ENHANCING THE INDUSTRIAL SERVICE OFFERING

NEW REQUIREMENTS ON CONTENT AND PROCESSES

Christian Kowalkowski
Abstract

The overall purpose of this thesis is to describe and analyse how capital goods manufacturers can enhance their industrial service offering.

The theoretical basis of this research is found in services marketing, recognising co-creation of value, that the service process is an open production system and that the customer determines value as the manufacturer can only offer value propositions.

The empirical basis is a multiple case study of service management at BT Industries, Electrolux Laundry Systems, ITT Flygt, and Saab. The four companies operate within different industries, have different service offerings and they are facing different internal and external conditions, which affect their service organisation and offering.

It is becoming increasingly important for capital goods manufacturers to offer services and there are further growth and profit opportunities on the market for industrial services. It is suggested that there is major improvement potential and financial gains possible to achieve if more resources are allocated to services. Moreover, utilisation of new technological means leads to increased dematerialisation and enable manufacturers to enhance existing service offerings as well as enable new ones.

Depending on whether the services have a traditional product-orientated focus or a customer-centric process-orientated focus, and depending on the scope of the offering, there are different critical factors to consider. Process-orientated services require knowledge about not only how to service the installed base but also how to improve the customer’s industrial production process.

Generally, bundled services require a modular structure with standardised, formalised processes and integration between local and central organisation. Extensive bundled offerings require that both customer and provider have relational intent and a long-term relationship is regarded as a condition for successful customer involvement in service development. Long-term relationships also enable the company to act proactive and develop offerings with a customer-centric approach, instead of having a product-centric approach and internally-focused innovation.

To conclude, operational service processes and interfaces, internal and with the customer, are critical to manage both from a cost-efficiency and revenue-effectiveness perspective. Furthermore, it is argued that customer relationships and development of the service offering must be managed strategically.

Keywords: Industrial service offerings, Bundling, Customer relationships, Process interfaces
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1 Introduction

It is well known that services are important, and are becoming increasingly so for both world economies and many manufacturing companies. During the twentieth century, the share of services in GDP rose constantly and the service sector now constitutes more than two-thirds of the production in OECD countries, with manufacturing and agriculture making up the remaining one-third (Bishop 2004). The decrease in manufacturing in terms of share of GDP is primarily due to the declining price of goods relative to services; if measured in constant, and not current, prices the share of GDP accounted for by manufacturing has remained rather stable in developing countries altogether since 1980 (Economist 2005). The move during the last decade towards outsourcing of services previously produced in-house within manufacturing companies is also an explanation for the increased disparity in production between manufacturing and services (OECD 2005).

One capital goods manufacturer that has taken over many of its customer’s previous in-house services is Metso Minerals. In its role as a maintenance partner specialising in the customer’s operations and processes, the company delivered a complete plant to the Sossego copper mine in Brazil in 2003. The goods provided included a 3.5 km long distance-belt conveyor, two cone crushers, a primary gyratory crusher, and five different mills. The service agreement comprises all mechanical preventive maintenance and some corrective maintenance, and includes the supply of spare and wear parts. One hundred and forty service people employed by Metso Minerals work at the plant (Metso Minerals 2006).

The fact that many services are included in manufacturing statistics because they are performed by companies also manufacturing goods and something illustrated in the Metso Minerals case, is supported by an analysis made by the Confederation of Swedish Enterprises (Fölster and Johansson Grahn 2005), which implies an even higher percentage of services. Fölster and Johansson Grahn (2005) argue that the prevailing division into manufacturing industry and service sector is arbitrary and archaic. The dividing line between manufacturing and services is blurred and a growing part of value-creating activities in manufacturing companies comprises services, e.g. design, finance, and after-sales activities (Economist 2005). Thus, the division into manufacturing and service companies is outdated and irrelevant if one wants to understand what creates future growth and profitability in manufacturing companies. This distortion was discussed by Hill (1977), who pointed at the fact that erroneous conclusions are drawn because even with
identical output, the same activity may be classified as good or service production depending solely on what economic unit is responsible for the production process. For example, if a capital goods manufacturer conveys the goods to the customer, it is registered as a manufacturing activity whereas the same activity performed by a third-party transportation company is regarded as a service.

Moreover, services are even more important than official figures suggest, and to an increasing extent for manufacturing companies, something which has been highlighted by the Swedish Agency for Economic and Regional Growth. To an ever-increasing extent, manufacturing companies are providing knowledge-based services to develop and maintain their products and systems. There is a clear trend which shows that facilitating services are becoming a more and more critical factor of competitiveness for targeting new customer segments as well as to retain existing customers (NUTEK 2006).

1.1 Towards a Service-Orientated Strategy

For manufacturing companies in the capital goods industry, it is becoming increasingly more difficult to maintain technological superiority as the sole lasting strategy due to e.g. rapid technological diffusion (Lele 1986). Moreover, as new competitors enter the market and as industry matures, core products traditionally offered tend to become commoditised (Lovelock 1995). Therefore, declining product margins and a stagnant demand in some industries has brought into focus the companies’ industrial services (Henkel et al. 2004), something which was highlighted as a high-profit, high-growth opportunity already twenty years ago by Lele (1986). As Levitt wrote in 1983, “The on-going nature of services and the growing complexity of technology will increasingly necessitate lengthy and involved relationships between buyers and seller. Thus, the seller’s focus will need to shift from simply landing sales to ensuring buyer satisfaction after the purchase…. Repeat orders will go to those sellers who have done the best job or nurturing these relationships” (1983a, p. 87).

