possibility of establishing measurable performance criteria, service maturity, supplier's goals for the service, supplier's competence and more). In order to gather the required information to perform an analysis of the factors, justify and make decision, and monitor results an organization needs to adopt a systematic pricing process.

Attempts to build pricing based on the company's own costs of service development and delivery was not successful for a very promising fuel saving services (FSS). The service supplier could not cope with such important factors as competing offers, the market situation, and the general economic conditions. On the other hand, the supplier did not have a clear value proposition that would distinguish the offering from the competing solutions, and offer different alternatives for potential customers. The situation with the fuel saving service is quite paradoxical: customers are constantly looking for the solution that will help to reduce fuel consumption; the supplier, who has a good reputation and recognized competence in this area, developed a service but could not sell it because of poorly thought-out pricing. An additional challenge for pricing arises from an unclear strategy – the supplier declared two, not always compatible, tasks for the fuel saving service: to increase company cash flow and to enter a new service market. The Firm has a good reputation in their current business, and in order to maintain cash flow, e.g. to develop new service business because of economic reasons, it would be a natural choice to develop additional services or increase sales related to their core competence (Aarto et al 2009). For new and risky projects, such as FSS, not associated with The Firm's regular business, customers might want a higher return on investments to compensate for the risks, which will affect the service price. Thus, strategy is a very important internal and outward looking factor for making a pricing decision that defines the goals that companies want to achieve by selling the service, and therefore the goal that pricing methods should support.

The case of the information management service (IM) illustrates how many factors should be considered when the company makes a pricing decision and how easily they can be ignored if not done in a systematic way. The company was ready to price the solution and offer it to customers, although the solution did not exist. There was no value proposition made which would define the targeted customer groups, explain why the customers need this particular of-

fering, or why the supplier was better than competitors in this area. This means that external (customer, competitors) and internal (service availability, customization) factors were not considered. The information management case shows that if the service's goal is to support the sales of some other offering and costs are relatively low, and while the customer's perception of the service's added value is low, the method for pricing can be to deliver the service 'free of charge' as a part of larger solution. Such an approach can be understood by customers as improved customer support, and therefore can improve customer relationships and satisfaction, and in this concrete example the information management service can support the sale of a larger solution.

The problems discussed during development of the conceptual design service (CD) emphasized the importance of standardization, modularization, and customization for pricing decisions and contributed to the internal service characteristics, which affect pricing. The modular structure of service and customized deployment allows the designing of an iterative pricing approach that includes checkpoints for ensuring commitment and service quality, the refining of goals, and the definition of precise performance targets.

Therefore, the practical application of service development and the pricing process to three industrial services has detected many internal and external factors that are important for making pricing decisions, and also revealed their interrelations. These factors and their dependencies contribute to a generic value driven pricing model and a process that collects and analyzes different aspects of service development in order to make a decision as to the best pricing option.

Another important observation was the supplier's lack of understanding of the importance of relational value, which was visible in the marketing approaches that the Firm tried to employ for all three services. The supplier did not have a segmented customer base, applicable to services. In interviews it was related that "we want to sell the services to everybody, whoever wants to buy", which is a traditional mass-manufacturing mindset. Even after proceeding quite far with the building of result-based models for pricing, the supplier did not have a complete picture of what different customer groups value in services. However, some steps forward were noticed – when building a result-based pricing model for the FS service, the managers suggested two alternatives, based on different levels of trust between the supplier and customer.

Chapter 5. SYNTHESIS AND DISCUSSION

The main goal defined for the thesis was to develop: a pricing model that reveals and describes factors important for pricing decisions; establish connections between service value and pricing in an industrial context; draw the links between customer relationship and profitability; and provide practical tools that can be used for the development of pricing mechanisms by the industrial suppliers developing services (see section Research questions and goals, p. 22).

The chosen abductive methodology suggested that the goal can be achieved by a systematic combining of the literature search with the empirical work, when guided by predefined research questions. The following discussion summarizes and synthesizes the findings from the empirical cases and the literature as regards the pricing model and its applicability for industrial companies.

5.1 Three-componential architecture of pricing model

The literature unambiguously describes service pricing as a challenging and complex task, especially for industrial services, and does not provide clear guidance as to how industrial services should be priced (see section Service pricing, p. 22, section Industrial service and solution pricing, p. 22). As logic dictated, the first empirical study Case 0 looked into the challenges of pricing, and the research tries to explain and cope with pricing problems. By in depth examination of the issues related to industrial service pricing, Case 0 has contributed to the defining of the architecture for a future pricing model.

The analysis of the Case 0 showed that the companies have both, outward and inward directed challenges with industrial service pricing, i.e. suppliers are not able to convey the value of their offerings, and at the same time, customers cannot recognize the value of industrial services (see section Summary of Case 0, p.22). The distance between the suppliers' and the customers' views, termed the 'value gap', creates additional challenges to service development and pricing. This leads to the conclusion that the pricing model should integrate both the supplier's and customer's views on service value, e.g. include internal and external (from the supplier's organization point of view) factors affecting pricing. Case 0 revealed a **number of factors** that should be considered when making pricing decisions (Table 8.17 in Appendix presents the list of factors found in the cases and the literature, and refers to some selected places in the text where these factors were discovered, described, and discussed).

Conceptually, these findings are in line with pricing aspects previously described in the literature. For example, Lovelock's (1992) introduced a 'pricing tripod' built on cost, competition, and customer-based characteristics – these being the most important ones for setting prices for services. Shipley and Jobber (2001) underlined the importance of a combination of service, organizational, and environmental characteristics for service pricing. Avlonitis and Indounas (2006a) empirically developed a set of characteristics that are important for industrial service pricing and observed that the most successful pricing is developed by systematized adaptation of market-based pricing objectives with respect to profit and cost related targets (see section Service pricing, p. 22).

In order to cope with the multiple factors affecting pricing a systematic **pricing process** has been developed through the cases studied in this thesis. Similar to Lancioni's (2005) plan for handling issues with industrial service pricing, the overall pricing model should also provide the possibility to collect information and major factors. These would include: a summary of the current pricing strategies of the company, an overview of the current market situation, the pricing strategy that the firm is currently employing in its market segments, the pricing objectives that the firm has established to guide its overall pricing strategy, the plans that will be used to accomplish the pricing objectives and the monitoring mechanism that will be used to review the results of the executed pricing strategies. In brief, the model defines what data is needed in order to handle pricing issues and establishes process needed in order to collect, process and analyses the data. Case 0 contains a description of the complete pricing process (see Figure 4.2, section The next step of the analysis: towards a service *pricing process*, p. 22) that has been developed within the scope of the present work. The pricing process uses the NSD - New Services Development process (section New service development process – systematic view on value creation process, p. 22) - and maps the reported challenges with industrial services related to pricing into the NSD stages. The pricing process has been applied and experimentally verified on three industrial service offerings (described in Case 3).

The novelty of this work is in the disclosure of evidence as to how **relational** aspects might affect pricing. Case 0 shows that customer trust, which is a crucial factor for the customer's decision to buy, depends on supplier competence and the complexity of the context. In the case of complex high technology solutions, it is not always possible to resolve complexity issues, e.g. customers will have limited access to service content, and therefore they will experience challenges in perceiving value. However, a trustful relationship, built on good supplier reputation, a long history of customer-supplier cooperation, customer satisfaction,

and high quality will help to manage value in a highly complex context. A similar logic can be applied to competence related issues. The service business is a new area for most manufacturing suppliers, and they do not necessarily have the required competences and capabilities to develop and deliver services, and they can have failures sometimes. The customer's purchasing decision, risk compensation, and therefore pricing depend on the customer's trust in the supplier's ability to keep their promises. Thus, one of the outcomes from Case 0 was to add the relational perspective on pricing decisions, and to suggest that relational factors should be studied further, e.g., how they can be included in the pricing model, and how they affect profitability. The relational factors have been studied in more depth in Cases 1 and 2, and observed in Case 3 as well.

The supplier's ability to deliver a service depends on existing knowledge and capacities. The ability to take a systematic view on service pricing and to apply service-oriented logic for pricing decisions depends on how far the suppliers' organization has developed as regards services. Case 0 showed that the maturity of a company as a service provider is reflected not only in the share of services in the portfolio and sales, but also in **mindset** and service orientation. There were a considerable number of discussions about service orientation in manufacturing businesses (e.g. Lusch et al 2007, Oliva and Kallenberg 2003); the results of Case 0 extended these discussions towards pricing issues. One example, as already mentioned, was the suggestion to include relational aspects into pricing models. Another attempt to break the goods-dominant logic was to challenge the widely used cost-based pricing methods. Case 0 revealed a 'value gap', which showed that customers and suppliers have very different views on the same issues and these not only come from a lack of cooperation, but also from different needs and goals. Hence, in order to manage pricing for services, it is important to manage value for all the parties. The widely used cost-based models do not provide any possibilities for managing customer value, and cannot, therefore, be applicable for services in general.

Overall, the results shows that to overcome challenges with pricing, industrial companies should consider the multiple factors affecting the pricing decision (including relational aspects), they should have a pricing process in place (see Figure 4.2), and develop a service-oriented mindset (see section Summary of Case 0, p. 22). Thus, based on the results of Case 0 and combined with the literature, a three-componential architecture for the pricing model has been suggested, and the main three pillars are (see also Figure 5.1):

- The number of factors affecting pricing, including relational aspects;
- The pricing process, which guides data collection, the analysis of factors, drives toward pricing decisions, and ensures proper pricing management;
- New logic that supports a service-oriented mindset.

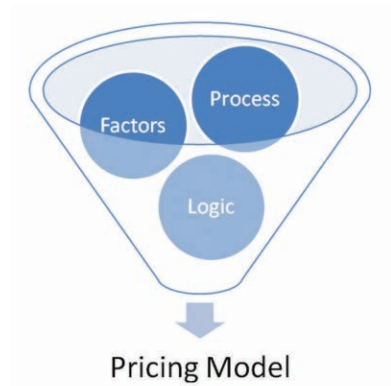


Figure 5.1. The components of a pricing model for industrial services.

By systematically combining the results of the literature search and the empirical cases, the research developed a pricing model in these three directions, and verified the developed model in real business cases.

5.2 Relational and functional factors affecting pricing

The findings suggest that pricing is affected by two major types of factors that can be regarded as relational and functional factors. Functional factors are service characteristics, business environments, and organizational characteristics that describe certain service development operations and can be expressed in measurable units and assigned to the company's costs or benefits (see, for example, Table 8.5, Table 8.6, and Table 8.7 in the Appendix). Relational factors, such as trust, loyalty, commitments, and satisfaction, affect 'relational capital' (see section Understanding of relational value, p. 22) and come from the personal and situational factors that customers use for assessing the service's value (Zeithaml and Bitner 2003). Organizations do not have clear processes on how to manage relational factors. However, these two types of factors are not necessarily separated in the pricing model.

The results of Case 0 induced further consideration of relationships for pricing and including relational aspects into the pricing model, and Case 1 and Case 2 clarified the importance of relationships for service business and pricing as well as suggesting how relational issues can be utilized for pricing.

Case 1 continued the research from a relational perspective and developed the idea that relationships are crucial for service value by using the example of service failures. Although the failure of service generates extra costs for the supplier and the customer from a financial perspective, and therefore negatively af-

facts added value, companies can minimize negative impacts and even increase value by developing trustworthy relationships through an effective handling of problems. Results of Case 1 supported the development of a new pricing **logic** by emphasizing the importance of relational factors for pricing. Indeed, if trust between customers and suppliers can, in practice, turn the losses from the service failure to the benefits, then managers should really include relational components into the models, and, despite the challenges, i.e. increased complexity and extra effort, thoroughly manage relational value.

Case 1 defined how relationship, trust, commitment, and satisfaction affect service value and how these relational factors are linked with each other (see Figure 4.7). Based on this, Case 1 provided a practical tool for value-based customer assessment and segmentation (see section Methodology: data description, two dimensional construct for analysis, p.22). The segmentation can be used when making pricing decisions for different customer target groups. Indeed, if the company has a customer base with several thousands of records, it is impossible to analyze pricing factors for each customer individually, and it makes sense to group customers according to some common criteria. Segmentation is a method which categorizes the customers according to the type of their relationship with the supplier, and thus utilizes relational factors for pricing purposes.

The results of Case 1 showed that relationships can and should be managed for pricing and other managerial tasks. The empirical work of the researchers on Case 1 revealed that building and maintaining relationships requires effort from suppliers and customer. This effort should be rewarded, and it confirms the relevance of the research question about profitability of service business in manufacturing industries, and the benefits of strengthening relationships. In order to answer these questions Case 2 provided a review of several patterns of service infusion for manufacturing companies that develop a life cycle approach for service solutions. Four types of life cycle approaches employed by industrial suppliers (see section Increase in the scope of supply by developing life cycle solutions – context and examples in related studies, p. 22) emphasize different aspects that affect pricing decisions, including, service availability, competitor price, service know-how, bundling and inseparability, customer performance indicators, strength of the relationship between customer and supplier, supplier competence and capability (see Table 8.17 in Appendix). Unlike some opinions that the cost is the most important characteristic for service pricing (e.g. Morris and Fuller 1989), life cycle solutions bring to the front such aspects as customer commitments, quality, excellence, trust, and sustainability during the life cycle.

The empirical findings of Case 2 supported a contingency approach to pricing, which emphasized a need to develop multiple-item processes in the pricing decision that would combine cost-informed, value-informed, and competition-informed pricing approaches. Such process should analyze multiple factors and the different degrees of their importance for pricing related information (Ingenbleek et al 2003). The diversity of aspects and their different impacts on pricing encourage a flexible and dynamic approach to pricing models – it makes no sense to aim at building rigid frameworks with predefined elements ordered by the severity of their impact and importance for pricing. Rather one should retrieve the most important influencers from the customer's and supplier's needs and goals, and validate the decision in the context and constraints of each business case.

Case 2 revealed the dependencies between the strength of the customer/supplier relationship and profitability. The empirical results of Case 2 showed that customers that buy more advanced knowledge-intensive services generate a higher margin, even with simplistic cost-based pricing models applied to the services. Thus the findings supported the **logic** that development of industrial services and investment in relationships is profitable for business (e.g. in Ostrom et al 2010, Oliva and Kallenberg 2003, Anderson, Fornell and Rust 1997). This is, however, not in contrast to the findings in Case 0 and the literature (e.g. Gebauer, Fleisch, and Friedli 2005), which notes that that service strategy can be challenging and not always successful for industrial suppliers. Instead, the results of Case 2 complemented the service research with a rather successful example.

Dependencies were observed between some of the factors (see Figure 4.3). High complexity in technology requires a high level of trust due to the limited transparency of the offering and therefore the difficulty in assessing service value (see section Results: beyond the challenges, p.22). There is also a link between customer trust and the supplier's capability to provide a certain service, and the supplier's experience and knowledge (see section Results: beyond the challenges, p.22). In turn, the supplier's capability to develop and deliver a service depends on the maturity of the organization as a service supplier, and the complexity associated with the service itself. Conceptually, trust together with commitment, is the fundamental element in customer/supplier relationships (see section Commitment and trust, p.22).

The observed dependencies between the pricing factors and their conceptual meaning helped to simplify the pricing model, as they clarified how to collect data for pricing and how to manage these factors. Indeed, it would be very difficult to assess trust level in measurable targets, and a little artificial to in-

clude such assessment into the pricing mechanism. However, it is a lot easier to analyze trust dependent variables, such as supplier capabilities, commitments, level of complexity, and supplier maturity as a service provider (for example, by share of services in portfolio). The example with trust shows that relational components can be dependent on other relational factors as well as on functional factors, such as capability and complexity. Thus, though the research argues that relational factors are very important for pricing decisions, there is not much sense in separating relational components from the other components in the pricing model. However, for practical reasons, e.g. such as collection of the required data, application of different managerial methods, identification of the most influential factors for the specific case, factors affecting the pricing decision should be grouped and systematically managed by a pricing process.

5.3 Grouping of pricing factors and pricing process

The process of discovering, systematizing, and managing of pricing factors has been built on theoretical arguments as well as empirical observations. The research literature provides such important input for the building of a pricing model as multidimensionality and contingency (Indounas 2009, Ingenbleek et al 2003), inward and outward looking factors for pricing decisions (Avlonitis and Indounas 2006a), consideration of economic consequences associated with consuming as well as providing (Bonnermeier et al 2010) and relational value (e.g. Möller et al 2007). In turn, the present thesis contributes to service research by developing a pricing model, including analysis of factors affecting pricing and new pricing logic and processes. The important goal for the pricing model is its feasibility for practitioners, and therefore, the main principles followed when building the model were:

- To provide guidance and process for collection and processing needed data;
- To describe a process for making pricing decisions;
- To achieve flexibility needed to support complex and dynamical pricing solution;
- To provide clear instructions for applicability.

Certain factors that affect pricing were explored in Case 0 (see Table 8.17). The abductive approach of the analysis enabled further expansion of some key dimensions (Dubois and Gadde 2002) of the model by deeper examination of the pricing factors in Cases 1, 2, and 3.