Due to price pressure on their products, many industrial customers increasingly focus on their core businesses and for that reason demand more services (Kalliokoski et al. 2004) and because advanced service offerings are more difficult to imitate than goods, services could become a sustainable source of competitive advantage (Grönroos 2000; Oliva and Kallenberg 2003). Since manufacturing companies have deep knowledge of their products and markets, they are often well positioned for performing service activities (Knecht, Leszinski, and Weber 1993; Mathieu 2001; Wise and Baumgartner 1999). The market for industrial services is often counter-cyclical and operating on it is likely to give higher margins and require fewer assets than manufacturing activities do (Oliva and Kallenberg 2003). Reducing the cyclical variations in financial performance is an important driver for many machinery and equipment manufacturing companies to increase the share of service sales (Kalliokoski et al. 2004).
In order to address customers’ business needs, companies are increasingly combining services with goods by the provision of extensive, more tailored solutions (Corporate Strategy Board 2001; Davies et al. 2001; Foote et al. 2001; Galbraith 2002; Hax and Wilde 1999; Phillips, Ochs, and Schrock 1999). A shift towards this new strategy implies opportunities as well as challenges. For example, with declining margins for manufactured products the focus on the installed base increases and thus, companies are turning towards providing the services required to upgrade, maintain and in some instances also to operate the equipment manufactured and delivered to their customers (Wise and Baumgartner 1999). Competitive service offerings are potential opportunities for companies to become more strategic business partners with their customers, thereby improving customer retention. Creating greater business value for customers can reduce competition, and these offerings can also increase share of wallet with customers and possibly enable companies to target new markets (Krishnamurthy, Johansson, and Schlissberg 2003).

A major study of international manufacturing companies in the power equipment, rail vehicles, machine tools, paper machines, and metallurgy equipment industries and some of their European service customers indicated further growth and profit opportunities across all industries. “The estimated annual growth rate of services (2000-2005) ranges from 5-10% in the machine tool and metallurgy equipment industries to 15% in the rail vehicles industry. Service margins could be as high as 15-20% (in the power equipment and the metallurgy equipment industries), exceeding the average margins in the product business by a factor of 4 to 5” (Henkel et al. 2004, p. 15). Nevertheless, these margins are also being exposed to increasing pressure from low-cost service providers.

Siemens views industrial services as their main competitive advantage against the threat of having to compete through commoditised products and services with what Porter (1985) calls cost leadership strategy. Furthermore, as the global enterprise moves from viewing itself as a manufacturer of goods to ultimately viewing itself as a service provider, it has to balance the need for standardised/automated service offerings with the need for customised ones (Berner 2005). Another company acknowledging the importance of services is Caterpillar, which sees its three service divisions, which are fast growing higher-margin businesses, as the key to the company’s strategic shift and critical for counterbalancing the cyclical product market and a probable stagnating demand (Arndt 2005).

General Electric early recognised the importance of offering services and former CEO Jack Welch in a recent interview (Isaksson 2005) emphasised the importance for manufacturing companies’ businesses to have well-managed services and to focus on long-term customer relationships instead of focusing solely on transactions. Rather than concentrating on selling existing products to more customers, GE focused on developing new services, thereby increasing its offerings for its existing customers. In 1980, 85% of the group’s profits derived from manufacturing, twenty years later three-quarters come from services (Economist 1999). This
change in business focus from a product-centric to a customer- and service-orientated strategy has major implications for manufacturing companies and therefore needs to be further investigated.

1.1.1 International Presence and Competition
Pressure on manufacturing companies to manage their business with increasing cost efficiently is today’s reality, partially due to the growth of competition as a result of integration of the international markets with globally present actors (Ohmae 1989; Porter 1990; Prahalad and Doz 1986) and the worldwide goods and service flows (Douglas and Wind 1987; Levitt 1983b). The situation has also changed on a macroeconomic level; in the inflationary economy of Sweden in the 1970s, domestic customers were prepared to pay an additional 5-10% on the price in order to buy Swedish products (Brege 2005). This is certainly not the case in today’s rather deregulated and low-inflation economies.

Despite the fact that international companies have to work across geographical borders (Bartlett and Ghoshal 1995), the buying and selling of industrial services and spare parts are often conducted in a fragmented way (Abrahamsson and Brege 1995), meaning that each local company designs and operates their service activities without interference or coordination from central units. There is often a lack of a central concept to identify how the services support the product by delivering superior customer benefits. Thus, service productivity is believed to have potential for improvement in manufacturing companies (Kalliokoski et al. 2004).

1.2 Purpose
This background leads to the overall purpose of this thesis:

_The purpose of this thesis is to describe and analyse how capital goods manufacturers can enhance their industrial service offering._

Following the purpose, a theoretical foundation of industrial services and services marketing is needed to be able to elaborate the research questions.

1.3 Industrial Services
Instead of using the commonly used term “after-sales service”, which is inevitably linked to the sales of goods and is provider-orientated rather than customer-orientated (Paloheimo, Miettinen, and Brax 2004), the term “industrial service” is used in this thesis. From a lifecycle point of view, the potential value of sales for after-sales services is often higher than the actual product sale (Knecht et al. 1993) and the interpretation of the term based on its linguistic meaning understates this importance. Moreover, “after-sales” and “aftermarket” suggest that it is about the final phase of the product’s life cycle, where a fundamental role of the services is to enable repurchasing of goods. Another problem is to establish when the sale is actually completed. Is it when the contract is signed – possibly before the product is delivered and the customer’s operating
personnel trained – or when the product is in operation? If it is when the product is running, the question is what to call the initial services, which are required in order to sell a product and make it become a part of the customer’s installed base. Consultation services and a performance audit are examples of services that can come before, in connection with, and after the actual sale.

In many cases, customers do not buy specific goods or services, but instead, buy offerings combining different elements of goods and services. With a broader offering, consisting of both goods and services, a more extended customer need is fulfilled than in ordinary product selling. This concept was labelled systems selling in the 1970s and Mattsson (1973) defined systems selling as the marketing of somewhat standardised problem solutions that are adjusted to an individual customer’s special needs. Integrated solutions and solutions selling are terms commonly used today and they refer to the performance of a complete function for the customer. However, this idea was already used in Hannaford’s (1976) definition of systems selling. Wise and Baumgartner (1999, p. 138) view integrated solutions as a business model which combines “products and services into a seamless offering that addresses a pressing customer need”. However, this could also be said about systems selling. To Hannaford (1976, p.140), the systems selling philosophy is about “the provision of total packages of product and service solutions to [industrial] customer problems”. There is not necessarily a specific termination date to the contract, prices are not tied to the contract, and the customer neither has to specify quantities to be carried by the provider nor be obliged to buy specific quantities.

It is crucial that the systems provider grasps the problem solving orientation of the concept and takes an active part in this process, since the provider’s knowledge of the customer needs have to be more extensive than in ordinary product selling. An important part of the concept is that the provider is responsible for the system design and uses a relatively standardised set of components that are mainly designed in advance. These components – that could also be sold separately – are then adapted and fine-tuned to fit customers’ needs (Hannaford 1976; Mattsson 1973). A difference between the concept of systems selling and of solutions selling is that while systems selling means combining products by means of more know-how than in traditional product selling (Mattsson 1973), the products become parts of the solutions offering rather than being the centre of the value proposition (Oliva and Kallenberg 2003). Thus, the distinction between traditional products and the services associated with them becomes blurred (Davies et al. 2001; Galbraith 2002; Wise and Baumgartner 1999).

In solutions where for example the provider owns the product and where the contract is based on a measure that creates value for the customer’s business, this distinction no longer exists. If the term after-sales service is renamed, the mental image held internally at the product-centred company can be changed and thereby the attitudes towards services between departments and towards customers will hopefully, be more positive. By using the term “industrial product”, McDowell Mudambi et al. (1997, p. 435) cover both goods and services
when defining industrial products as “products used in manufacturing that are not marketed to the general consuming public”. If an equivalent nomenclature was to be used for industrial services, it would consequently imply that they are business-to-business services.

Grönroos (2004, p. 2) views services as processes, whereas goods are outcomes of processes and for him, the essence of service is “to support a customer’s processes, so that value for them is created in those processes”. This relationship-based perspective is customer-centric instead of product-centric and therefore is considered more suitable when discussing industrial services. Based on the above discussion and its definitions, the definition of industrial services used in this thesis is “processes supporting customers’ industrial production processes, so that value for them is created in those processes”. Hence, industrial services are viewed as a series of activities connected to the customer’s value creating processes in a business-to-business context. These services can be provided directly (e.g. customer training) or indirectly (e.g. spare parts) “through the provision of tangible goods; goods…[being] distribution mechanisms for service provision” (Vargo and Lusch 2004b, p. 326). Consequently, industrial services may affect both goods and persons.

Following the typology made by Henkel et al. (2004, p. 10-11) but focusing on the production process rather than their explicit focus on the augmented physical product, industrial services as covered by the definition in this thesis are:

1. **Spare parts**: provision of replacement components for the physical product
2. **Repair**: restoring products to sound condition after damage
3. **Reconditioning**: restoring physical products to good condition, especially by renovating or rebuilding. Reconditioning is more extensive in scope than repairing
4. **Performance upgrade**: replacement or addition of one or more hardware and/or software components, which provide better overall performance
5. **Inspection**: periodical examination of product for flaws
6. **Maintenance**: activities required in order to keep the physical product in proper condition; major types are preventive, scheduled and unscheduled maintenance
7. **Technical support**: provision of advice to users of the product via call centre, webpage etc.
8. **Technical consulting**: offering of technical expertise such as engineering skills and information and communication technology (ICT) tools to solve a specific problem related to the customer’s industrial production process
9. **Performance audit**: conducting an audit of the customer’s processes, analysing the performance, and identifying areas for improvement in terms of e.g. cost efficiency and uptime
10. **Operation:** day-to-day running of production process including all related services

11. **Customer training:** customer training or activities to familiarise customers with the use of hardware and software, regardless of whether it takes place before, during, or after the product is in place.

Performance audit is not included in Henkel et al.’s definition but is nevertheless regarded as a distinctive and important process-orientated service, although one could argue that it could be viewed as a subset of technical consulting. Overhaul is a service that is common in many industries and it is evidently an industrial service. However, it can be regarded as composed of individual services such as inspection and repair. One category of services that is however included by Henkel et al. but which is not encompassed by the definition of industrial services used in this thesis is financing, i.e. supplying funds for the purchase of a good or service. This demarcation has been purposely made, even though financing is a service connected to industrial goods and services, and is a prerequisite for the “core offering”. Financing is nonetheless a condition for all types of procurement, not only industrial.

One must be aware that this typology is only one of several ways in which industrial services can be categorised. Another possibility would be to use a taxonomy of industrial services, based on one or more of the characteristics according to which the services are classified and based on this, either group the services or array them along continuums in one or more dimensions (e.g. Buzacott 2000; Hill 1977; Lovelock 1983; Oliva and Kallenberg 2003; Schmenner 1986; Silvestro et al. 1992).