5.3.1 In- and outward looking characteristics

Avlonitis and Indounas (2006a) stated that pricing decisions are influenced by both inward and outward looking characteristics. This is supported by the results of Case 0 that show that there are outward and inward directed challenges related to pricing decisions (see section Summary of Case 0, p.22). Life cycle solutions described in Case 2 (see section Increase in the scope of supply by developing life cycle solutions – context and examples in related studies, p.22) revealed a number of factors that affect pricing decisions, and challenged the priority of costs for pricing decision. The results of Case 3 supported the idea that for successful pricing companies should perform systematic monitoring and analysis of the external (such as customer demand and needs, customers' business models, the customer's perceived value of the service, trust in relationships between the customers and supplier, the availability of connected services from 3d party suppliers, the market shape and maturity, legislation and authorities) *and internal factors* (such as the level of service standardization, the possibility to customize and modularize services, the possibility to establish measurable performance criteria, service maturity, the supplier's goals for the service, the supplier's competence etc.). Moreover, similar to Case 2, Case 3 showed that the factors that affect pricing decisions can be very different depending on each concrete case, e.g. cost is not always the main influence on a pricing decision.

This is in line with the results of the empirical study by Indounas (2009), where he analyzed multiple service pricing approaches and service, organizational, and environmental characteristics that influence pricing decisions and concluded that both company- and market-related characteristics affect pricing objectives, methods, policies, and information. He empirically observed that the most successful pricing methods are built on a combination of market-based pricing objectives and methods, and profit and cost related targets.

Based on all of the above, the present research suggests subdividing factors into internal and external groups. The main advantage of such groupings is the possibility to apply different managerial approaches to manage these factors. The internal factors are very much under the control of the supplier and depend on the supplier's capabilities (see Figure 4.3), meaning both - technological competence and organizational resources. The external factors, such as competitors' prices, customer priorities, and demand are out of the supplier's control; the supplier has limited possibilities to influence them, and sometimes it is even difficult to obtain information in order to analyze external factors. Therefore, these two groups of factors, internal and external, require different

methods to collect and process information, different granularity of information, and different approaches to manage uncertainty. However, it is important to consider both groups, in order to assess the economic consequences associated with providing (provider's point of view) and consuming (customer's point of view) customer solutions (Bonnermeier et al 2010, Bolton et al 2007).

5.3.2 Internal factors: strategic and managerial

The internal factors can be further grouped into strategic and managerial (or tactical) in order to ensure that the pricing decision has been made based on systematic thinking as to why and how the company should develop and sell industrial services.

Strategic factors define the goals that companies want to achieve by selling the service, and therefore the goal that pricing methods should support. Strategic factors compose the pricing objectives that the firm has established to guide its overall pricing strategy (Lancioni 2005) and consistent with organizational influencers, e.g. defined by Avlonitis and Indounas (2006a), such as the marketing objectives, the marketing strategy, the corporate objectives, the corporate strategy (see Table 8.6).

The present research proposes to discuss strategic factors in the context of the relational nature of services and the customer's involvement in the value creation process. Value co-creation is more effective if there is strategic congruence between the client and the service provider. This congruence exists when the client and the service provider have sufficiently related value creation strategies (Möller et al 2007). It should be remembered that the supplier should define a service strategy for each customer or each customer group separately, depending on their needs, business models, relationships, commitments and level of trust, and as much as possible to do this together with the customers.

Thus in order to define a clear strategy, the supplier should have a clear answer to the following question:

Why do we want to sell THIS service solution to THAT customer/customer group?

For example, in the case of the information management service, discussed in Case 3, the main goal of the IM service was to support the sale of some larger offering and the cost of the IM service delivery was relatively low. The customer's perception of IM service's added value would therefore also be low; therefore, the method of pricing could be to deliver the service 'free of charge' as a part of the larger solution. Such an approach can be understood by customers

as improved customer support, and therefore can lead to improved customer relationships and increased satisfaction.

Managerial factors influencing pricing decisions include the costs of service development and delivery and other service characteristics that might affect pricing, such as the readiness and availability of the service, the possibility of testing or running prototypes, the level of innovation in the service, the degree of bundling with other services and products, or inseparability, the possibility of customization, and the level of standardization (see more service characteristics in Table 8.5 in Appendix).

Researchers have emphasized the importance of cost to service pricing (e.g. Morris and Fuller 1989, Avlonitis and Indounas 2006a, Zeithaml et al 2006, Monroe 1989, Tung et al 1997, Shipley and Jobber 2001). Empirical studies confirm that the current pricing mechanisms employed by the majority of industrial service are based on costs. Therefore, cost is a mandatory threshold in the pricing mechanism, i.e. on a general level the cost should set the minimum price for a service. However, in industrial services there are cases when the company sells certain services at prices, which are below their own costs in order to develop and deliver services. Usually, such a pricing decision is driven by short-term targets, such as fast market entry, pressing-out competitors, and increasing market share. As a main rule in order to approve of a price, business case managers want in the long run, to see margins becoming positive and growing to the level established for the company portfolio. A standalone service is, however, does not always enable a profitable deal. It may instead provide non-monetary benefits, such as increased trust, better customer-supplier relationships, stronger customer commitments, or that it is included into some larger profitable offering. For example, logistic services for some industrial suppliers do not generate profit, but through increased customer satisfaction positively affect net sales. Thus for industrial services it is especially important how the profitability of the service is measured i.e. the income may be indirect, for example, increasing the sales of some other products.

In many cases, a cost-oriented mind set prevents successful service development (Grönroos 2000). Many business developers (for example in Case 3) have reported that in order to obtain permission from the top management to start a service development project they have to prove that the new service sales margin will reach established company targets. However, other service characteristics, not only cost, can also significantly affect the pricing decision. Technological complexity, bundling to equipment and customer specific conditions for service execution complicate the definition of the performance criteria and measurement of outcome,

which is needed for a performance - based pricing methods. Companies make decisions in favor of simplistic pricing methods because pricing managers do not have confidence in the service quality and availability or the skills to design performance criteria. In Case 3, a fuel saving service was initially proposed to be sold at a fixed cost-based price, but this could not compete with the throw away prices of the competitors. Moreover, developing a performance based mechanism has been seen for a long time as a risky and complex approach. After several workshops with the supplier's employees together with customer interviews and deeper analysis of content, the competitive advantage and actual value of the fuel saving service, it became evident that cost was not the most important characteristic for the pricing decision. Service innovation, service quality, risk, and differentiation were the most important factors that influence the pricing decision. In Case 2, the development of life cycle solutions did not fully explore the potential benefits of the cost-based approach for pricing. One of the reasons is that cost is not the most important characteristic for pricing life cycle services. For life cycle solutions, both customers and suppliers see such characteristics as availability, time to deliver service and bundling to equipment as the most important influences as regards the pricing decision. Lack of service culture, or organizational immaturity as a service provider, also influences the pricing decision. For example, in Case 0 (see issue 3 Table 4.2) the supplier's employees expressed a lack of faith in their ability to provide the service successfully, and therefore they preferred to provide it free of charge in order to avoid commitments and disappointing the customer.

In sum, the managers should have detailed a clear answer on the question:

What exactly do we sell?

During the collaborative research projects described in the empirical part of this thesis, several tools have been suggested in order to measure and assess the importance of different managerial factors on the pricing decisions of several companies. However, the final recommendations have been built not on quantitative methods, measuring the impact of the service's characteristics, but rather on a systematic approach that analyzes managerial factors together with strategic factors and defines the main influencers that should be built into the pricing mechanism.

5.3.3 External factors: customer related factors and business environment

Lovelock (1992) defined the "pricing tripod", where cost, competition, and customer-based characteristics together set up prices for services. According

to Morris and Fuller (1989), the customers' price elasticity policies and characteristics vary across different service industries and give the unique structural characteristics of different service sectors that affect pricing. Shipley and Jobber (2001), Avlonitis and Indounas (2006a) have emphasized the importance of environmental characteristics for effective pricing. Therefore, customer related issues together with market, technology, and value chain elements represent the external factors affecting the pricing decision.

The external factors have been subdivided in the model of customer related and business environment factors. The main reason for this is to emphasize the importance of customers to industrial services, and to clarify the level of cooperation between suppliers and customer (co-creation, co-design), as well as to be able to create a customer (or customer group) specific pricing solution.

The *Business environment* affects pricing decisions through the competitors' prices, the maturity of the market for the service, the strength of competition, regulations existing in the industry, the impact from other stakeholders, for example, suppliers, market trends, technologies. Avlonitis and Indounas (2006a) emphasize the importance of the competitors' price as an influence on the service pricing decision as well as many other external characteristics (see Table 8.7). Case 3 (Fuel Consumption service) shows that competitors, through reducing prices force the company to change business models and to look for innovative pricing mechanisms. Other regulations such as the level of governmental intervention can significantly affect the pricing approach. For example, for the providers of decentralized energy production solutions the development of industrial services causes major changes in their business models. Industrial suppliers develop new business cases when, instead of just delivering only equipment and installation services, they take responsibility for the entire energy production. In such a case, they become more dependent on local regulations controlling electricity prices. The composition of factors related to the business environment should provide the answer to the question:

Where do we sell services?

The role of the customer, the customer's business model, and the customer's values play a crucial role for industrial services. It was proven that trust has a direct impact on price in the highly relationship based business of industrial services. The customers' belief that they will get value for money is built upon many factors, including how well the supplier communicates value through their value proposition, and the complexity and competitiveness of the business environment. Strong relationships between customers and suppliers pro-

vide not only social benefits but also a utilitarian value to the supplier through, for example, an increase in sales and customer loyalty, which is a widely accepted measurement of performance (Selnes and Hansen 2001, Case 2 see section Summary of Case 2). In order to develop and successfully sell industrial services the supplier should understand the customer's value creation process, have a clear understanding how the offered service will be used by customers, how it will affect the customers' performance, and how to measure the impact from the service. Case 3 (e.g. information management service) shows that service benefits, customer competences, and the capability of delivering the service are not always visible for potential customers. In a case where the supplier develops a service which is not associated with its regular business, customer might require additional compensation for risk, which affects pricing (Case 3 Fuel Consumption service). Clearly defined tangible performance targets that the supplier and customer develop together contribute to transparent pricing mechanism that connects real customer benefits and supplier compensation. Emerging outcome based pricing methods require a balance between the customer, the service provider and the external conditions. The customer and the service provider must specify the outcome and how it can be measured in a changing business environment (Ng et al 2009). Thus, customer related factors cover a wide range of functional and relational aspects. Functional aspects require knowledge of the customer's needs, the customer's business model, and the customer's problems. Relational aspects come from the personal and situational factors that customers use for judging the service's value (Zeithaml and Bitner 2003), including the customer's loyalty, an awareness of the supplier capabilities, and satisfaction from the previous projects. Altogether, these factors contribute to forming an understanding of customer value. Therefore, *customer related factors* can be summarized in a question:

Why would the customer buy the service from the supplier?

The answer is provided by a clear and detailed value proposition that the supplier produces in collaboration with the customer.

5.3.4 Addendum to pricing process description

The pricing process plays an important role for systematization of data collection, design of pricing methods, feedback analysis, and performing corrective actions. The pricing process was developed in Case 0 and tested in Case 3 (see Figure 4.2, Figure 4.13, Table 8.10, Table 8.11, Table 8.12, Table 8.13, Table 8.14, Table 8.15 in the Appendix). The importance and role of the process

for pricing has been discussed in the literature (see section Importance of the process approach for pricing – pricing is a *capability*, p. 22). The usability and usefulness of the process for pricing were proven in Case 3, where systematic application of this process helped to make a justified pricing decision, which was very different from the ad hoc decision initially suggested by the managers.

The process and its application has been described in Case 0 and Case 3, however, there are additional aspects that require special attention and discussion. According to the developed process, the first important step is to decide which service to sell and to whom. This decision might in practice require a lot of work: preparation, data collection, analysis, workshops, customer visits. However, the wrong choice of service and customer target group will lead to extra costs and losses, unclear value proposition, and a poor reputation as service supplier. The methods of service profiling (described further in section Which service to sell - service platform profiling, p. 22) and customer segmentation (described further in section Example of customer segmentation using relationship/*commitment model*, p. 22) have been developed in this thesis in order to help make a service and customer evaluation. They can be especially helpful for large industrial companies with an enormous amount of potential service offerings and a large customer base.

5.3.5 Which service to sell - service platform profiling

‘Why haven’t the new ideas and technologies led to improved performance? Because managers lack a framework for deciding which ones are best for their particular company’s situation’, stated Fisher (1997, p.106), in his discussion on building a successful supply-chain strategy.

In the process of collecting and processing empirical data, it was observed that the suppliers’ managers are either uncertain or mistaken about the content of the actual industrial offering including services, and the customer target group for the offering. There is no systematic process of analysis and selection of industrial services for further development and sales. In order to answer the question of how to price industrial services it is important to understand what exactly is included in the offering and why.

As was found in Case 0 (Table 4.2), the wrong choice of service for further development can cause a lack of faith in the customer as to the supplier’s ability to provide the service, and a lack of confidence in the organization itself that it can deliver the required quality for the service. Case 3 shows that if the decision to productify and sell certain services is made without systematic justification, the customers most probably will not recognize value and refuse to pay for it.

The information management service (Case 3) did not belong to the Firm's core competences and the Firm did not declare a strategy to enter the information management market. The Firm tried to sell it as a separate offering and failed to convince customers that the needed competences existed.

The factors affecting a pricing decision (Table 8.17 in the Appendix) provide key inputs for profiling the supplier's service platform, i.e. the company can systematize its knowledge and technology according to service development goals. The main idea behind such profiling is to cross check the goals that companies pursue when they decide to develop and sell industrial services with the potential estimated impact of the services. Artto et al (2009) have identified altogether six different 'impact types' that explain the impact of services on the performance of industrial projects ('impact types' described in section Services in the industrial sector, p. 22). Such categorization for industrial services provides theoretical justification for the matching or mismatching of the company goals with the estimated impacts.

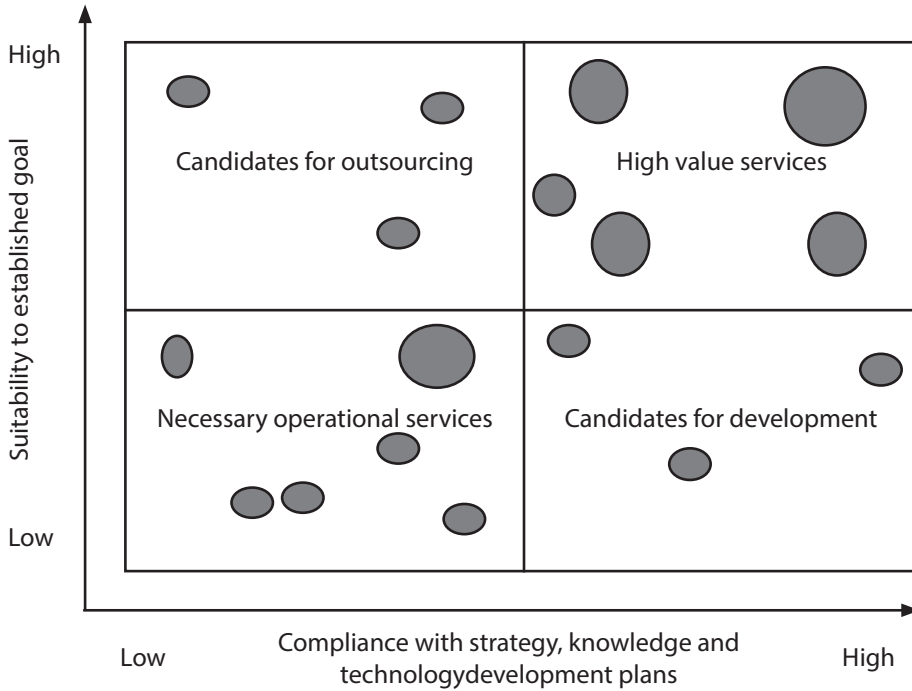
Company A (Case 0) entered a new developing market with the same business models as used in its home country and suddenly faced strong competitor pressure in the local market. The company established a strategic goal to overcome the competition by developing high quality logistic services and competing on service excellence. However, the results were rather disappointing, but quite predictable if the management had performed a more systematic study of the potential service impact prior to the making the actual investments. According to Artto et al (2009), supply chain management, centralized operations service centers, and operations support service, which logistic services belong to, have more impact on delivery efficiency than directly on the company's competitive advantage (see Table 8.4 in the Appendix). Furthermore, deeper examination of the local context revealed that there were several mistakes that the company made when deciding to develop logistic services. When the decision to build a logistics center was made, the company tried to copy the business model that was used in its home country for the same kind of logistic service, with minimal changes. The management justified such a decision by the similarity of the market characteristics which were due to the geographical proximity and close neighborhood of this new market to the home country. The solution included a complex combination of services, e.g. pick up points, warehousing, pre-fabrication of some products, delivery just-in-time, and some expensive delivery methods, and it should have been integrated with the local transportation and cargo systems. However, the landscape of the new market was found to be to-

tally different from that in the home country and there was no developed transport infrastructure that could support the business model employed. Moreover, the local logistic services market was mainly “grey”, meaning that there were many local service suppliers that could perform reliable logistic services for simplified cash payment methods and dumping prices. The main disadvantage came from a lack of demand – there were no customer need for excellent and precise logistic services. For small and middle-sized customers such services would not be affordable, large customers had their own logistic services. There is a clear mismatch between the established goals and selected service. According to Artto’s et al (2009) classification, one option for Company A would be to develop services related to the company’s core project, for example, operational and consulting services related to the company’s unique technology, knowledge base, and know how.