Although classification schemes in marketing can have a purpose (Lovelock 1983), a more systematic typology is not considered to support this stage of the thesis. Furthermore, taxonomy is not an end in itself and the main purpose of the categorisation covering industrial services is not the categorisation as such but rather the drawing of attention to the different competences and operations associated with industrial service offerings. For that reason, this typology is considered not only sufficient but also appropriate for examining the development of increased service offerings.

### 1.3.1 The Concept of Service Offering

The different types of industrial services presented can all hypothetically be offered either individually or as service bundles. Bundles can be combinations of some of the individual services solely, or can also include facilitating goods. Supporting services not related to the customer’s production process and that do not facilitate the use of the core service or good are not explicitly studied.

One reason for using the concept of offering is to move away from the discussion about goods versus services, as the term offering is all encompassing. In addition, the concept of offering is perceived to be more inclusive than the term service, which is more likely to be seen as a single, unbundled service only. Furthermore, the concept of offering is about offering the
customer something, but the customer makes the decision about whether to accept this offering or not. This is in analogy with the concept of value proposition; value is not pre-produced by the provider as in the value chain metaphor (cf. Porter 1985) but determined by the customer (Vargo and Lusch 2004a) and the value proposition is a bridge between the company’s internal and external environment (Normann 2001). Hence, the offering must not be regarded as isolated from the customer/user and the offering is not the same as the price unit. Very often, only one part of the offering, often a good, is the price unit and pricing aspects of the offering have an effect on how customers act (ibid.). Grönroos (2000) refers to the bundle of features related to the service production a process, and the outcome of the same a service offering (and the comprehensive model of a service offering is described as an augmented service offering).

1.3.2 Perspectives on Services

There are several ways to consider services and some important perspectives therefore need to be discussed. Services have often been regarded as the opposite to goods in terms of their central characteristics and transfer of ownership, but they can also be seen as a company’s primary value-creating process, intertwined with manufacturing, and as a catalyst for increased market orientation, etc. These different views, some of which are compatible and some of which are contradictory, will be further elucidated.

The traditional view of service has been that services are not only something different from goods, but that the good is the norm and service production is aberrant (Vargo and Lusch 2004a; 2004b). Thus, service activities have often been considered of secondary importance for manufacturing companies and have been pushed in the background by the manufacturing-orientated focus. The IHIP characteristics (intangibility, heterogeneity, inseparability, and perishability), which distinguish services from goods, addressed by e.g. Regan (1963) and summed up by Zeithaml, Parasuraman, and Berry (1985) are considered to be of little value when one wants to understand what creates customer value, and thereby what de facto creates profitability and competitiveness. Vargo and Lusch argue that these characteristics “(a) do not distinguish services from goods, (b) only have meaning from a manufacturing perspective, and (c) imply inappropriate normative strategies” (2004b, p. 324). This view is supported by Lovelock and Gummesson (2004) who claim that many services in fact possess one or more of the opposite IHIP characteristics, i.e. tangibility, homogeneity, separability, and durability.

Hence, the very distinction between goods and services is outdated (Normann and Ramirez 1993) and the two marketing fields are converging with a service-centred view dominating (Grönroos 2000; Gummesson 1995). Services should therefore not be viewed as not-X, with X being the recognised property of goods. In the ongoing “servicification” (cf. Normann 2001) the focus of marketing should be value co-creation rather than value distribution (e.g. Grönroos 2000; Normann and Ramirez 1993; Prahalad and Ramaswamy 2004). Because a product itself has no intrinsic value and its value is determined by the customer as a solution to a specific problem, a dominant logic for marketing in which service provision is fundamental to economic exchange is this thesis’ point of departure (cf. Vargo and Lusch 2004a).
A service goods dichotomy based on ownership is another aspect that can be accentuated (e.g. Grönroos 2000; Judd 1964). Lovelock and Gummesson (2004) have proposed a set of assumptions tentatively labelled the rental/access paradigm, which is based on the premise that services are marketing exchanges that do not result in transfer of ownership from provider to customer. Hill states that “From an economic point of view, it makes a considerable difference who owns the goods involved, who controls the timing and location of production, who bears the capital costs and who assumes the risks. The distinction between the production of goods and services often depends more on these economic factors than on the nature of the production process” (1999, p. 443). Although this aspect is recognised as both interesting and relevant, services are not discussed and analysed only from a strictly economic view in this study. Other perspectives, such as the service processes, value creation, and provider-customer interactions and relationships are also interesting. Before conducting the actual study, it is therefore considered too early either to dismiss or to acknowledge the major implications some authors place on ownership. One can nevertheless conclude that aspects such as risk taking, timing, and location of service production are germane to service management and thus pertinent to consider.

1.3.3 Approaches to Service Production

In marketing literature, different approaches to service production can be found. Because goods-producing and services-producing companies are not dichotomies, service organisations at times are similar to manufacturing companies in terms of both output and organisational arrangements, and there are also examples of the opposite (Bowen, Siehl, and Schneider 1989). A manufacturing and production-line approach to services was proposed by e.g. Regan (1963) and Levitt (1972; 1976), suggesting that services should be industrialised and that service companies could learn from mass-production manufacturing methods. Emphasis was put on homogeneous, standardised services and cost effective operations.

Critics claim that such methods lead to long-term degradation of service quality: “customer disaffection, high employee turnover, falling sales, and little or no growth in productivity for individual companies and for services overall” (Schlesinger and Heskett 1991, p. 71). Whereas new technology eventually becomes commoditised and affordable to everyone, skilled employees are considerably more difficult to imitate or buy. Heterogeneity and inseparability, not homogeneity and efficiency of separability, should be normative marketing goals (Vargo and Lusch 2004b) and service has to be the raison d’être for all organisational activities (Grönroos 2000). However, the industrialisation of services must not be repudiated as a matter of routine as it can make sense (ibid.) and both a services marketing and production-line approach to service production must be considered when discussing industrial services.

Hence, there is not necessarily a contradiction between production orientation and market orientation as is sometimes discussed; an increased market orientation does not have to be realised at the expense of production orientation. Tetra Pak Business Support (TP BuS), Tetra Pak’s internal service company, managed to not only improve when it came to market activities and customer interaction but also improved within activities of production (e.g. costs and lead-
times). They did this because they moved towards market orientation through offerings, and through more structured customer contacts and market channels (see Figure 1.1) (Kindström 2003).

Figure 1.1 Illustrating TP BuS move from T₁ to T₂ (Kindström 2003, p. 146).

Thus, market (customer) orientation is not necessarily diametrically opposed to production orientation in previously product-centric companies.

Apart from an uncritical acceptance of the IHIP characteristics, the different perspectives on services discussed in this chapter are important and will therefore be further discussed in the theoretical framework. Even if they do not distinguish services from goods, imply unsuitable normative strategies, and do not necessarily focus on the most important aspects; intangibility, heterogeneity, inseparability, and perishability aspects must however not be automatically dismissed. If one recognises the increasing importance of long-term profitability and competitive advantage, and of services in general and of industrial services in manufacturing companies in terms of augmented offerings in particular, then it would seem logical to study this phenomenon using mainly a services marketing perspective. With this said, a services marketing approach is used in this thesis.

1.4 Research Questions

A development of the industrial service offering will be associated, at least to some extent, with a change not only in terms of internal processes but also in terms of new value propositions towards customers. Manufacturing companies in the capital goods industry face opportunities and challenges that affect their traditional business model of selling products, spare parts and good-related services (Kindström 2003). As it is believed that this development implies that many service offerings are more extensive than before, the first research question is:
How is the service offering extended in terms of more advanced services and increasing service scope, particularly through unbundled and bundled service characteristics?

As the customer focus has increased in manufacturing companies and as it is fundamental when discussing services from a services marketing perspective, one imperative aspect to discuss is how the customer’s role in the service development and service production process can improve the service offering. This leads to the second research question:

What is the customer relationship’s role for the service offering?

New services imply that new processes and activities are created, both within the company and in the interface between the company and its customer. In addition, the utilisation of information and communication technology has enabled companies to improve their manufacturing processes and to develop offerings that are more advanced. Similarly, ICT applications can be used to improve a company’s existing service processes and develop new ones (Koskela 2002; Normann 2000; Zackariasson and Wilson 2004), and hence how ICT applications can enhance the service offerings must be discussed. Thus, the third research question is:

How are interfirm and intrafirm service processes and interfaces affected by new services and technological means?

Interfaces in this context refer to the physical or virtual points of contact between company and customer (interfirm) or within the company organisation (intrafirm).

1.5 The Empirical Context

The empirical base of the thesis is the study of the management of industrial services among capital goods manufacturers. Access has been given to the central service organisation’s strategic work in a time when extending the service scope is an espoused strategy. Henkel et al. (2004) among others, have highlighted not only the potentials for exploiting the industrial service market but also how industries differ in terms of profit margin, market growth, competition, etc. Therefore, it is of interest to study companies within different industries to analyse each unique case as well as the similarities and differences between them.

The companies chosen are BT Europe (warehouse solutions), Electrolux Laundry Systems (professional laundry), ITT Flygt (fluid handling), and Saab Aerosystems (aviation). The focus is on their European operations, Saab Aerosystems being the exception as also the South African customer is discussed. Even if all four companies pay more attention to their services now than in the past, they differ in terms of matters such as customer orientation, service culture and awareness, market situation, and the period of time they have focused on services. Thus, this empirical setting with possibilities and challenges facing the service organisations and the in-depth information from service managers provide the requirements to answer both the purpose and the research questions.
1.6 Thesis Outline

In this chapter, a background to the purpose is given and thereafter, theoretical perspectives on services are discussed and industrial services are defined, leading to the research questions. Chapter 2 deals with the theoretical framework and discusses particularly services marketing and service production. The methodological considerations and research design is given in Chapter 3. The Chapters 4-7 contain the empirical foundation of the thesis, with the case data from BT Europe, Electrolux Laundry Systems, ITT Flygt, and Saab Aerosystems respectively. In Chapter 8, the theoretical framework in Chapter 2 is compared with the empirical data in Chapter 4-7 and analysed. The analysis consists of three parts, dealing with service offering characteristics, customer relationships, and operational service processes. Finally, Chapter 9 presents the conclusions of the thesis.
2 Theoretical Framework

As discussed in the first chapter, several aspects on services and service production exist. Therefore, the theoretical framework that will be the foundation for the subsequent analysis will be outlined in this chapter. Relationship marketing and services marketing positions will be discussed as well as theoretical perspectives on service production and service development. Although much of the applied services marketing literature is emanating from business-to-consumer marketing theory (e.g. Grönroos 2000; Larsson and Bowen 1989; Ojasalo 1999; Parasuraman, Zeithaml, and Berry 1985; Storbacka, Strandvik, and Grönroos 1994), it is considered germane to this context.

2.1 A Relationship and Services Marketing Approach

At industrial markets, well-established relationships with customers are seen as important in order to defend the existing service business as well as to develop new services and thereby further developing the relationship. Hence, a relationship marketing approach is adopted, positing that the provider and the customer interact at least to some extent and that value is co-created in these interactions (Grönroos 2000; Normann 2001). Grönroos (1998) believes that all companies adopting a relationship approach towards marketing have to define themselves as service businesses, regardless of whether the traditional business is service-orientated or goods-orientated. In the long term, goods become more and more service-orientated, requiring service marketing and management in order to manage the business successfully. Moreover, customers in long-term relationships are increasingly looking for solutions, making goods a service element among others (Grönroos 1998; Vargo and Lusch 2004b). A services marketing approach is therefore in line with the companies’ ambitions to increase and improve their industrial services, although a majority of their offerings has a goods core.