Another important criterion for the decision to develop an industrial service is the relevance of knowledge and technology required for this service to the company’s strategic developments and related knowledge development plans. Industrial services require specific knowledge and technologies (see section The role of knowledge in industrial services, p.22), and the development of new knowledge generates significant costs for a firm (Løwendahl et al 2001). Therefore, it is very important to classify services according to their relevance to the company’s strategic development plans. For example, when industrial suppliers want to focus on new technology and innovations they often outsource such basic services as maintenance and support for their delivered customer installations to other service providers, though in many industries maintenance services are a high margin business. In some cases, the decision is driven by costs and efficiency concerns; the industrial suppliers that are able to provide spare parts and maintenance services cheaper at an accepted quality level create a profitable business and successfully compete with OEMs on pricing, service quality, and availability of services. However, in other cases OEM suppliers are looking themselves for partners on local markets in order to outsource basic and standardized services if they want to focus on innovations and outsource operational services to somebody else. Large industrial companies, including those discussed in Cases 0, 1, and 2, outsourced such basic services as general education in technology, safety, project management, and others to the local suppliers and provide their customers with only advanced, product-specific trainings.

The arguments above are illustrated in a two-dimensional matrix model (see Figure 5.2).

Figure 5.2. Matrix for industrial services profiling



In the matrix assessing industrial services, the horizontal dimension reflects strategy compliance. Service development, and the related technology and competence development, can be in-line or not in-line with the company’s strategy and long-term plans. For example, the company performs a customer training service as part of the current project delivery. However, the company does not have plans to develop a further training and consulting business, in order to decouple, systematize, or further customize it. Furthermore, the top management might even be considering outsourcing this service. In this case, the service is not in the company’s business development plans even though the service is still part of the company’s offering.

The vertical dimension is defined from the perspective of impact on the supplier’s business performance. Compliance of the supplier’s goal, established for the service, and the possible service impact (e.g. in terms of Artto’s et al (2009) classification, see Table 1.1) on the supplier’s business performance provides higher value. That is to say, no matter how well defined and high quality a service is – if this type of services is not suitable for achieving the established busi-

ness goal, it is unlikely that the service will be successful (see above example of logistic service).

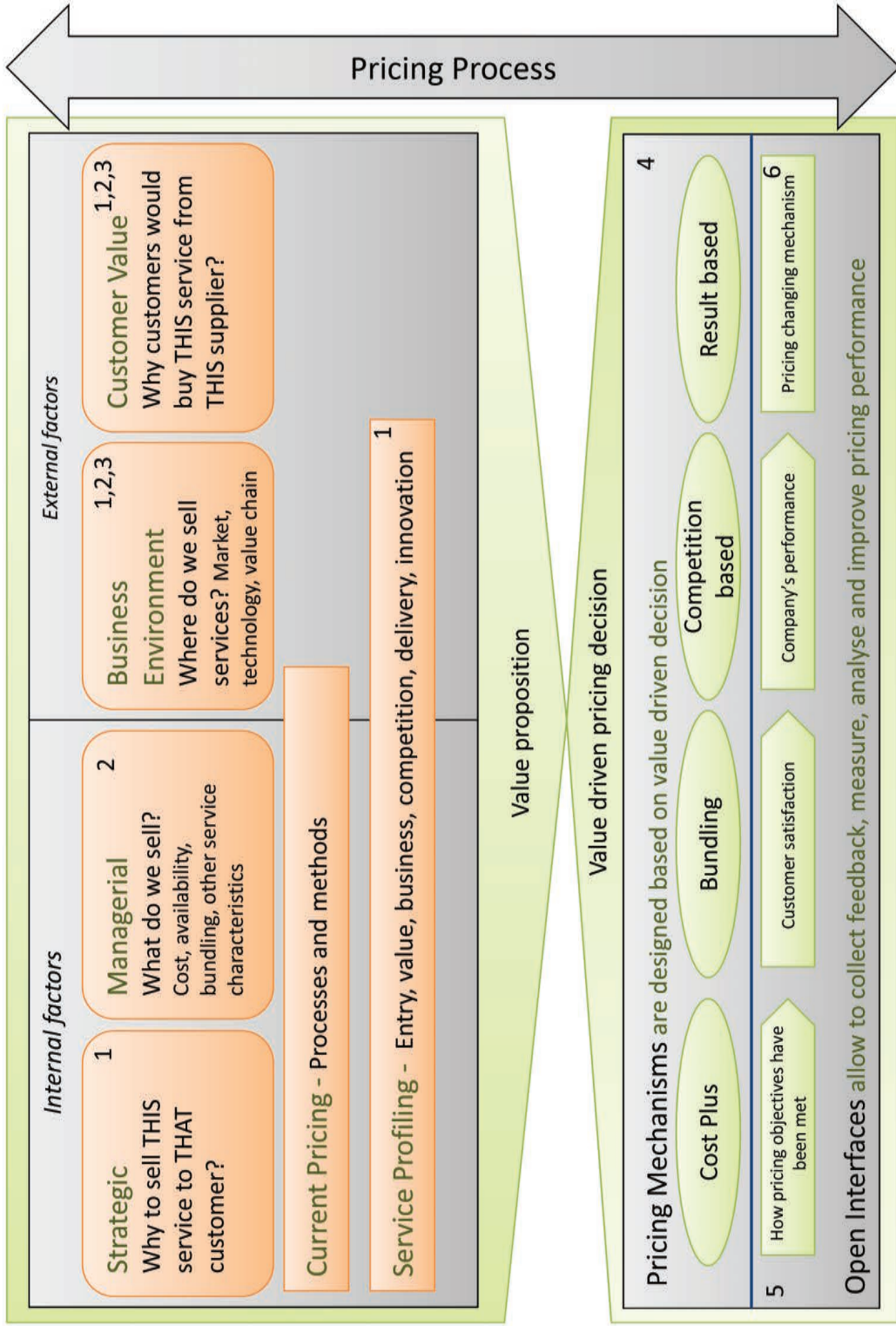
Thus, service platform profiling reveals four general groups for industrial services: high-value services, candidates for development, candidates for outsourcing, and necessary operational costs. High value services correspond best to the company's current goal and belong to the long-term development plans of the company's business (knowledge, technology base). Candidates for development do not contribute to the current business goals; however, these services are an important tool for meeting future challenges. Services that do not belong to the company's strategic development plans can be outsourced if it is possible, or they can continue to complement the main project delivery as a part of an operational or business process.

Industrial service profiling has a direct impact on the pricing mechanism; it provides input to the overall pricing strategy. High potential services can be considered a core offering, and therefore should have established sales and profitability targets. For candidates for outsourcing it is important to understand and monitor the cost structure and consider alternative solutions that can be offered by other suppliers. Services that represent necessary operational costs are usually embedded in larger solutions and can be sold with bundled pricing.

5.4 Visualization of factors and processes

By systematically combining the results of the literature search and the results of the analysis of empirical data, the research has detected a number of factors affecting pricing decisions (Table 8.17). In order to manage these pricing factors, e.g. to collect the needed data, to analyze factors, to make pricing decision, to monitor results and perform corrective actions, companies need a process that eliminates the obstacles presented by the different functions and activities, and helps to handle them in a systematic way. The process might include activities that are not directly related to pricing methods, such as service profiling, and customer segmentation methods. These findings are visualized in Figure 5.3. The goal of Figure 5.3 is to visualize a part of the developed pricing model, which defines multiple factors that need to be considered and the number of tasks that are necessary to perform within the scope of the pricing process, in order to ensure a value driven approach.

Figure 5.3. Further visualization of pricing model – factors focused view



As was suggested in the section In- and outward looking characteristics, factors that affect pricing decisions are subdivided into internal and external factors. Such subdivision is mainly driven by different management practices, is applied to internal and external issues, and lies behind the organizational structure. On a general level, the analysis of internal factors affecting pricing, both strategic and managerial, reflects the supplier's ability to develop and deliver services. The analysis of external factors, the business environment, and the customers, reflects the supplier's ability to compete with services and correspond with customer needs.

There are cross functional (both, internal and external) activities related to pricing. Service selection is the company's internal choice; however, there are important external factors to be analyzed, such as competitors' offerings and industry trends. Therefore service profiling is rather a cross functional activity.

Figure 5.3 indicates that the current pricing approaches also have an impact on pricing decisions. However, because of the repetitive cost-based principles of pricing applied by industrial suppliers, existing pricing is not treated as input for pricing decisions, but as a possible limitation on the applicability of a pricing framework. This is discussed in the following section Challenges on the way to systematic pricing.

After analysis of all of the internal and external factors, and the constraints, managers are able to decide on what kind of pricing approach should be taken and to start designing pricing mechanisms (see Figure 5.3 on the bottom). Pricing mechanisms can be very simple, such as fixed price or cost based methods (if these methods provide the best value for supplier and customer at the moment), or can include sophisticated performance indicators, or can be a combination of different mechanisms as was shown in Case 3. The important part of pricing is flexibility - a possibility to change the pricing, or to estimate and plan needed correction in future pricing. Pricing easily becomes outdated through, for example, changes in the business environment (competitors' prices), changes in the customer business models (the customer's own cost of performing service becomes lower than the service supplier's price), accomplishment of strategic goals (the company successfully entered the market), and changes in the offering itself (cost structure changes, technology evolved). Successful pricing should have the monitoring mechanism that will be used to review the results of the executed pricing strategies (Lancioni 2005). It is especially important for long-term life cycle solutions to be able to adjust pricing in order to reflect such changes. In order to save and maintain trustworthy relationships with partners during the entire life cycle of the relationship, and to avoid a reputation as a rig-

orous market player the company should define and track market and technology changes in their contract through “open interfaces”, such as, for example, a market-base price plus escalation techniques, or other performance based methods. A Life cycle approach changes the duration of the customer-supplier relationship; the relationships in project sales last from some months to several years, however, from a life cycle perspective relationships endure for many years, as long as, for example, the customer uses the installation. Obviously, it is very difficult to make pricing for such long contracts based on costs, and any fixed price might become irrelevant very quickly. For such contracts a performance-based approach is a natural choice – as long as the customer generates profit from the installation, the supplier will capture their own value.

The important part of the pricing model is the pricing process, which is also outlined in the framework (see Figure 5.3 on the right side). An analysis of factors, making a pricing decision, designing of pricing mechanisms, application of pricing methods, collecting feedback, performance, and pricing change management are the different activities that are performed according to organizational pricing processes and practices. The process is not always linear, and can be applied cyclically, depending on how the factors that are handled by the process change and evolve. For example, the sudden appearance of a strong competitor can imply redesigning of the service content or even the entire offering in order to strengthen the competitive advantage.

The main components of the process have been described in section The next step of the analysis: towards a service pricing process (p. 22) and are as follows:

1. Establishing pricing goals;
2. Defining service characteristics;
3. Decision making on pricing methods;
4. Designing of pricing methods;
5. Implementation and feedback phase;
6. Pricing management.

The numerical labels in Figure 5.3 show how pricing process stages can handle data collection and analysis of factors, and performing the required pricing management activities.

5.5 The importance and priority of various pricing factors

The amount of factors affecting pricing decision, the complexity of their relationship pose questions about the importance of each factor, the impact of the factors on the pricing decision, and therefore, on the business performance. Indeed, different factors can produce opposite input into the pricing decision. For example, the factor of inseparability of the service and the equipment can call for bundling pricing methods; however, if this is a new service with a high degree of innovation, it is important to reflect the degree of innovation in the pricing mechanism, and, therefore, try to develop result-based method. The practical illustration of this “factors overlap” could be remote monitoring services. On one side, remote monitoring services are designed for certain equipment, and only on conceptual level can be applied for other purposes. Thus, the companies promote these services and sell them with and for their own equipment, and the price is defined as a fixed maintenance fee. On the other side, remote monitoring systems are a fast growing, emerging market for industrial services. New players, such as IT, service companies, integrators, and technical consultants are trying to enter this market. They are not manufacturers of equipment and, therefore, they will compete on service excellence. Thus, in order to compare the offering customers will request service KPIs, and, most probably, will be willing to pay based on performance indicators, number of tickets, down time, and improved efficiency of equipment.

Service literature does not provide an univocal answer on which factors are the most important for pricing decisions. Literature review performed on service pricing (section Service pricing, p.22) provided the following view on factors affecting pricing:

- Cost, competition, and customer-based characteristics are the most important ones for pricing decision (e.g. Lovelock 1992);
- Cost is the most important characteristics followed by the difficulty in completing the service and the elasticity of the customers’ price policies (Morris and Fuller 1989);
- The cost of the service is considered as the most important service characteristic followed by the quality of the service, and the type of the service (Avlonitis and Indounas 2006a)
- Characteristics are varied across different service industries, given the unique structural characteristics of different service sectors (Morris and Fuller 1989); the prices can be market driven, but can also be very much

affected by different institutional pressures and public regulations, such as tendering, public services fees, and long-term agreements (Cowel 1984).

- A combination of services, organizational and environmental characteristics is important in order to make effective pricing decision (Shipley and Jobber 2001);
- The most important organizational characteristics influencing pricing decisions are related to the corporate strategy and the corporate objectives (Kurtz and Clow 1998);
- Both company- and market-related characteristics affect pricing objectives, methods, policies, and information (Indounas 2009);
- Customers' willingness to pay for services linked to their perceptions of service quality and value makes pricing especially complex (Bolton, Grewal, and Levy 2007);
- The most successful pricing methods were developed by systematized adaptation of market-based pricing objectives and methods with respect to profit and cost related targets (Indounas 2009), for example, by co-creation of value proposition, and linking of value-in-exchange and value-in-use (Lusch et al 2007).

Although not wishing to reduce the importance of other factors, the present work implicitly (e.g. by repeating the importance of strategic factors, describing strategic factors at first, starting pricing process from strategic goal) and explicitly (by creating a separate section Which service to sell - service platform profiling, p. 22) emphasizes the importance of strategic factors. An unclear strategy on industrial service development will contribute with high probability to failure even if a “well-oiled machine” properly manages all the managerial and external factors. However, the importance of strategy should not lead to an approach where all the other factors attain secondary priority. It is rather that strategy should be defined and stated first and with the necessary justification and in a clear formulation. In fact, the following strategy, often voiced by industrial suppliers, - “we want to sell any services to all possible customers in order to raise cash flow, satisfy customer demand and sustain competition” - does not seem to be a clear and useful input for pricing decisions. As was defined in the section Internal factors: strategic and managerial, p. 22, strategy should answer the question why do we want to sell THIS service solution to THAT customer/customer group?

Another practical aspect when evaluating pricing factors is their persistence, variability, and uncertainty. Analysing of strategic factors usually requires coordination and decision making at a top management level. Thus, these factors are more persistent and harder to change. Managerial factors are the most controllable by the supplier, though they can be harder to change (for example, costs related to subcontractor work) or easier to change (for example, content of solution). Business factors can rapidly change the whole picture, for example, by the sudden appearance of a competing offer. Thus, they possess a high level of uncertainty. In the case of close collaboration and long relationships with customers, customer related factors should become more predictable and manageable.

5.6 Challenges on the way to systematic pricing

The empirical study of this thesis concurs with the literature findings that most of the services are priced with a cost-based approach (Zeithaml, Bitner, and Gremler 2006, Monroe 1989, Tung, Capella and Tat 1997). Managers of all the observed companies have used or were going to use cost-based or fixed fee approaches when pricing their services. Although in Case 3 the researchers together with practitioners created a value-based model for pricing of selected services, it was rather more of an attempt to innovate the existing pricing process. The main tendency is, however, still the same – pricing for the service should compensate the supplier's costs to deliver the service and have some margin. Interviewed managers expressed the belief that value based pricing methods for pricing have high potential for improving the competitive position and profitability of the supplier; that value based methods will increase customer confidence in service quality, availability, and therefore increase customer purchasing loyalty. However, it seems that industrial companies are slow to accept new pricing approaches– value-based pricing methods for services remain too theoretical for industrial companies.

It is very important to understand (first of all for the practical application of the ideas developed in the thesis) why industrial organization so widely apply cost based pricing methods despite criticism from service researchers, and the low profitability of many of the services.

5.6.1 Organizational constraints

Similar to Dutta et al's (2003) research, pricing in the observed organizations consists of the pricing-setting capability within the firm (calculating of cost of

implementation and delivery of service) and pricing-setting vis-a-vis customers (setting up financial targets, e.g. margins). In large organizations, costing and pricing capabilities are typically the responsibility of the different business units. R&D, production lines, and financial controllers are in charge of cost estimations, calculations, and following up. Sales, business development, pricing managers, and sale support units are responsible for determining the final price. Such separation of costing and pricing is a result of cost – oriented traditions for pricing in manufacturing services (Jobber 2004, Morris and Fuller 1989).

The typical organizational structure of the industrial companies, studied within the scope of this thesis, can be described as the following: development, production, resourcing and finance controlling units are responsible for internal managerial factors related to costs, availability of service, customization, and other service characteristics. Business development teams are responsible for *internal strategic factors* and some of *external factors*, such as pressure from competitors and technology development. Sales units are responsible for the actual price setting.

Such division of responsibilities leads to the situation (observed during the present research) where, for example, an engineer who is actually making a service has no idea about how much it costs for the customer, what the competitors' strengths are, which company strategy the service should support, or how the customer is planning to use the service. Engineers are not aware of customer value; they do not know which of the product/services' features customer appreciate most, why they are ready to pay extra for some products, services, or improved quality. If the actual service developers have up-to-date direct customer feedback they could focus more on critical issues, emerging technologies, and create some valuable proposals. However, in real life, development of services is driven by product and program management, which might be a good way to build services around customer needs, but it is definitely a limited approach in terms of service innovations and technological inventions.

Sometimes, sales managers apply a cost based or fixed fee approach for services without taking into account strategic goals. The role of strategists in industrial service development is very minor since they do not see the services as a core offering. Such organizational structure and processes, sometimes called 'working in silos,' contributes to the use of cost-based methods for pricing, because it allows those with control over organizational costs a satisfactory level. As an example, the simple formula that is used for industrial training services is:

$$\text{Price} = (\text{cost of creating content} + \text{cost of delivery} + \text{costs of equipment} + \text{managerial overhead costs}) * \text{target margin} * \text{geographical and other discounts.}$$

Training units and R&D units calculate costs, after which the sales managers define the price, based on cost level, desired margin, and taking into account different discount possibilities.

With this approach, organizations support cost-based methods for pricing their goods and services, and provide little opportunity for developing alternative value-based methods with end-to-end view on the pricing process. The dominant approach among industrial companies is to utilize the “cost plus” method, although they claim they are using value-based pricing. As one of the interviewed managers remarked: “We say that we have value-based pricing but at the end of the day, we take our cost, and add a percentage, so it is cost-plus. Our value-based pricing is not based on a systematic way of doing it.” Taking a more systematic approach to pricing by implementing a company-wide process would benefit the synergy between all parties and create opportunities that at the moment companies miss due to their decentralized pricing mechanisms.

5.6.2 Cost estimation and management methods

The investigation of processes implemented by the companies (Case 1, Case 2, Case 0 Company C) revealed that pricing management is clearly connected to cost engineering and management methods. Improvement of profitability is heavily based on cost efficiency, and estimates are done mainly employing activity based costing (see section Importance of costs). Activity based costing requires deep knowledge of product and service structure, and the needed resources and processes (Dean 2003). The Company examined in Case 1 and 2 uses, for its core product and solutions, activity-based costing which is a natural choice since the company has well established production processes and deep knowledge of its own product and processes. However, for new services and solutions, and for new business models, when the company takes more responsibility for the customer operations, ABC is not a suitable method due to a lack of input data. Thus, the Company decides on prices based on the cost of the service, but if costs estimations are not precise, it automatically makes the price irrelevant.

Additional challenges for the cost-based approach to pricing come from the organizational structure. Distribution of competences and resources needed to develop solutions (Paloheimo et al 2004), and a mixture of global and local organizational units complicate cost estimation. For example, training solutions might be managed and designed by the global training center and require competences from R&D and production units located in different regions, or training services might be delivered by local sales, using a distributed virtual

environment. Costs vary from region to region, and might be different for similar (from the customer's point of view) solutions, and therefore costs –based methods are not necessary the best approach to set up pricing for such services.

5.6.3 Lack of service orientation and innovativeness

Another drawback of cost driven pricing is that cost driven models ignore relational aspects of value. Relationships between customers and suppliers can provide not only social benefits but also a utilitarian value to the customer through, for example, an increased number of deals and improved business performance (Selnes and Hansen 2001). Although the company, studied in Case 1 and Case 2, regularly and systematically measures customer satisfaction, and the purchasing loyalty of its customers, the results are not utilized in pricing models. In the case of, for example, the life cycle solution described in Case 2, customers can easily accept extra charge from the equipment suppliers if they take responsibility for increasing the equipment performance and availability. However, customers would also recognize value from relationships when they help to save on time to search for any needed services and suppliers, reduce the risks related to uncertainty in quality and availability of services, and employ trust when evaluating technologically complex solution.

However, relational value is ignored and pricing and marketing strategies are developed in favor of mass production methods. The inability to manage customer relationships in order to increase the profitability is a challenge in some markets – customers are switching to cheaper suppliers for basic services, because they are not able to recognize the value of the original equipment manufacturer in delivering services.

Overall, the situation with value pricing can be described as the following: managers recognize the emergence and competitiveness of the value driven approach for pricing, but they think that it is too early to implement result-based pricing for industrial services. They are mainly concerned with how to organize, develop, and sell services, and comfortable with handle pricing according to existing pricing models.

There are several general reasons that companies provide to explain resistance to innovative methods in pricing. Adaptation of value driven logic for pricing requires an understanding of the customer's business model and customer needs; it requires a balance between the customer needs, the provider's interests, and external conditions. In other words, it requires understanding value-in-use, e.g. how does the customer use the service, what are the processes, competencies, and assets involved, and how do they change under different

conditions (Ng et al 2009). The results from Case 0 revealed the distance between the customers and the suppliers, the 'value gap', that indicates a lack of collaboration between them, and complicates application of value driven logic.

The customer and the supplier must specify an outcome and how it can be measured; the service provider should be able to provide a specified outcome in the changing business environment that may affect the delivery of outcomes (Ng et al 2009). It is difficult and expensive to change major processes, and companies do not want to invest in developing new pricing methods for industrial services that are not part of core offering. For example, performance-based pricing methods requires measurable criteria for performance that can be monitored and can be adjusted to changing business environments. The precise measurements can be achieved by special measuring equipment, e.g. additional machinery that monitor certain customer processes and provide precise measurements of used fuel, electricity, balance of load, etc. However, if the customers are not certain of the value of the offered service, they will hardly be convinced to invest into additional measuring equipment that is needed for performance monitoring. In Case 3 (the fuel saving service) only one of the potential and one of the existing customers expressed an interest in buying additional measurement machinery that could be used for precise monitoring and measuring of ship equipment performance and therefore provide performance indicators for value-based pricing methods. This was mostly because the customers had a plan for a larger ship renovation project.

In practice, the industrial suppliers employ a mass-marketing strategy and apply the same strategy to industrial services as well as to physical goods. The companies have developed a number of methods calculating their return on investments from industrial service development, the measuring and management of customer satisfaction and strength of relationships, and estimating profitability from life cycle industrial services, but they do not seem to be in a hurry to utilize these methods for pricing their industrial solutions.

Keeping in mind that pricing should be seen as a strategic process and not as a series of quick decisions (Lancioni 2005), the shift from cost-based methods to value driven logic, and introducing new pricing models and processes might be a radical change to existing business models and the company processes. As Case 0 shows, the management of industrial suppliers considers service pricing to be a complicated task and therefore apply simple methods of pricing, in most of the cases cost-based methods, constructed as compensation for labor costs and resources. They have difficulty in accepting radical changes in pricing approaches due to the high risks and high costs of replacing the current pro-

cess. Therefore, the model of pricing should take into account current pricing process and methods, so that instead of radical changes the model could be implemented incrementally, for example, under the umbrella of business improvement initiatives, and be a part of a company's continuous improvement process. For example, in Case 3 the company could systematize the pricing process, introduce value driven choices for pricing methods, and design performance based methods for selected customers as well as selected solutions. Moreover, after the 'proof of concept' the pricing models and processes can be improved based on lessons learnt from the pilot cases and proposed to the top management as business improvement initiatives.

In addition to the earlier described cost-based mindset, distributed competences, 'silo' mentality, and cost driven organizational structure, it is important to take into account the effort needed to change the pricing approach, either fully or in some parts, and to perform some kind of cost/benefit analysis of a new pricing model for the service. Pricing practices and processes are the result of internal managerial decision, but they are often made under the influence of external factors, such as, for example, pricing practices in industry.

Organizational constraints have to be considered as a limitation on the usage of the entire pricing model developed in the present thesis using the reasoning explained above. Resistance to changing the existing pricing approaches is caused, to a large extent, by the lack of a value driven mindset.

5.7 Introduction of value driven pricing logic

Design of pricing mechanisms does not automatically lead to adaptation and application of the mechanisms for real life situations. As described in section Challenges on the way to systematic pricing, there are many limitations that prevent industrial companies implementing new innovative pricing methods. These include the 'silo' development of services, the strong bundling of the pricing decision process to the cost engineering process, ignoring the impact of customer relationships for pricing models, and the attempts to unify the pricing process to cover all kinds of offerings. In order to change their opinion about pricing of services, managers should adopt service-dominant logics in general, for example, as suggested by Lusch et al (2007) and in particular for pricing, for example, as suggested below.

No matter how pricing is approached, as an element of the marketing mix, as part of the managerial process, or as a strategic tool, pricing has always been associated with money. Development of industrial services and the importance of

relationship-orientation in service business (Grönroos 1995) have expanded the concept of pricing by adding non-monetary components into the pricing models.

The process of value creation, delivery, and perception is different in products and services in terms of the difference between 'value-in-exchange' and 'value-in-use' (Vargo and Lusch 2004a). Even within a wide range of services, there are different value creation styles. The styles may vary according to the degree of customer involvement and the customer's role, the level of customization or standardization of services, as well as the organizational mind-set toward services.

The results of the empirical analysis revealed that the pricing of industrial services in the observed companies is strongly dependent on the pricing approaches that the companies employ for their main products. The process of pricing for industrial services follows general pricing practices established in a company. The interviewed managers confirmed the existing opinion that the primary goal established for sales staff is to sell products (Anderson and Narus 1995).

Some services are offered for "free" to enable the deal. Similar to the researchers' opinion that not all industrial services are billable (e.g., Grönroos 2000, Malleret 2006, Oliva and Kallenberg 2003), the managers interviewed were quite certain that all services do not need to provide monetary compensation. Some services are considered by the customer more or less to be "good customer service" (e.g. Case 0 Table 4.5 issue 2), others are offered in order to enable further agreements (e.g. conceptual design service in Case3), to create a good image or to maintain customer satisfaction. Pre-project services are often seen as marketing tools (Artto et al 2009). If the main goal for the service is to enable a contract of several millions then often the 'enabling' service, such as investment consulting, procurement, project management, or feasibility studies can be given to customer for free in order to secure the deal.

The empirical study confirmed earlier findings (Anderson and Narus 1995) that pricing policies are not thought through properly. The results are fully in line with the opinion that many companies in the industrial service sector do not take full advantage of the opportunity to use creative pricing due to a lack of customer orientation, high cost-orientation, and inflexibility of pricing schemes (Jobber 2004, Morris and Fuller 1989). Taking into use a systematic approach to pricing that includes organizational, business, strategic, customer, and market specific issues would help the companies to systematize the process of industrial service development and pricing. It would also increase profitability and customer loyalty. However, there are challenges in adopting and implementing new pricing approaches. Analysis of the challenges and constraints to pricing in Case 0, discussed in the section Challenges on the way to system-

atic pricing, give the idea that the pricing process (handling multiple factors affecting pricing) alone cannot resolve the problems with pricing of services in industrial companies. In order to change the mass-manufacturing mindset the companies should employ new value driven logic for pricing. Similar to service-dominant logics, proposed by Vargo and Lusch (2004a), in order to emphasize fundamental principles for service marketing, pricing of industrial services is based on several principles that distinguish industrial service pricing from mass-marketing methods, which dominated earlier in the industrial markets. The results of theoretical and empirical studies on industrial solutions can be generalized by an introduction to value driven pricing logics that is built on the three foundational statements, described below.

1. The relational component of value provides significant impact on pricing of industrial services. Customer retention, satisfaction, trust, and commitments have direct impact on a company's profitability. Investment in the development of relationships is a profitable business for both, the supplier and the customer and therefore pricing should not only focus on monetary income, but also on relational value.

Long-term relationships between the customer and the supplier generate a history of exchange that promotes social attachments and trust (Granovetter 1985, Gulati 1995, Macneil 1978). Relationships between customers and suppliers not only provide social benefits but also a utilitarian value to the customer through, for example, an increased number of deals, improved business performance (Selnes and Hansen 2001), and the saving of resources required to search for a supplier. Industrial solutions are often built on on-going relationships between the customer and supplier, and, therefore, pricing should reflect the relational value and be relevant over the duration of relationship. This is especially important for long-term life cycle agreements. During a long period of agreement, the business context may/will change, e.g. the market situation, the technology, the value chains. The principles defined for outcome-based contracts i.e. that the service provider should be able to provide specified outcome in a changing business environment that may affect the delivery of outcomes (Ng et al 2009), are valid for service pricing in general. Case 0 shows (see for example Table 4.6) that customers have some issues with trust when the supplier introduces new services. In order to make the initial investment, customers request a return-on-investment calculation that shows the services' benefit for improving their performance of operations. Customers are willing to start services based on faith, but with a reduced fee as long as the link to performance

is not proven. In some cases, customers have doubts that the supplier is able to measure some of the inputs that are essential for providing a reliable assessment of the installation's performance and prediction of maintenance needs. However, relationships can be controlled and managed by the companies, and therefore can be used as a reliable criteria of the companies' performance over time. For example, different levels of trust can be reflected in price through different risk compensations. In practice, customer satisfaction plays a crucial role for making purchasing decisions, and therefore, satisfaction together with other components of relationships such as purchasing loyalty, commitment, and trust should be properly managed.

2. For the industrial solution that includes services, the subject of pricing is not the solution itself, but the value proposition created for this solution.

Since value propositions were not the main focus of analysis in the material from the cases, this statement has been mainly derived from the underlying theoretical concepts with some illustration. The purpose of the statement is to provide an additional theoretical basis for the first statement, which is deeply rooted in the results of the empirical study.

One of the fundamental statements of service dominant logic (Vargo and Lusch 2004a) states that: "The Enterprise can only make a value proposition". Unlike products that do not have value for the customers before they are sold (Gummesson 1995), in services, value is created throughout the relationship by the customer (Grönroos 2000). The focus changes from value distribution to value creation, where the customers interact with the service supplier. If a tangible product is included in the offering, it is embedded with potential value into the solution. Extending this logic towards pricing it can then be noted that an enterprise can only price a value proposition. The customer does not pay for consumed value, but the price is usually set sometime during the value creation process, for most of the companies this is at a very early stage of the solution development. In fact, customers have to pay for the supplier's promise to fulfill their particular needs or resolve actual or potential problems, which mean that they have to pay for the value proposition. Emerging outcome-based contracts for services can be considered a powerful tool for changing the focus from selling promises to selling value-in-use, however, in practice such contracts do not remove the relational aspects from pricing of industrial services. For industrial services, customer performance and therefore KPIs might change significantly, depending on how the customer uses the service and how much the business environment changes. The number of factors and the complexity of the rela-

tionship in a service system can overload the contract terms and make the pricing model irrelevant if it was built on a selected monetary KPI. It is much easier to manage such agreements if the customer and supplier have a long term and trustful relationship. Case 0 shows that one important element of pricing is the customer's trust in receiving value for money (Figure 4.3), which is indeed crucial when selling promises. The Life cycle solution discussed in Case 2 is an example illustrating this statement – making long term contracts to deliver the availability of certain services or to ensure some operation is very much selling a promise. Statement 2 defines an additional theoretical link between pricing of value and trust for industrial solutions. Indeed, selling promises requires trust, and different levels of trust can be measured as, for example, it was shown in Case 1, and should be reflected in the pricing.

3. The pricing process of industrial solutions considers all the participants of the value creation process and analyzes their value.

According to the “service science” view, value in services is created through the interactions between the service system entities (Spohrer and Maglio 2010). As Spohrer and Maglio (2010) noted, “value co-creation can occur when the KPIs of two or more service-system entities become linked in ways that improve the KPIs together”. Thus the goal for the pricing process developed in this thesis is to provide a model enabling linkage of different entities' interests, performance criteria, constraints and characteristics, for example, in terms of KPIs, and frames, thereby ensuring transparent and justified decisions on price setting.

Emerging output-based pricing methods illustrate such linkage between customer-supplier interests. Output-based contracts require a service system value architecture that integrates resources, such as equipment, materials, knowledge, and skills and enables co-creating value and innovation in service offerings (Ng et al 2009). The logic behind output-based pricing is a mapping of value captured by the supplier in order to create value for the customer (Roegner et al 2001).