Although Levitt (1972) believed that relationships should be strictly businesslike, he claimed that “Everybody is in service” (p. 42) because all companies have a service component and he questioned why companies like General Motors and IBM were seen as manufacturing companies even though they were presumably more service-intense than manufacturing-intense. Since the good is only one part of the product, there would often be no sale without services (cf. Bowen et al. 1989; Lele 1986). Thus, Levitt (1972) argued, services should get the same attention as manufacturing. The more technologically advanced the goods are, the more dependent its sales on its services (ibid.). The addition of services is in line with the denotation of the augmented product (Levitt 1980) and it is very doubtful whether the core product has any value without additional services (Grönroos 1998).
Because of the different logic that service offerings have compared to physical goods, it can be challenging for manufacturing companies to offer competitive industrial services that are also profitable. The offering is an input to the value creating process where the customer determines the value and participates in creating it, and long-term relationships are emphasised before transactions (Normann and Ramírez 1993; Vargo and Lusch 2004a). Goods are seen as physical embodiments of knowledge/core competencies (Normann and Ramírez 1993; Prahalad and Hamel 1990) and distribution mechanisms for service provision used in the customer's value creating processes (Vargo and Lusch 2004a). This is in line with Gummesson’s statement that both activities and things render services: “Customers do not buy goods or services: they buy offerings which render services which create value” (1995, p. 250, original emphasis). Vargo and Lusch (2004b) argue that no value creation can take place through manufacturing. As distribution mechanisms for service provision, the value of goods is determined by their ability to provide service. This is similar to Normann and Ramírez’s (1993) view that value creation is not a function of manufacturing but of solving customers' problems or achieving benefits. Therefore, products are viewed as tools used to solve customers’ problems or achieve customer benefits (Grönroos 1998; Levitt 1972; Vargo and Lusch 2004a) instead of items bought by customers.

A service-centred view and co-creation of value imply customer orientation and that the exchange is relational (Vargo and Lusch 2004a). As opposed to a traditional product-centric company where new product development is perhaps considered the most important process, customer relationship management is the primary process in a customer-centric company (Galbraith 2002). Instead of focusing on potential opportunism in the relationship, emphasis should be put on activities needed for maintaining and improving cooperation (Larson 1992). The assumption of opportunism can become a self-fulfilling prophecy; opportunist behaviour will increase with sanctions and incentives imposed to hold it back (Ghoshal and Moran 1996). However, opportunism does exist and it exists not only between but also within companies (Johanson and Mattsson 1987). Hence, the line of argument is that one must recognise the risk of opportunistic behaviour even though the focal point of the cooperation should not be estimations of potential opportunism but the relationship’s value-creating processes.

There are however customer segments not valuing relationships and although these situations are not very common, situations can occur where relationship costs are high (Grönroos 2000). Vargo and Lusch (2004a, p. 12) believe that “Even rather discrete transactions come with social, if not legal, contracts (often relatively extended) and implied, if not expressed, warranties”. This is in line with Grönroos’ view that latent relationships always exist and that one of the actors or both can choose to activate it or not. “The main thing is, therefore, not whether a relational strategy is possible or not, but whether a firm finds it profitable and in other respects suitable to develop a relational strategy or a transactional strategy” (1997, p. 408). Despite a customer having relational intent and a long-term relationship exists between provider and customer, the relationship might be not only costly but also unprofitable for the provider and seeking to retain
such a customer in an industry with continuous customer interactions cannot be defensible from a business rationale point of view. If there is no possibility of improving the profitability of the customer relationship, one should thus not aim for relationship longevity (Storbacka et al. 1994). Besides, when goal congruence is low between provider and customer and when performance ambiguity is high, exchange is very much based on price, the actors put self-interest and opportunistic behaviour ahead of shared returns, and a clear boundary exists between the provider and the customer, making a transactional strategy preferable (Bowen and Jones 1986). Thus, there could be situations where adopting transactional intent and creating transactional marketing strategy can be more profitable (Grönroos 1997; Gummesson 1994).

On the other hand, a relational marketing strategy is prescribed when goal congruence is high and performance ambiguity is low. The customer will then increasingly limit their economic exchange to a given provider and both provider and customer “concede some control and autonomy in return for assurance of equitable exchange and reduction of [relationship] risk over the longer term” (Bowen and Jones 1986, p. 436). The stance taken in this thesis is that adapting a relational marketing strategy aiming at customer relationship longevity should be the company’s normative goal but that there are most likely to be situations where this strategy is not profitable and the company thus should deviate from it.

### 2.1.1 Reactive and Proactive Market Orientation

A market orientation, including customer centricity, has a substantial positive effect on profitability according to several studies (e.g. Narver and Slater 1990). Customers’ needs and solutions can be viewed either as expressed, of which the customer is aware and therefore able to articulate, or latent, which are needs and solutions the customer is unaware of. In accordance with Narver, Slater, and MacLahlan (2004), market orientation is composed of indispensable sets of behaviour. The first one is a reactive market orientation, which is the company’s attempt to understand and satisfy customers’ expressed needs, while the second one is a proactive market orientation, being the way the company attempts to understand and satisfy customers’ latent needs. Since it is often insufficient to attract and keep customers in the long term by exclusively satisfying customers’ expressed needs, a reactive market orientation is not enough and proactive market orientation therefore plays a major role in the success of new offerings.