The importance of customer and supplier value for industrial service development and pricing has been discussed in this thesis in the literature review, evaluated in each case, and emphasized in a model through internal and customer value related factors (see Figure 5.3). However, empirical studies show that in some cases other actor's interests play a determinative role in pricing decisions. For example, in Case 3 (Fuel Consumption service) competition provided the main input for the pricing decision; in Case 0 Company E becomes more dependent on local regulations controlling electricity prices (business environment factors in Figure 5.3). Though empirical material mainly focuses

on provider-customer dyads, this third statement has been expanded towards “all the participants of the value creation process”; their role and influence on pricing is the topic for future study that can develop towards pricing ideas for value constellations (Normann and Ramírez 1993), service systems (Spohrer and Maglio 2010), and open systems (Galbraith 1973).

A pricing mechanism can be seen as an open system (Lawrence and Lorsch 1967), enabling and analyzing input from many sources (market, environment, internal organization, strategy), which can be applied to different customer segments (individual customer, customer target group) and modularized industrial offerings, and which has open interfaces that enable dynamic changes in pricing approaches.

5.8 Suggestions for practical application of pricing model

In practice, the elements of a value driven pricing model and logics (as a part of it) can be applied in everyday business tasks and processes, for example, to customer base management, customer relationships, service platform management, pricing management, and design of pricing mechanisms. Though it is of paramount importance to take a systematic approach to pricing it is natural that companies are focused and interested in certain tasks, depending on their priorities and criticality to the current business situation. It is more realistic to expect them to apply certain parts of the model and to increase gradually the value-driven approaches, rather than to implement radical changes and to apply a complete value driven method.

Several methods developed and described in this work can be utilized for different business tasks. The most evident are:

- Customer segmentation based on a relationship/commitment model (described in the section Example of customer segmentation using relationship/commitment model);
- Customer relationship (value and trust) management using a relationship/commitment model (method used in Case1);
- Service platform profiling, based on supplier performance – knowledge base matrix (described in section Which service to sell - service platform profiling);
- Pricing process (described in Case 0, section The next step of the analysis: towards a service pricing process);

- Pricing factors analysis (described in section Visualization of factors and process);
- Performance-based methods (see Case 3).

The present thesis emphasizes the importance of relationships for service development and urges consideration of relational aspects while developing pricing for services. Relationships are built into the value-driven pricing logic introduced in section Introduction of value driven pricing logic. For example, unlike goods, in services, business companies sell a value proposition, that requires trust and longer commitments between the customers and suppliers. The following section discusses the possibility and need to use the results of the customer relationship assessments for pricing mechanisms.

5.8.1 Example of customer segmentation using relationship/commitment model

Empirical data for Cases 0, 1, and 2 includes measurements of customer satisfaction, commitment, and loyalty from hundreds of customers, which creates thousands of accounts in supplier's databases. The pricing model should reflect the needs and preferences of each customer, but produce a manageable number of pricing approaches for the supplier. This poses the question of how to categorize customers according to their relationship with the supplier, and how to use such categorization for pricing related tasks.

Customer segmentation remains a challenging task for industrial suppliers. For large industrial companies their customer base is huge and not homogeneous. It is therefore difficult to create a systematic approach that would manage thousands of customers that are different in size, that belong to different industry segments, and that have their own needs and life cycles. In order to manage their customer base, suppliers employ different types of customer segmentation techniques. Some companies (Case 0 Company A, Company D; Case 3 "the Firm") use simplistic methods for segmentation, such as by the amount of sales, by turnover with certain customers, or profitability (for example, actual earnings from the customer). Others (Case 0 Company C, Company E; Case 1 "the Company") develop more sophisticated "need based" segments, artificial clustering of customers' base based on the combination of customer purchasing profile, and loyalty, and satisfaction indexes. The basic idea behind any segmentation exercise should reflect a specific purpose. The purpose of customer segmentation for pricing is to justify the pricing decision, and design a manageable number of pricing mechanisms that can be applied to a certain

customer group. Neither customer needs, nor sales size can be the only criteria for customer segmentation in value driven pricing. On the other hand, including too many external and internal factors that affect the pricing decision into segmentation criteria might be difficult from a data gathering point of view and may not even be necessary.

The customer assessments introduced in Case1 (see Figures 1.2 and 1.3) have been used as a basis for the customer segmentation of an industrial supplier that has several thousands of customers. The model was originally developed in a research project in the scope of this thesis for a value-driven pricing mechanism. The goal was to apply different pricing methods for each customer group in order to maximize value. Later usage of the model has been extended to other value management related tasks. For example, a subset of customers with the highest correlation between commitment and relationship has been identified as the primary candidates to invest into customer relationships due to a high probability of an increase in sales in the case of the successful development of relationships.

Analysis of relationships between customers and suppliers, and customer commitments as described in Case 1 (Figure 4.4) suggested value driven customer segmentation that reveal four general approaches to pricing:

- *Price negotiation* is applied to the customers that have high growth potential but their supplier's selection is market driven; pricing for these customers should be very competitive since they do not invest in long term partnership and therefore can easily switch to another supplier;
- *Value maximizing pricing methods* are applied to the customers that have high growth potential and high loyalty towards the supplier; they are ready to share risks to achieve mutual benefits, and therefore they are good candidates for development of performance-based methods which requires deep understanding of the customers' business;
- *Innovative methods* are required for customer that do not have obvious potential for sales growth; here the supplier should create innovative proposals, e.g. innovative pricing methods, to increase mutual benefits and enable future sales;
- *Development and retaining methods* are applied to the customers that do not have obvious potential for growth and appear to be at a low satisfaction or high uncertainty level. For example, new market players are uncertain about their business models, and the new market trends environment.

The relationship/commitment model can be harmonized with existing company processes. The Company does not have to replace existing customer segmentation. For example, a “customer needs” based segmentation that is sometimes used for offering systematization purposes, can be developed further by using relational factors. The Company studied in Case 0, Case 1 and Case 2 employed the customer segmentation for the service business unit as described in Table 5.1.

Table 5.1. Example of customer segmentation for large industrial company

Customer segment	Purchases	Type of contracts	Customer value and needs
1. Basic	Maintenance and spare parts	Transactional, purchase order	Low price
2. Extended basic	Maintenance and spare parts, service support for customer own maintenance department	Long-term service contract, support agreement	Low price, technical support
3. Availability (full service)	Maintenance, spare parts, training, inspections	Service contract	Preventive maintenance, RCM (reliability centered maintenance)
4. Performance partnering	Maintenance, spare parts, training, consulting, inspections.	based on a long-term service contract	OEE (overall equipment efficiency), how to make the most of the equipment
5. Value partnering	Same as performance partnering plus business consulting (possibly only remotely connected to the equipment)	based on a contract and long-term, intimate service relationship	Focus on the customer’s business process, not maintenance

The purpose for the segmentation was to systematize and standardize service offering by development of customized solutions that correspond with customer expectations. The segmentation has been done by a clustering of the customer base according to the customer’s needs and the customer’s loyalty levels. The customer in different clusters employ different business models and demon-

strate different purchasing behaviour. The customers from segments 3, 4, and 5 tend to outsource maintenance to the equipment manufacturer. In this industry sector, maintenance is a relatively mature business and the supplier has a reputation as a reliable and competent supplier of maintenance services. The 3rd segment is the largest service customer segment, and there is a distinct trend to move customers from the basic segments 1 and 2 into this group, which can be an indication of the building of the relationship between the supplier and the customer. However, it can be also be a sign of commodification, or “productification” of the maintenance services. New types of relationships, which are built on common performance targets and co-created value is a distinctive characteristics for still quite small segments of performance and value partners (segments 4 and 5). Performance partners are focused on mutual benefits from a maximization of equipment availability and performance; they are looking for innovative solutions to achieve a performance excellence through close collaboration and an increase in the knowledge and technology base. Value partnering involves complicated contractual issues. Though it might sound extremely profitable, only a few customers (less than 10% in the case sample) can consider value partnering. In addition, to the contractual complexity, value partnering requires from the supplier and the customers a high level of trust, a readiness to share risks, and a deep knowledge of each other business.

In the scope of this thesis, the relationship/commitment model has been applied in such a way that for each of the described segments the correlation between relationship and commitment has been measured separately (see Table 5.2).

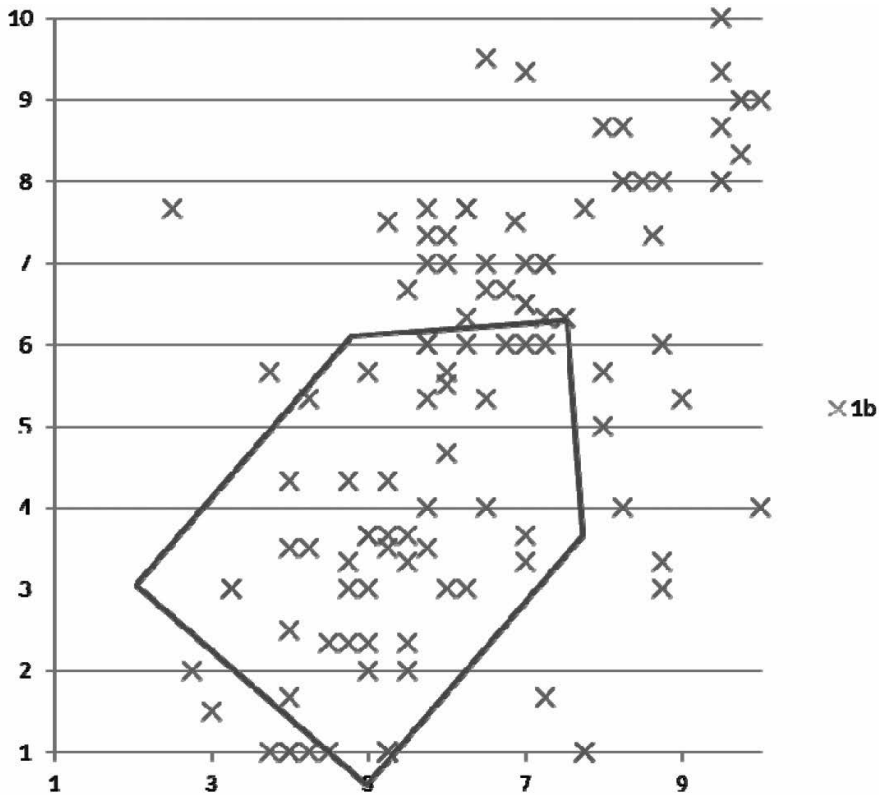
Table 5.2. Correlation of relationship and commitment for different customer segments

Segment, based on customer need and experience	Correlation between relationship and commitment
1 – basic	0,361365
2 – extended basic	0,588393
3 – availability (full service)	0,313623
4 – performance partnering	0,362315
5 – business partnering	0,391983

For segments, 1, 3, 4, and 5 correlation is between 3 and 4, which can be caused by research error, as a result of the difficulties in clearly distinguishing between the commitment and strength of the relationship. The highest correla-

tion has been observed for customers in segment 2. This allows the suggestion that this segment has the highest potential for investment into customer relationships. Strengthening of the relationships will likely result in stronger commitments or new opportunities (see Figure 5.4) and vice versa - new business opportunities will improve relationship and will “lift” these customers to the value maximizing corner.

Figure 5.4. Customer base analysis – selection of high potential customers for business development



Thus the customers from segment 2 are good candidates for business development. This method, together with the satisfaction analysis methods described in Case 1, can be used for customer value analysis and management.

5.8.2 Example of practical application of pricing model

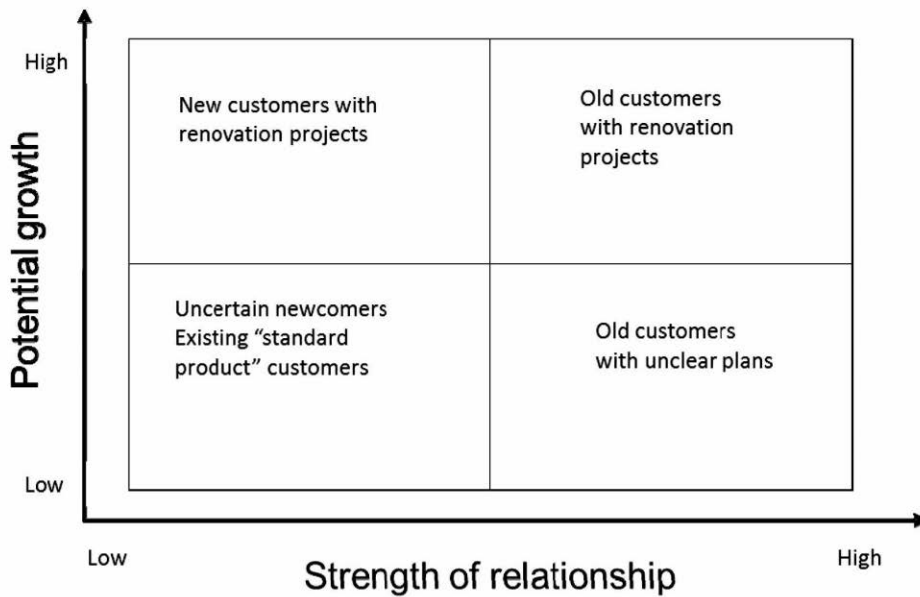
The section describes how the elements of the pricing model can be applied to some concrete services, described in one of the cases (for example

Fuel Saving Service from Case 3), and how the model could help making correct pricing decisions.

According to the development process (Figure 4.2), the first important step is to clarify pricing goals by a clear understanding of why the service is to be sold to certain customers. The main goal for the Firm (Case 3) was to develop a service business and to create additional cash flow by selling its recognized competence in the energy market as a new fuel saving solution. In future, the Firm aims to increase its visibility in the energy market. The service was developed as a modular customer solution and consisted of different optimizations, upgrades, modernizations, operations support, training and consulting services, and meant to be delivered to already existing ships, for example, as a part of a renovation project. Such services in the post-project phase can help to increase customer value and to develop service business for the supplier (Artto et al 2009, see Table 8.4). Thus the service profiling method showed that the Fuel Saving Service had high potential for the supplier, since it is in line with its knowledge and strategic development plans, and the established business goals complement the service potential (high value service). The next steps, according to the pricing and service development processes, were related to the definition and analysis of the content and characteristics of the service. This required deep analysis of the customer needs. Good practice at this stage is to involve the potential customer into the development of the solution. Describing their needs in general terms, the customers required a solution that would help to save fuel due to high oil prices and the increasing environmental rules on air emissions. In order to define the content of the solution, the different modules for the solution, the customized packages and then the value proposition, it was important to analyse the business models of the potential customers as well as the relational aspects. The method of customer segmentation, described in the previous section, suggest four main groups for the customer base. The fuel saving service has its own specific characteristics. In cases where customers do not buy additional equipment (as part of the service or separately), it is difficult to follow KPIs. Thus, the following groups (see Figure 5.5) of customers can be suggested:

- New customers (no relationship history, low trust) that are planning renovation and looking for the best prices on the market. The solution for these customers is Alternative B (see section Fuel Saving Service – result-based pricing, p. 22), which includes additional services for the installation of the new energy management system and allows precise measurements of energy consumption to be made. It will be difficult to approach this group

Figure 5.5. Customer profiling



- Existing customers with a good and long relationship, who are planning renovations or new buildings. Trustful relationships allow long-term contracts that define performance targets without special equipment, and agreement on how any changes should be handled.
- Existing customers that do not have, at the moment, any plans for renovations or new buildings. They are also good candidates for business development. If they cannot invest in full-scale renovations, they can be offered customized smaller solutions that nevertheless improve their performance, and the price can be result-based. For this group Alternative B might also be an option, since it can be a new investment decision for measuring equipment.
- This group can include different types of customers that do not have obvious growth potential, for example, new market players uncertain about their business models, and existing customers who only buy from the Firm's standardized services. In order to approach these customers with fuel saving services managers should analyze their business models and discern opportunities for increasing the scope.

Consequently, there are several value propositions that can be done, based on the customer's needs and level of relationship. A further step, the design of

a pricing mechanisms for two selected alternatives, has been described in the section Fuel Saving Service – result-based pricing. Post-delivery pricing management activities, such as KPI monitoring, change management, were very important for this case. There can be different expected and unexpected changes affecting the pricing of KPIs, such as the change of trained crew members to new members, a change in ship's routes, and a change of cargo. A result based pricing contract that define the customer - supplier relationship for several years, and built on performance indicators could be very risky and complicated. However, a result-based approach might be the only way to emphasize service excellence and guarantee quality, in order to compete with larger suppliers.

Chapter 6. CONCLUSIONS

The role of services has changed during the last decades. If, in the 1970s, industrial suppliers considered services as an 'unfortunate necessity', nowadays they see services as a source of differentiation, competitive advantage, and an opportunity to enter new business segments. Academia has reflected the new role of services in a growing body of service research. The researchers discuss the reasons to develop services, the benefits and challenges, the value creation processes, the new mind set, and the logic required for successful service development. Special attention is drawn to solutions and, therefore, modularization, customization, and standardization principles. However, very little attention is paid to pricing of industrial services. The main reason for this is a prevalence of product orientation in corporate strategies and management mindsets, and, as a result, an absolute dominance of simplistic pricing methods, such as cost based and fixed fee methods. In fact, lack of pricing literature (both empirical and theoretical) for industrial services reflects the current state of service pricing approaches in industry.

Service researchers are almost unanimous about the key role of customer to services. They emphasize the importance of the customers and their different roles in the service value creation process, for example, by introduction of value co-creation and co-production concepts. Engaging customers and value network partners in co-creation and co-production activities increase emphasis on the importance of a relational perspective of value for the services. It was noticed that social bonds between customers and suppliers provide not only social benefits but also a utilitarian value. However, the relational component is excluded or ignored in the pricing mechanisms applied by industrial suppliers, and described by researchers.

Researchers emphasize that the key success factor for service development is an understanding of value creation processes. However, there is not much research connecting value and pricing on both a conceptual and practical level.

Thus, the present work has emerged from a need for a new pricing approach for industrial services, based on a deep understanding of service value and the value creation process, which takes into account relational value components as well as monetary benefits.

The thesis has both theoretical and practical contributions. The main theoretical contribution of this thesis is the development of a three-componential pricing model for industrial services, including new logic, a number of factors

affecting pricing, and pricing process. The thesis propagates service dominant logic into pricing, thereby developing a value driven logic for industrial service pricing. This is necessary in order to re-evaluate the present cost dominant pricing approaches. The novelty is in the exploiting of the relational value for pricing and therefore developing the value-based pricing approach into a broader model that includes 'intangible' elements such as customer commitments, trust, strength of relationship, and satisfaction. The practical contribution is the development and description of several methods, which can guide the business developers and decision makers towards justified pricing decisions, and help to develop a pricing mechanism. From a practical point of view, value driven pricing logic does not necessarily assume a radical change of existing process, but rather iterative development and improvement steps towards new ways of proceeding, which take into account current best practices. Thus, the thesis contributes to managerial science by suggesting a new way of tackling pricing for industrial companies.

6.1 Main results

The research proposed four general reasons behind the pricing issue challenges reported by practitioners and observed by academia: issues with *trust*, different aspects of *complexity*, organizational *immaturity* as a service provider, and lack of the necessary *competences* and *capabilities*. These four reasons have been used as the dimensions for an initial construct for further analysis of the pricing problems (Figure 4.3). It was noticed that a significant number of the problems with industrial service pricing occurred because of the distance between the customers and the suppliers, indicating a lack of collaboration between them. The lack of collaboration between the supplier and the customer created a 'value gap' in their relationship where the supplier cannot properly communicate and deliver value and the customer cannot recognize and utilize value of industrial service offering. In order to increase collaboration, the companies should practice value co-creation approaches, co-design of value-proposition, co-production, risk- and performance- sharing pricing approaches, i.e. to shift the relationship to a higher level and utilize relational capital.

In order to find support for the belief that relational capital is associated with a greater exchange value (and therefore affects the economical capital and is important for pricing), the research used the example of service failure. It was shown that low satisfaction, if temporary, does not lead to an end of commitment if the customer continues to trust in the service provider's willingness

and ability to recover from failures and to eventually continue to provide satisfactory service quality. Successful service recovery can even lead to increased trust, which can lead to stronger commitment and increased satisfaction, thus creating a positive cycle.

However, the development of relationships means for the suppliers (and in many cases for the customers as well) significant investment. This investment is related to a change of business models, improving customer services, organizational changes, and development of competences and capabilities. In order to justify investment decisions, managers want to have some 'tangible' proof of the profitability of industrial solutions, and transparency in the links between relational characteristics and their impact on overall company performance. The thesis discusses life cycle approaches that have recently been observed in different industries for building long-term customer solutions. Using the sales, satisfaction, and loyalty data from one large industrial supplier the research showed the positive impact from the development of a life cycle approach on customer-supplier relationships and profitability.

The development of relationships means major changes in business models and an alteration of the general manufacturing mindset that dominates in industrial companies since this new business logic does not fit into the present, product-driven and technology-dependent organizational forms. The proposed value driven logic for pricing of industrial services is built on three fundamental statements:

- The relational component of value provides significant impact on pricing of industrial services. Customer retention, satisfaction, trust, and commitments have direct impact on a company's profitability. Investment in the development of relationships is a profitable business for both the supplier and the customer, and therefore pricing should not only focus on monetary income but also on relational value.
- For the industrial solution that includes services, the subject of pricing is not the solution itself, but the value proposition created for this solution;
- The pricing process of industrial solutions considers all participants of the value creation process and analyzes their value.

The first statement is an important theoretical contribution of the present thesis. The second statement has been mainly derived from underlying theoretical concepts with some illustrations and with the purpose of defining the additional theoretical link between pricing of value and trust. The third state-

ment has been empirically verified with supplier-customer dyads; it has been expanded towards “all the participants of the value creation process” based on certain evidences and concepts, and requires future research.

Following this logic for pricing of industrial services requires a systematic process that takes into account the value of all participants; this process is followed by the value creation process, and utilizes different aspects of relational value. The process is designed in order to systematically collect and analyze a number of internal and external factors that affect the pricing decision and drive pricing activities. Such a process enables a systematic approach to pricing of industrial services, and also provides an input into the actual pricing mechanisms. It makes possible the designing and implementing of advanced pricing models that might include performance indicators, relationship components, and open interfaces that increase flexibility and reflection on pricing.

Thus, the developed pricing model has a three-componential architecture, and the main three pillars are:

- The number of factors affecting pricing, including relational aspects;
- The pricing process, which includes the data collection and the analysis of factors, drives toward pricing decisions, and ensures proper pricing management;
- New pricing logic that supports a service-oriented mindset.

An important part of the thesis is finalizing the pricing model by testing it on a real company case. The application of the new pricing logic, and the developed pricing process to three real industrial services revealed a diversity of factors affecting pricing decisions, proved the usefulness of systematic processes, and thus emphasized integrity of the three-componential pricing model.

The main findings of the thesis can be summarized in the following way:

- Industrial suppliers face problems with service pricing because of a lack of the needed capabilities, a lack of experience in service business, the different aspects of complexity (also valid for service pricing in general), and a lack of a trustworthy relationship with the supplier.
- Widely applied cost-based methods do not provide a possibility of including customer value into pricing mechanisms, and therefore, is not applicable for services in general.
- The problems can be resolved by implementing a systematic value driven pricing approach that includes an analysis of the multiple factors affecting pricing decisions.

- Applying a systematic pricing process can significantly simplify an analysis of the factors and reveal possible challenges at earlier phases of service development.
- Relational aspects must be taken into account while designing pricing mechanisms. Customer commitment, satisfaction, strength of relationship, and trust can significantly affect customer purchasing behavior and therefore pricing.
- Application of a value driven pricing model is a challenge for companies, mainly due to the lack of a service-oriented mindset. Value driven pricing logic defines the main principles of service pricing.
- Thus, the industrial service pricing model is comprised of the adaptation of value driven logic for service pricing in order to break through the goods dominant mindset, analysis of a number of factor affecting pricing decision including relationships, and the development of a process for managing these factors.

Different practical tools for business tasks have been developed in order to achieve the goals of the thesis, such as a relationship/commitment customer segmentation method for pricing and managing of customer value, and a service profiling method.

6.2 Validity and reliability criteria

In order to access accuracy of the research the established criteria, i.e. transparency, openness, internal and external validity, construct validity, and reliability (see section Quality criteria for the research, p. 22) for methodological rigor have been used. The Table 6.1 describes how quality criteria have been achieved in the present research.

The important for abductive research the transparency and openness criteria are included to the reliability, and are achieved by detailed descriptions of the research process and the availability of data sources as is mentioned in Table 6.1.

6.3 Limitations and future research

The main limitation to the present research is a lack of empirical support or testing for end-to-end application of the developed model. Though the studied companies demonstrated a shift towards new service driven business development, in practice, they still apply the goods dominated business models and

Table 6.1. An Investigation of the methodological rigor of research, adopted from Gibbert et al (2008)

Internal validity	Construct validity	External validity	Reliability
<p>Pattern matching:</p> <p>Thorough review of literature regarding pricing, services and service value for identification of matching patterns reported by other authors;</p> <p>Theory triangulation:</p> <p>Concepts and phenomena of pricing and services have been examined through different theoretical lenses, e.g. service marketing, management, service operations; these bodies of literature have been used as means to interpret findings and define architecture for the developed pricing model and visualization of results, e.g managerial, strategic, and external (market) factors for pricing decision;</p>	<p>Data triangulation:</p> <p>Archival data (reports, press and other articles, white papers, brochures, meeting minutes)</p> <p>Interview data (original interviews carried out by the author and team of research projects)</p> <p>Participatory and direct observation (collaborative research methods, meeting and workshops, joint analysis, collaborative reports)</p> <p>Review of transcripts by peers (transcripts were used by different researchers for different purposes; discussions and comparison of results interpretations)</p> <p>Review of transcripts by key informants (transcripts or summaries of interviews have been submitted to interviewees for check)</p> <p>Indication of data collection circumstances (data collection process and methods are described in a separate methodology sections for each case)</p> <p>Check for circumstances of data collection vs. actual procedure (selection of data sources, assumptions and interpretation methods have been explicitly described for each case)</p> <p>Explanation of data analysis (For Case 1 and Case 2 dedicated section with data analysis, for Case 0 analysis explained together with results)</p>	<p>Cross case analysis:</p> <p>Multiple case studies (Case 0 describe 5 organizations)</p> <p>Nested approach (Case 3 examine 3 different case studies; Case 1 and Case 2 examine the same organization for different research goals)</p> <p>Rationale for case study selection</p> <p>(explanation why this case study was appropriate in view of research question is provided at the beginning of each case description)</p> <p>Details on case study context are provided in method sections for cases 0,1,2 and in descriptions of services in Case2</p>	<p>Case study protocol (section Research process, and for each case the process of research is described at the beginning of Case)</p> <p>Case study database (interview transcripts are stored in PBI Research Institutes database, quantitated data and comments are stored in CROL® database, narratives and other used data are attached as tables to present thesis)</p>

cost based pricing. The limitations of the applicability of the developed pricing model have been described and explained in section Challenges on the way to systematic pricing. This limitation presents an opportunity for future research, i.e. to design and implement an end-to-end solution based on the proposed pricing model and to perform an in-depth case study in order to refine and falsify the value driven pricing approach.

Another limitation is the lack of possibility to compare the results with other similar research from industrial service pricing. Due to a lack of empirical research in the area of industrial services (e.g. Indounas 2009) and the novelty of the field, it is not possible to fully compare models for industrial service pricing developed in this thesis and other research.

The outcome of this thesis - the pricing model - is developed specifically for industrial services. Such a limitation is pre-defined by the context of the cases – the services that are developed are consumed by industrial customers, not by the end consumers.

Future research should be focused on the refining of pricing models by full scope application to real business cases. There are no doubts that industrial companies will develop innovative pricing methods and withdraw from their current good-dominant mindset. This creates an opportunity for academia to drive the process of ‘servitization’ of industry by introducing the developed models and implementing them in real company cases through collaborative projects. Such ‘modus cooperandi’ immediately raises a question of the profitability of the proposed changes and models. Therefore, the next steps of research on pricing should give a clear answer on the profitability of different pricing strategies of service development in industrial companies. While the service business is reaching higher maturity in the industrial sector, the research should perform cross-case analysis of several types of strategies, for example, on life cycle service solutions, on a comparison of profitability, the success, the velocity of money, costs and other factors of the business model’s efficiency.

Development of industrial services provide new horizons for research; new business models and the renaissance of the relational perspective of the manufacturing business are a fertile source of topics for researchers from different disciplines. Industrial service encourages development of new concepts, or updating of existing concepts and models, for example, pricing models, that would better fit the industrial context, and reflect service value creation processes. Emergence of integrated and life cycle approaches in industrial markets emphasize the advantages of modularity in the solution’s component supply,

the standardization of interfaces and service modules, and the ability to specify and build customized solutions that fulfill specific customer's needs during long periods of cooperation. Thus, modularity and customizations become an important task for industrial companies developing industrial solutions. Nevertheless, many firms are still on the way to developing a highly standardized and modularized service platform. They believe that such an approach helps to optimize service related costs, systematize services and related competences, and make a better match of the services to customer needs. However, practitioners do not employ the ability to modularize and customize offering for pricing excellence. When they customize the offering, the only important element for pricing is the amount of delivered services, not the actual change in customer value.

One reason for the simplification of pricing approaches for customized solution is the goods dominant logic still prevailing in manufacturing industries. The aim of modularization, standardization, and customization is to reduce complexity and uncertainly characterizing services and service relationships. However, even such a progressive approach in business modeling such as modularity has a 'product' modeling bias; the services are 'broken down', 'productified' and then sold as products. Such a model might be imprecise for services, first of all, because it does not include relational aspects in the value creation process. Another question is how to manage the 'intangible' capabilities of firms that are related to service excellence, and which cannot be modularized and standardized. These include, for example, fast response, better handling of service failure, or unpredictable events, such as a potential innovation or technology break through. Thus there is a need for new service-oriented models that resolve the problems of the current modeling approaches, which are related to the rigidity of construct and the simplistic view on created service value, and therefore, on pricing.

The industrial market has a relatively short history. Industrialization has displaced traditional relationship-oriented trading with new transactional or mass-production approaches. The recent development of services in the manufacturing sector has stimulated a renaissance of the relationship perspective in business research, including research into the area of industrial service pricing.

Espoo, February 2014
Natalia Reen

Chapter 7. REFERENCES

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Chapter 8. APPENDIX

8.1 Tables

Table 8.1. The template A used for the customer interviews, the main discussion topics and the summary of the answers from all customers

	<i>Interview date</i>	<i>Customer N</i>
	<i>Place</i>	
	<i>Tape recording accepted/not accepted</i>	
1. Background information		
Describe your own role in the company		
The company's main activities (products, customers)		
Internet site address		
Describe your business relationship with The Supplier in the following terms:		
• Type of products/services you purchase from The Supplier		
• How long experience of working together with The Supplier		
• Who are the main contact persons at The Supplier		
• Other suppliers you use for similar products/services		
2. Products and services		
Do the offered products meet your expectations?		
Describe your opinion about product quality, functionalities and characteristics versus cost (the list of the main characteristics composed and presented to the interviewee)		
Do the offered services of The Supplier meet your expectations?		
Which services are the most important to you and why? (the list of available services is given to the interviewee)		
Is there some area where The Supplier could support your business by providing more tailor-made products and services to you?		
What could The Supplier do in your opinion, in order to increase customer value?		
• Would you be prepared to outsource some of the work you do in-house to The Supplier? What would The Supplier have to do to convince you to do this?		
• What kind of processes on customer-The Supplier-other possible participants' network could be developed in order to trigger/support the value co-creation?		
3. Marketing and sales		
How is The Supplier's sales and marketing compared to other suppliers?		
• Do you get enough information of the products and services?		
• What kind of information would you like to receive even more?		
• Do you get the answers from The Supplier quickly enough?		
• Are the offers/sales documentation enough comprehensive and detailed?		
• How efficient is the order processing?		
4. What is your overall opinion of The Supplier's sales personnel compared to other suppliers?		