The relational content connected to the specific service can be arrayed along a relationship dimension. However, relationships can be developed and long-term even if the service itself is transaction based. Social bonds developed during the relationships are, due to e.g. customer lock-in through switching costs, desirable for the provider but not necessary for discrete industrial services like equipment transport to customer or installation services as such. In order to enable a proactive market orientation, relationships with customers are nevertheless crucial for understanding latent needs and solutions (Hax and Wilde 1999). Hence, the relational dimension can be seen as a reactive-proactive continuum where a proactive market orientation requires
relationships but developed relationships on the other hand do not necessarily imply proactivity and reciprocal interdependencies (see Figure 2.1). Proactivity is seen as “taking initiative in improving current circumstances or creating new ones; it involves challenging the status quo rather than passively adapting to present conditions” (Crant 2000, p. 436) whereas reactive behaviour is to adapt to conditions set by customers, competitors, and other actors in the business environment. Although customer orientation is only one element of market orientation (cf. Narver and Slater 1990) the customer is the locus of marketing (e.g. Grönroos 2000) and the customer orientation aspect of marketing is thus especially accentuated and, even if other aspects are implicitly included, Figure 2.1 is therefore explicitly emphasising customer orientation.

![Figure 2.1 The reactive-proactive customer orientation continuum (graduations from Decker and Anderson 1989).](image)

As the business environment is increasingly dynamic, a proactive response is required (Abrahamsson and Brege 2004) since only acting reactively generates little insight into new value-creating opportunities for the customer and thus, generates little customer dependence and basis for future customer loyalty (Narver et al. 2004). In line with a proactive market orientation, the company should choose which customers it should invest in a relationship with rather than randomly targeting customers or accept the given business environment. The choice of customers must be based not only on the customers’ expressed and latent needs, but also on the potential of the relationship for profit and on the basis of the customers’ demand abilities (Ford 2001). Thus, one must assess how the customers’ abilities can help to enhance and develop the existing service offering. This can involve situations when the company might have to “pay for” exchange with an advanced and challenging customer, either by reducing the price of the offering or through extensive interaction (ibid.).

Also, proactivity corresponds to the ability to conceive and reconfigure the value-creating system illustrated by Normann (2001); leading companies described as prime movers set the rules for other companies by organising value creation beyond their own boundaries and thereby not only creating new products and services, but designing a new business environment. It is more a matter of which company creatively can draw up boundless solutions than about positioning oneself in a static, predefined system. When a market or industry deregulates, proactivity is vital as the situation breeds new room to manoeuvre as well as new competitors. For many businesses, deregulation has had an effect similar to technological breakthroughs; what previously was not possible suddenly is (ibid.). Moreover, value is not only created when the offering is made cleverer, but also when customers are made more intelligent through the companies’ continuous
reconsideration and redesign of competencies and relationships (Normann and Ramírez 1993). In line with Normann (2001), proactively endeavouring to find new constellations and offerings in which customer value is created is considered to also provide value for the provider in the long term.

2.2 Classification According To Bundling Strategy

Rathmell (1966) presented a goods-service continuum arguing that all economic products could be placed along it, with goods at one end of the scale (e.g. food and tobacco) and services, being deeds or processes, at the other (e.g. education and research). In order to be useful, most goods nevertheless require supporting services and most services require supporting goods, arraying those products between the pure good and pure service extremes. Shostack (1977) criticised the distinction between goods and services claiming that all market entities are combinations of different tangible or intangible elements. Products were arrayed along a tangibility spectrum where salt illustrated the tangible dominant and education the intangible dominant. Both Rathmell (1966) and Shostack (1977) focused on consumer products when discussing services, but a division similar to Shostack’s (1977) is Oliva and Kallenberg’s (2003) good-service continuum for the machine manufacturing industry. It is used to show the transition from product manufacturer to service provider. When moving along the continuum, from selling industrial goods only to entering and expanding in the installed base service market, the relative importance of tangible goods decreases and the product eventually becomes part of the offering in contrast to being its focal point (Oliva and Kallenberg 2003).

Although this division is illustrative, Gummesson and Rust among others have questioned the implications of tangibility delineation (Vargo and Lusch 2004b) and when arraying industrial services, tangibility is misleading as a measure of categorising offerings. A service such as disconnecting a drainage pump from its pump station is rather trivial whereas technically upgrading the installed base is both far more complex and includes more elements that are tangible. Not only is the traditional effort to define services by distinction from tangible goods inappropriate but it also restrains and prevents understanding of the role of service in economic exchange. Vargo and Lusch (2004b) argue that “Unless tangibility has a marketing advantage, it should be reduced or eliminated if possible” (p. 327) when suggesting that economic exchange basically is about service provision (Vargo and Lusch, 2004a, 2004b). Intangible elements such as computer programmes, which must be distinguished from the physical medium on which they are recorded and stored, makes tangibility further illogical as a measure of categorisation (Hill 1999).

Instead of focusing on the offering’s tangibility characteristics, the substance of its content could serve as a basis of division. By bundling several services, differentiation can be achieved through modularisation (Sundbo 2002) and these “flexible service offerings” will give companies greater latitude in pricing, increase value in use in proportion to costs, and supply companies with
powerful resources for developing business with important customers (Anderson and Narus 1995).