• Competence	
• Understanding of customers' needs	
• Availability	
• Customer focus/Service-mindedness	
• Initiative	
• Flexibility	
5. Delivery	
What is your opinion about The Supplier's deliveries?	
• How do you find the offered delivery times and terms?	
• Have the promised timetables been kept?	
• Have there been deficiencies in the deliveries?	
• How has The Supplier informed about its deliveries?	
• How has The Supplier handled the delivery documentation?	
What kind of delivery services would you be interested in? Could The Supplier support you better in this area somehow?	
Would you be interested in having regular meetings with The Supplier to discuss ways to increase cooperation on a more strategic level?	
6. Relationship	
How do you see future relationship with The Supplier?	
Are you interested in long term life cycle solutions from the supplier (including financial services, warranty and post warranty services, initial design, project management, remote monitoring)?	
What is your opinion about The Supplier pricing level and approach?	
What is your opinion about result-based pricing for the services (proposed services)?	
What are the main obstacles to develop partnership, involving risk and benefit sharing?	
7. General questions	
How do you find The Supplier's reputation?	
• Overall competence and efficiency of The Supplier's personnel	
• Service-mindedness and initiative, please clarify how do you understand it	
• Customer focus, please give some examples	
• Quality of products and services	
Would you recommend The Supplier to others?	
What do you think are the main strengths/main weaknesses of The Supplier?	
Who would you say is The Supplier's strongest competitor? How do they differ? Is there something that competition is doing better?	
What is the most important matter that The Supplier should improve?	
What kind of expectations do you have for The Supplier?	
• Your future needs	
• Development of the business	
Is there anything else you would like to say about The Supplier and your business with them?	
Comments and impressions from the Interviewer	

Table 8.2. The template B used for the customer interviews

	General and background questions
1.	Describe your own work and connection to/experience with The Supplier.
2.	How would you describe your relationship with The Supplier? Do you see them as a partner/supplier/innovator or something else?
3.	What is your company strategy in general and regarding usage of suppliers such as The Supplier?
4.	What are your needs/expectations from The Supplier? Have your expectations been fulfilled? Why not?
5.	What are The Supplier's main strengths/weaknesses if you compare to other companies providing similar services? What is the difference with others? What is the promise?
6.	Which are the main phenomena/factors that have affected your business in the recent future/which you anticipate in the future?
7.	Future direction of cruise and ferry market? Main focus areas (safety, environment, differentiation from others?)
	Value and needs
8.	What kind of problems/needs you have at the moment, what kind of offerings/solutions/competences you are looking for (energy context)?
9.	What is the added value that The Supplier brings or possible can provide to you/which of your problems can The Supplier solve?
	The Service
10.	What kind of services/solutions related to fuel savings, energy consumption you are using from The Supplier?
11.	How do you use those services?
12.	How did you know about those services? How well are the services presented in the marketing material/web pages/offers?
13.	What kind of your problems those services help to resolve?
14.	Do you have any other problems/needs related to energy and environment (which can be possibly solved by The Supplier?)
15.	Are you satisfied with quality, functionalities?
16.	Who is The Supplier's strongest competitor for fuel saving concept? Is there something they do differently?
	Pricing
17.	What do you think about current pricing model used by The Supplier?
18.	What do you think about value-based pricing? Do you use similar model with other partners?
19.	Would you be interested to develop such model together with The Supplier?
20.	What could be performance targets/criteria for fuel saving service?
	Future development
21.	What would you like to improve/add in fuel saving service related to service quality and functionalities?
22.	What kind of expectations do you have for The Supplier in the future? What does The Supplier have to improve the most?
23.	In which area should The Supplier improve the most, if you would name only one thing?
24.	Do you have any other expectations for your future cooperation with The Supplier that we have not discussed yet?
25.	Do you want to add anything else to our discussion, before we finish?

Table 8.3. The description of the contacted persons in the studied companies and their customers, Case 0

	Company A	Company B	Company C	Company D	Company E
Interviews with employees	General manager Head of business development Head of regional branch Product Group Manager Senior Technical Support Manager Head of Sales	Head of unit Training administrator Regional training manager Contracting Manager	General Manager Pricing manager Chief engineers Project managers Head of Units Business developers Service sales manager Sales managers Customer assistance manager	Director of business development Business development manager Service managers Solution managers	General manager Pricing manager Technical service specialists Technical coordinator Technical director Project managers Sales managers
Interviews with the customers	General directors Vice directors Head of supply Chief engineers Sales director Commercial director Logistic manager Head of technical department	Operational engineers Fleet managers Technical service specialist Technical coordinator Technical director	Fleet manager Technical service specialist Divisional purchasing director	Head of technical management Technical director Supply managers Chief engineers Technical specialists	Warranty manager Operational director Installation project manager Logistic managers HR director Safety managers
Workshops	1 st workshop to setup the goals, compose the customer list, describe business models, with regional department and sales managers 2 nd workshop to create a mechanisms how to utilize the results of the study	1 st workshop to familiarize with the current services, identify problems with Training administrator and Head of unit 2 nd workshop to present the results of study and new approach to customize and price services to coach regional trainers	1 st workshop to introduce customer needs based segmentation for sales directors and managers 2 nd workshop to design extension of segmentation based on type of relationship for sales directors and managers	1 st workshop to assess current status of service development 2 nd workshop to present results and based on recommendations develop further steps	1 st workshop to introduce business-driven strategy to top executives 2 nd workshop to analyse service platform and customer feedback with business developers 3 ^d workshop to introduce value-driven customer segmentation to customer relations specialists

Table 8.4. Service Impact Types on Business Performance

	Pre-Project Phase	Project Phase	Post-Project Phase
Customer entry	Consulting, consultative selling, conceptual design and feasibility studies, joint development and innovation activities, configuration tools and methods for creating specifications	Delivery process planning	Consulting, optimization, maintenance, training
Customer value	Engineering design, systems integration	Training, project management, systems integration, engineering and design	Systems integration, optimization, upgrades, modernizations, extensions, maintenance, operations support, outsourcing, asset sharing, financing, localized operations support/service centers, open web-based and real-time information sharing
Competitive advantage	Consulting, conceptual design, systems integration	Core project and inherent service offering	Outsourcing, asset sharing
Delivery efficiency	Project/product configurator, training	Supply chain management, procurement, commissioning and handing over	Centralized operations service centers, maintenance, operations support
Service business	Maintenance, operations support	Core project and inherent service offering, Build-Operate-Transfer (BOT)	Consulting, systems optimization, systems integration, training, maintenance, operations support, outsourcing, asset sharing

Table 8.5. Service Characteristics that Influence Pricing Decisions (from Avlonitis and Indounas 2006a)

The cost of the service	All the fixed and variable expenses associated with producing and delivering the service (Capettini et al 1998, Hoffman and Bateson 1997, Kurtz and Clow 1998, Lovelock 1996, Meidan 1996, Meidan and Chin 1995, Palmer 1994, Zeithaml and Bitner 1996)
The type of the service	The extent to which the service is a consumer or industrial one (Ansari et al 1996, Hoffman et al 2002, Lovelock 1996, Meidan 1996)
The time required for completing the service	The time horizon that is necessitated for performing the service (Baron and Harris 1995, Segal 1991)
The risk associated with the service	The potential loss (in monetary, psychic, energy or time terms) that customers must incur in order to purchase the service (Deacon and Watkins 1995, Watkins et al 1995)
The service quality	A number of factors (e.g. price, staff appearance, equipment, premises) that determine the total outcome of service delivery to customers (Boroniko 1997, Hoffman and Bateson 1997, Langedard 2000, Tse 2001)
Service automation	The extent to which the service can be delivered without human interaction (Hughes 1990)
Service standardization	The extent to which the service is offered in exactly the same way to all customers (Mitra and Capella 1997)
Service availability	The extent to which customers can find the service easily (Arnold et al 1989)
Service innovation	The extent to which the service satisfies a unique need (Palmer 1994, Schlissel and Chasin 1991, Woodruff 1995, Zeithaml and Bitner 1996)
Service differentiation	The extent to which the service is different from the competing ones (Arnold et al 1989, Finch et al 1998, Gouvea et al 2001, Holdren and Hollingshead 1999, Mitra and Capella 1997)
The extent to which the service can be tested	The extent to which customers can try the service before using it (Arnold et al 1989)
The extent to which the service can be customized	The extent to which the service can be adapted to customers' individual needs (Baron and Harris 1995, Lovelock 1996)
The extent to which the service is human or capital based	The extent to which the service requires labor or asset based elements in order to be produced (Zeithaml and Bitner 1996)

Table 8.6. Organizational Characteristics that Influence Pricing Decisions (from Avlonitis and Indounas 2006a)

The marketing objectives	The aims and goals set by the company's marketing department (Lewis 1990, 1995)
The marketing strategy	The direction and long-term activities formulated by the company's marketing department (Lewis 1990, 1995)
The objectives of other departments within the company	The aims and goals set by the company's other departments (Schlissel 1977)
The corporate objectives	The company's overall purpose, aims and goals as set by its top management (Kurtz and Clow 1998, Meidan 1996)
The corporate strategy	The direction and scope of the organization in the long term as set by its top management in order to meet stakeholder expectations (Kurtz and Clow 1998, Meidan 1996)
The company's organizational structure	The division of activities among functions and business units within the company (Schlissel 1977)
The company's culture	The assumptions and beliefs shared by the organization's members (Channon 1986)

Table 8.7. Environmental characteristics that influence pricing decisions (from Avlonitis and Indounas 2006a)

The process that customers adopt in order to evaluate the service	The personal and situational factors (e.g. price, fame, customer service) that customers use for judging the service's outcome (Zeithaml and Bitner 1996)
The value that customers attach to the service	The costs (i.e. monetary, psychic, energy, time) that customers must incur vs. the benefits associated with obtaining the service (Berry and Yadav 1996, Hoffman and Bateson 1997, Lovelock 1996, Naylor and Frank 2001, Zeithaml and Bitner 1996)
The customers' personal characteristics	The customers' individual traits such as their size, contribution to company's total turnover, income, age, place of location, degree of loyalty etc. (Mitra and Capella 1997, Saunders 1999, Yelkur and DaCosta 2001, Yelkur and Herbig 1997)
The distribution channel that customers use	The extent to which customers purchase the service on-line or off-line (Meidan and Chin 1995)
The customers' price elasticity	The customers' sensitivity to different price levels (Kurtz and Clow 1998; Lovelock 1996; Palmer 1994)
The competitors' prices	The prices of the company's competing products (Hoffman and Bateson 1997, Lovelock 1996, Kurtz and Clow 1998, Meidan and Chin 1995, Payne 1993, Zeithaml and Bitner 1996)

The expected competitive reactions	The competitors' responses to the company's price initiatives (Kurtz and Clow 1998, Zeithaml and Bitner 1996)
The competitors' costs	The competitors' variable and fixed expenses associated with producing and delivering their services (Payne 1993)
The threat of new competitors entering into the market	The extent to which it is easy for new competitors to make business in the company's market (Palmer 1994)
The intensity of competition among the existing companies	The extent to which many companies that offer homogeneous services exist in the market (Palmer 1994)
The threat from substitutes	The extent to which there are similar but not identical services, satisfying the same need (Payne 1993)
The buyers' bargaining power	The extent to which customers can impose their will when making business with the company (Ratza 1993)
The suppliers' bargaining power	The extent to which suppliers can impose their will when making business with the company (Zeithaml and Bitner 1996)
The existing level of the interest rates	The current level of the interest rates as formulated by the country's central bank (Saunders 1999)
The future expected level of the interest rates	The predictions related to the evolution of the interest rates in the future (Saunders 1999)
Other macroeconomic characteristics	The level of indices such as GDP, unemployment rates, growth rates, inflation, etc. (Payne 1993, Ratza 1993)
The future expected level of other macroeconomic characteristics	The predictions related to the evolution of these indices in the future (Payne 1993)
The level of governmental intervention	The extent to which government interferes and sets prices by itself in a specific industry (Woodruff 1995)
The existing regulation regarding pricing practices	The laws associated with specific pricing practices such as pricing below cost, price collusions and price differentiation (Woodruff 1995)
The existing values in society	The culture and social norms characterizing the society (Lovelock 1996)

Table 8.8. Review of Industrial Service Pricing Literature (from Lukassen, Wallenburg, 2010)

Period, years	1973-1977	1978-1982	1983-1987	1988-1992	1993-1997	1998-2002	2003-2007
Published industrial service articles	1	1	3	4	4	1	15

Table 8.9. New Service Development, adopted from Torkkeli (2007) and Jaakkola et al (2007)

<i>Service Development Phase</i>	<i>Description</i>
<i>The start-up phase</i>	Gaining an understanding of the customer’s problems, business climate, aspirations and how their problems can be solved. A strategy is formed how to build up the service; which services should be productified, to what extent and to which customer group.
<i>The defining phase</i>	The decision what the service package should consist of. Modules are created that suit the customer. Here, the work-process for producing the service is resolved. Every module’s work process should be separate. The lead customer should become involved in this phase to some extent. A name will have to be found for the service concept.
<i>The concretizing and testing phase</i>	Provider communicates content and quality via customer documentation, brochures, etc. This phase also involves the customer testing the service product to the extent possible. The lead customer should be involved in this phase.
<i>The marketing- strategy phase</i>	Marketing strategy and, in particularly, pricing mechanism are created. A favorable marketing strategy is often a key factor for success. This is also where the product brand can evolve.
<i>The follow-up and measurement phase</i>	The customer should evaluate the service product and give feed-back in order for the product to be continuously improved according to the customer’s needs. This can be done e.g. through performance measurement tools.
<i>Continuous development and change management</i>	The phase is needed in order to be successful in long term, and be able to adjust to changing environment. For example, pricing mechanism should have embedded change management interface, which allow changing pricing methods according to supplier and customer needs.

Table 8.10. Service development phases – Information Management service

Service Development Stage	Description	Status	Justification
Start-up phase	Gaining an understanding of the customer's problems, business climate, aspirations and how their problems can be solved. A strategy is formed how to build up the service; which services should be productified, to what extent and to which customer group.	Done	Customer' needs: improvement of efficiency and safety in usage of vessel by up-to-date information base
			Business climate and aspiration: customers do not recognize value from service, they see the offering as a set of tools, software, that is not in core competence of the supplier
			Customer target group: existing and new customers, ship owners, first entry approach those customers who are planning to renew ships
			Strategic goals: to develop long-term relation with customers, to diversify to a new market segment, to start service business
Defining phase	Decision on what the service package should consist of. Modules are created that suit the customer. Here, the work-process for producing the service is resolved. Every module's work process should be separate. The lead customer should become involved in this phase to some extent. A name will have to be found for the service concept.	Ongoing	Service package is defined, it includes 3 different web-based tools that allow collect, analyze information and produce different reports
			Customers are not involved into definition of service content
			Name for the service exists
			Value proposition is not clear for customer, does not reflect customer needs and benefit of usage
Concretizing and testing phase	Service provider communicates content and quality via customer documentation, brochures, etc. This phase also involves the customer testing the service product to the extent possible. The lead customer should be involved in this phase.	Ongoing	Proposal to evaluate service has been sent to several customers, but customers are rather skeptical
In marketing-strategy phase	Decision on a marketing strategy and, in particularly, pricing mechanism are created. A favorable marketing strategy is often a key factor for success. This is also were the product brand can evolve.	Started	Marketing has not been started yet, except some initial thoughts about pricing

Follow-up and measurement	When the customer should evaluate the service product and give feedback in order for the product to be continuously improved according to the customer's needs. This can be done e.g. through performance measurement tools.	Not started	
Continuous development and change management	Needed in order to be successful in long term, and be able to adjust to changing environment. For example, pricing mechanism should have embedded change management interface, which allow changing pricing methods according to supplier and customer needs.	Not started	

Table 8.11. Pricing Process Phases – Information Management service

Pricing Stage	Description	Status	Justification
Setting pricing goals	The supplier should clearly state what is the purpose of selling the service to the certain customer or customer target group;	Done	Pricing strategy should support strategy to enter new service business, however in order to be accepted by top management, service sales should be profitable with the margin that company establish for other projects
Definition of service characteristics	Definition of service characteristics, which affect pricing and value proposition, when the supplier should decide on service content, therefore, its cost, level of modularization, standardization, customization, availability, and other relevant characteristics. This is also the phase, when the supplier draw a value proposition for the potential customers;	Done	Costs of service are known, modules are defined, service is highly standardized, and ready from content point of view

Decision on pricing methods	Justified decision on pricing methods should be made based on multiple factors, such as strategic intentions, service characteristics, business environment, customer needs and customer perceived value; the decision often requires customer involvement, for example, for elaboration of measurable performance targets;	Ongoing	Proposal to use bundled pricing, cost plus and fixed pricing considered to be inefficient
Design of pricing Methods	Design of pricing methods, when actual design of pricing methods is performed and pricing solution delivered to business process;	Not Started	
Implementation and feedback phase	During implementation and feedback phase the supplier should collect performance data and analyze results of the applied pricing methods;	Not started	
Pricing management	Pricing management is carried out through open interfaces implemented in pricing mechanisms, which allow doing changes and corrections into the pricing solution, based on environmental and performance signals.	Not started	

Table 8.12. Service Development Phases – Conceptual Design Service

Service Development Stage	Description	Status	Justification
Start-up phase	Gaining an understanding of the customer’s problems, business climate, aspirations and how their problems can be solved. A strategy is formed how to build up the service; which services should be produced, to what extent and to which customer group.	Done	Customer needs: to improve efficiency of actual ship building project, to ensure that latest technologies are used, to improve budget
			The supplier competence is known and valued
			CD service can be delivered and priced separately or together with actual design project
			The main strategic goal is to enable future building project, and also enter a service business with CD service
			Customer groups: new building companies, ship yards
Defining phase	Decision on what the service package should consist of. Modules are created that suit the customer. Here, the work-process for producing the service is resolved. Every module’s work process should be separate. The lead customer should become involved in this phase to some extent. A name will have to be found for the service concept.	Done	Service package comprise several feasibility studies, project outline, including financial calculation, budgeting; there is proposal to include IM service in CD
			Customers are very much involved into content definition
			Working name exist
			Value proposition exist and understood by customers
Concretizing and testing phase	Service provider communicates content and quality via customer documentation, brochures, etc. This phase also involves the customer testing the service product to the extent possible. The lead customer should be involved in this phase.	Done	Content and quality is defined and communicated to customers
In marketing-strategy phase	Decision on a marketing strategy and, in particularly, pricing mechanism are created. A favorable marketing strategy is often a key factor for success. This is also where the product brand can evolve.	Ongoing	Result-based pricing mechanism has been proposed and discussed with customers; customers are positive to value-based pricing approaches. Several alternatives for performance criteria have been studied. Training materials are not ready. Delivery processes are not defined.

Follow-up and measurement	When the customer should evaluate the service product and give feedback in order for the product to be continuously improved according to the customer's needs. This can be done e.g. through performance measurement tools.	Not started	
Continuous development and change management	Needed in order to be successful in long term, and be able to adjust to changing environment. For example, pricing mechanism should have embedded change management interface, which allow changing pricing methods according to supplier and customer needs.	Not started	

Table 8.13. Pricing Process Phases – Conceptual Design Service

Pricing Stage	Description	Status	Justification
Setting pricing goals	The supplier should clearly state what is the purpose of selling the service to the certain customer or customer target group;	Done	The goal for pricing is to generate adequate return from highly valued service
Definition of service characteristics	Definition of service characteristics, which affect pricing and value proposition, when the supplier should decide on service content, therefore, its cost, level of modularization, standardization, customization, availability, and other relevant characteristics. This is also the phase, when the supplier draw a value proposition for the potential customers;	Done	Costs of service is estimated, modules are defined, service package is highly customized, high transparency and availability, medium to low risk level
Decision on pricing methods	Justified decision on pricing methods should be made based on multiple factors, such as strategic intentions, service characteristics, business environment, customer needs and customer perceived value; the decision often requires customer involvement, for example, for elaboration of measurable performance targets;	Done	Decided to propose and develop result-based pricing mechanism

Design of pricing Methods	Design of pricing methods, when actual design of pricing methods is performed and pricing solution delivered to business process;	Ongoing	Several alternatives for result-based pricing are suggested, e.g. increased number of cabins, reduced fuel consumption
Implementation and feedback phase	During implementation and feedback phase the supplier should collect performance data and analyze results of the applied pricing methods;	Not started	
Pricing management	Pricing management is carried out through open interfaces implemented in pricing mechanisms, which allow doing changes and corrections into the pricing solution, based on environmental and performance signals.	Not started	

Table 8.14. Service Development Phases – Fuel Consumption Service

Service Development Stage	Description	Status	Justification
Start-up phase	Gaining an understanding of the customer's problems, business climate, aspirations and how their problems can be solved. A strategy is formed how to build up the service; which services should be productified, to what extent and to which customer group.	Done	Customer' needs: savings on fuel, branding as "green", aiming for environmental; certificate, improving fuel efficiency, reduce OPEX, sustainable improvements (both targets - money and image)
			Business climate stimulates customers to look for possible savings
			Service concept should be formed from several components: Performance analysis and action plan, implementation of action plan (trainings, ship survey on board), evaluation of the progress
			Strategy for productification - door opener for new clients and wider relation for existing clients
			Customer groups

Defining phase	Decision on what the service package should consist of. Modules are created that suit the customer. Here, the work-process for producing the service is resolved. Every module's work process should be separate. The lead customer should become involved in this phase to some extent. A name will have to be found for the service concept.	Ongoing	Service package is defined in ECP (Energy Conservation Program) on the deliveries and detailed modules level
			Lead customers are involved to some extent (Colour Line, P&O)
			Working name exist, but not yet examined against customer needs
			Value proposition has not been finalized
Concretizing and testing phase	Service provider communicates content and quality via customer documentation, brochures, etc. This phase also involves the customer testing the service product to the extent possible. The lead customer should be involved in this phase.	Ongoing	Content and quality is defined, e.g. Value based pricing is under development. Pilot customers are selected (CL)
In marketing-strategy phase	Decision on a marketing strategy and, in particularly, pricing mechanism are created. A favorable marketing strategy is often a key factor for success. This is also were the product brand can evolve.	Ongoing	Marketing workshop has been arranged in March 09. Marketing strategy is under development. Enter market with value-based pricing, e.g. Fixed price + savings based; or cost+technical improvements result based. Branding work has been started
Follow-up and measurement	When the customer should evaluate the service product and give feedback in order for the product to be continuously improved according to the customer's needs. This can be done e.g. through performance measurement tools.	Not started	
Continuous development and change management	Needed in order to be successful in long term, and be able to adjust to changing environment. For example, pricing mechanism should have embedded change management interface, which allow changing pricing methods according to supplier and customer needs.	Not started	

Table 8.15. Pricing Process Phases – Fuel Consumption Service

Pricing Stage	Description	Status	Justification
Setting pricing goals	The supplier should clearly state what is the purpose of selling the service to the certain customer or customer target group;	Done	The service concept proposed to be sold to Customer 1 and Customer 2 for the purpose to establish long-term relation and re-establish level of cooperation as well as to enter large operation field. The service is a door opener for new clients and increase knowledge base for the supplier
Definition of service characteristics	Definition of service characteristics, which affect pricing and value proposition, when the supplier should decide on service content, therefore, its cost, level of modularization, standardization, customization, availability, and other relevant characteristics. This is also the phase, when the supplier draw a value proposition for the potential customers;	Ongoing	Costs of service is estimated, modularization is done, standardization is not yet finalized, availability is the same as production level
Decision on pricing methods	Justified decision on pricing methods should be made based on multiple factors, such as strategic intentions, service characteristics, business environment, customer needs and customer perceived value; the decision often requires customer involvement, for example, for elaboration of measurable performance targets;	Ongoing	Value-based methods are proposed, justified based on competitors' situation, designed
Design of pricing Methods	Design of pricing methods, when actual design of pricing methods is performed and pricing solution delivered to business process;	Ongoing	Two alternatives for value-based pricing are developed, costs are estimated, different scenarios for customers are developed
Implementation and feedback phase	During implementation and feedback phase the supplier should collect performance data and analyze results of the applied pricing methods;	Not started	
Pricing management	Pricing management is carried out through open interfaces implemented in pricing mechanisms, which allow doing changes and corrections into the pricing solution, based on environmental and performance signals.	Not started	

Table 8.16. Profitability of projects for different types of vessels

Ship type	t/a	Eur/a	1% savings	Savings potential out of 33% savings	Project added value	Supplier's share for each %
Small ropax	10 000,00	3 000 000,00	30 000,00	1,01%	19,20%	29 800,00
Medium size ropax	20 000,00	6 000 000,00	60 000,00	0,51%	98,40%	49 600,00
Large/fast ropax	30 000,00	9 000 000,00	90 000,00	0,34%	177,60%	69 400,00
Panamax cruiser	40 000,00	12 000 000,00	120 000,00	0,25%	256,80%	89 200,00
Large/fast cruiser	50 000,00	15 000 000,00	150 000,00	0,20%	336,00%	109 000,00

Table 8.17. Factors affecting pricing

Factors	Selected references				
	Literature review	Case 0	Case 1	Case 2	Case 3
Relational aspects					
Customer/supplier relationship, relational value	p. 41; p. 80, item. 5	p. 111	p. 131, Figure 3.7	p. 143	p. 160
Level of trust	p. 47, p. 80, it. 5;	p. 108	Figure 3.7	p. 145	
Customer satisfaction, service quality	p. 48; p. 62		Figure 3.7	p. 143	
Customer commitment and loyalty			Figure 3.7	Figure 3.12	
Service characteristics					
Complexity of service, complexity of technological context	p. 79, it. 2	p. 108			
Costs, other service characteristics such as standardization, customization, innovation, automation, differentiation, bundling to product	p. 67, Table 7.5 Table 7.6; Table 7.7			p. 135	p. 174, Table 7.10; Table 7.11; Table 7.12; Table 7.13; Table 7.14; Table 7.15
Maturity of service, availability		Figure 3.1; p. 112			Figure 3.13

Supplier's organization					
Supplier's competence and capability	p. 35	p.110		p. 139	p.154
Maturity of supplier as a service provider	p.134	p. 109			p. 160
Organization structure, current pricing approaches	p. 80, it. 6	Table 3.5:3, Table 3.4:3, Table 3.5:5 Table 3.3:2 Table 3.2:4		p. 147	150
Service strategic goals	Figure 2.4				p. 158
Market					
Customer needs and awareness	p. 76, it.1	p. 111	p. 123	p. 134	p. 153
Competitor's pressure, prices, solutions	p. 59	Table 3.5:5			p. 149
Value chain, value constellations, interests of other value network participants, business environment	p. 39, Table 7.7	Table 3.4:1	p. 130		p. 155
Cross-domain aspects					
Customer value	p. 39, p. 55, p. 71, p. 80, it. 7	Table 3.2:4, Table 3.3:3, p. 111	Figure 3.7, p. 29		
Service impact on performance	p. 32	Table 3.3:3			p. 159
Matching supplier' strategic goals to knowledge and technology development related to service	p. 35	Table 3.2:1 Table 3.2:2, Table 3.4:1, Table 3.4:2			p. 150

Figure 8.1. Results of cross – citation method applied for combination "Industrial Service" within ISI Web database, executed 15.6.2009

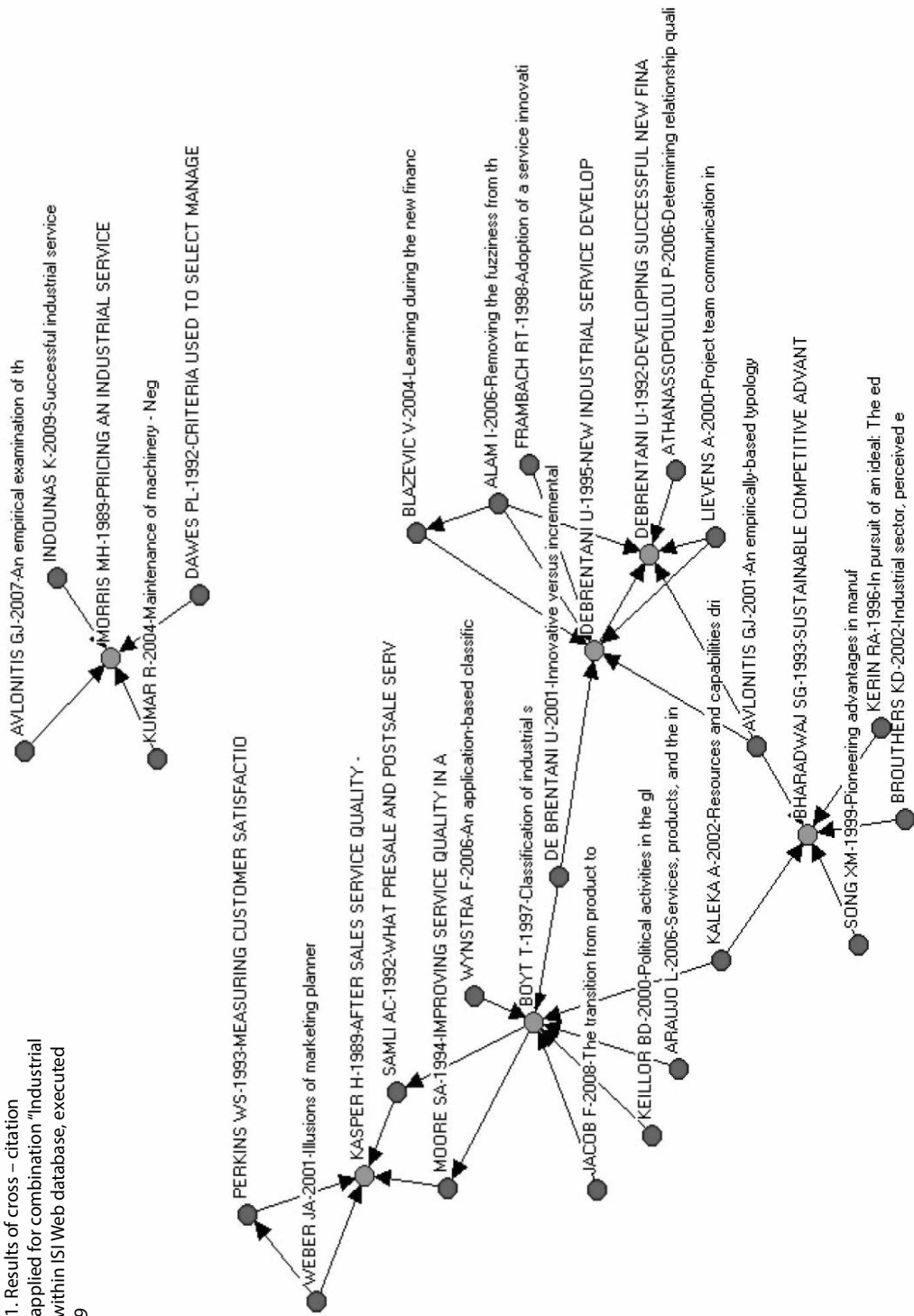
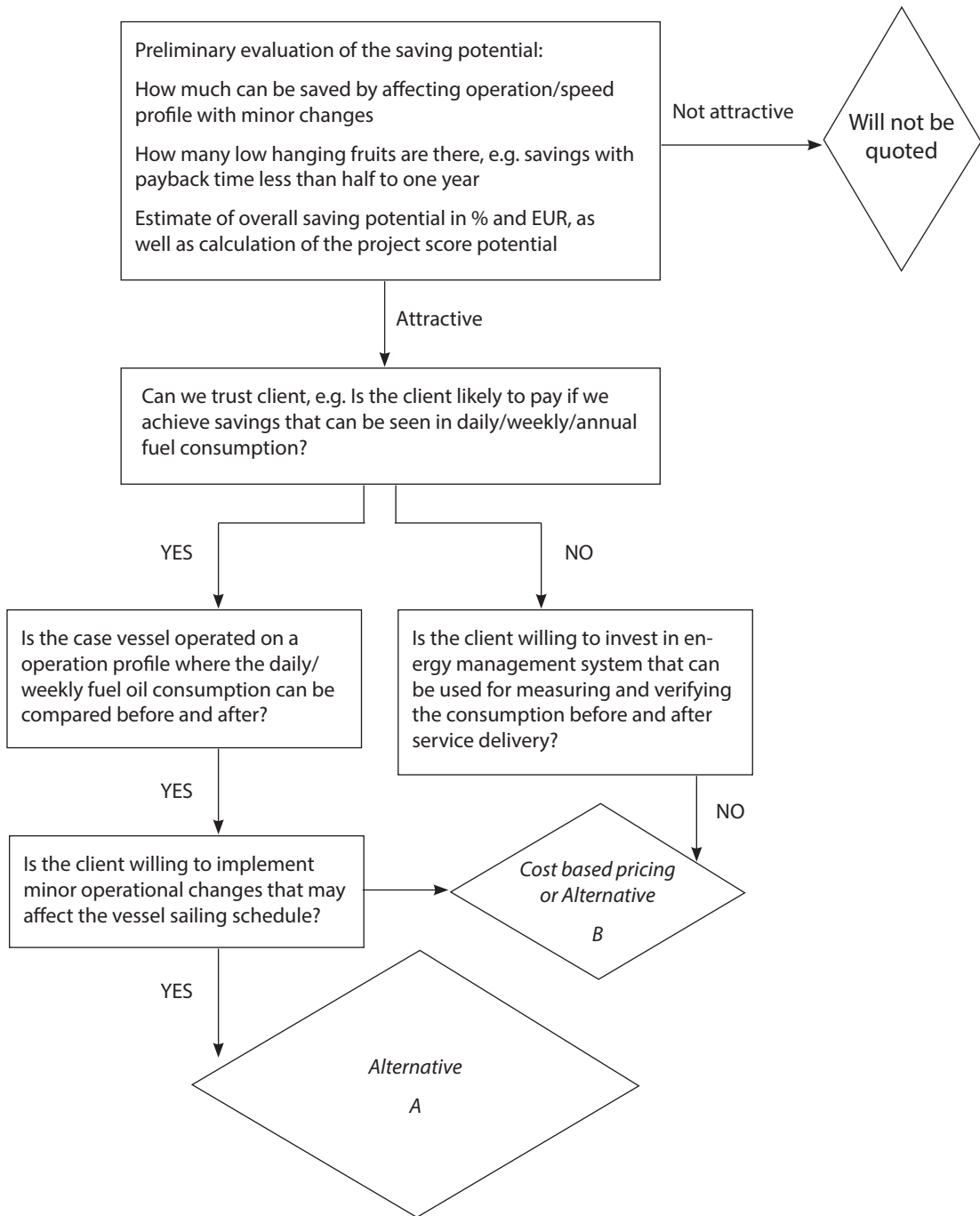


Figure 8.2. Different scenarios for value based pricing alternatives





Natalia Reen

The Pricing of Industrial Services

In order to become service providers industrial companies make significant efforts on different levels, however, there is a strong opinion that only a few manufacturers have achieved the ambitious financial objectives related to services. Analysis and improvement of financial performance from services, understanding service value, managing profitability drivers, and pricing mechanisms have become crucial tasks in global service competition. Industrial services are much more relationship-oriented than the business of a traditional equipment manufacturer. The recent development of services has stimulated a renaissance of the relationship perspective in business research, including research into the area of industrial service pricing.

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