All services can be differentiated and this applies in particular to services in industrial markets (Levitt 1980). Integration can be seen as the interrelationship between different service components being bundled together within a single offer to create value beyond the sum of the parts (Krishnamurthy et al. 2003; Roegner and Gobbi 2001). Therefore, content per se is not relevant, but competence is needed to bundle industrial services so value is co-created through flexible service offerings. In order to achieve technical integration, physical interoperability of components is needed (Krishnamurthy et al. 2003) making an offering in analogy with systems selling philosophy (cf. Hammarkvist, Håkansson, and Mattsson 1982; Hannaford 1976; Mattsson 1973; Page and Siemplenski 1983). Furthermore, Stremersch et al. (2001) consider bundling an imperative aspect when offering a service that fully satisfies the customer’s needs. Beyond the reactive proactive continuum, a second dimension categorising services in bundled or unbundled offerings can thereby illustrate the contents and integrative aspects of the offering (see Figure 2.2). Together, the two axes can serve as a point of departure when arraying industrial service strategies.

<table>
<thead>
<tr>
<th>Service characteristics</th>
<th>Reactive</th>
<th>Proactive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bundled</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Unbundled</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Figure 2.2 A framework for classifying service offering strategies.

Since the company can have a range of offerings, both bundled and unbundled, and act both reactive and proactive, it is possible not to only have one specific position in the framework concurrently. In addition, the framework is not only a static depiction but it should be used to comprise changes over time as well. Even if the model only contains two dimensions, it can together with other analysis models and tools compose a more comprehensive framework.

When the customers’ problems are complex it is more difficult to provide a wide range of offerings, since the cost of having the range of competences and technologies required to

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1 In reality, a spectrum of different kinds of service offering strategies exists. Therefore, there is significant overlap between them and any attempt at framing a typology tends to be to some extent arbitrary.
develop and fulfil the offerings efficiently and effectively increases rapidly as the range widens. Thus, the investments needed and the running costs of having the desired range of offerings might constrain the ability to adapt different elements of the offerings in order to meet and fulfil customers’ needs. Having a wide range of offerings implies having solutions for various customers’ needs based on one’s unique abilities and technologies, and the company is dependent on having knowledge of a wide range of customers’ different expressed and/or latent needs as well as the ability to handle the many different types of offerings and relationships. A narrower focus, on the other hand, is likely to entail lower operational costs but it is unlikely to be a complete solution to the customers’ needs and it implies an increased exposure to technological obsolescence. Besides, it is a lesser opportunity to have a reciprocal relationship with customers, which would enable the company to better understand the customers’ problems and react to changing needs (Ford 2001).

That the multiservice cost function, summarising both service production and other organisational costs, exhibits economies of scope is important when determining the company’s range of bundled and/or unbundled offerings; i.e. that the cost of providing sharable input to two or more different services are subadditive. Panzar and Willig (1981) discussed the notion of such economies of sharing from a manufacturing perspective, but its logic can be likewise applied to services, although systems of service production are more complex in that various external factors can play a major role in the production process (e.g. Larsson and Bowen 1989; Ojasalo 1999). It is thus of interest for this thesis to discuss service offerings in the light of economies of scope. Having cost efficient service operations is vital and it is therefore relevant to look at both the range of offering and what implications customer relationships (including proactivity and reactivity) may have for service production.

2.3 A Service-Centred Approach towards Productivity

Although services are considered more heterogeneous than goods (Grönroos 2000; Zeithaml et al. 1985), one could argue that e.g. transportation can be as homogeneous as the manufacturing of the conveyance used for the service provision. Vargo and Lusch (2004b) oppose the traditional view that goods are homogeneous whereas services are heterogeneous claiming that “Homogeneity in output often results in heterogeneous judgment of quality by individual customers, if not whole markets” (p. 329). In spite of being very similarly produced, a transportation service could be perceived very different by two customers due to their gap between expected and perceived service quality (Parasuraman et al. 1985) and the same logic applies to manufactured goods. The subject of heterogeneity is therefore not a matter of goods versus services but an issue of whether to take a producer or customer perspective. Thus, service providers have to recognise the heterogeneous standards of customers when creating their service offerings (Anderson and Narus 1995; Vargo and Lusch 2004b).

Customer perceived quality is recognised as vital to take into consideration when discussing services and the quality aspect cannot be dealt with separated from productivity in the case of
services (Grönroos 2000; Ojasalo 1999; Vuorinen, Järvinen, and Lehtinen 1998). In opposite to traditional production systems, the service process is to a large extent an open system and there are consequently other premises and conditions to service productivity than to the manufacturing of goods (Larsson and Bowen 1989). Variations in service quality occur not only because of heterogeneity (internal factors) but also due to the influence of customer participation (external factors) (Ojasalo 1999).

Anderson et al. (1997) found that, contrary to manufacturing, improving both productivity and customer perceived quality is difficult in services. If a company intends to achieve increased service productivity through decisions concerning internal efficiency (e.g. cost reductions), these measures risk deteriorating customer perceived quality and leading to a vicious cycle of dissatisfied customers and financial problems (Grönroos 2000; Normann 2000). This is not to say that improved profit orientation is not needed; internal efficiency should on the contrary be given priority, but the improvements have to be based on service characteristics. This implies that “the interrelationships between the internal and external effects are taken into account” (Grönroos 2000, p. 186).

The provider and customer can have a relational intent and still not be as successful as possible for various reasons. There can be a misunderstanding between actors leading to an outcome different from the desired one. Moreover, the customer’s demand fluctuations can be difficult to predict, which can lead to difficulties for the provider to have the capacity needed available; something especially challenging when discussing services (Ojasalo 1999). In spite of a keen desire to learn from the other, tacit knowledge is difficult to formalise and effectively transfer (Nonaka, Toyama, and Nagata 2000). Furthermore, if there is a lack of competence of the provider or customer, the service process output might not be the one wanted.

Storbacka et al. (1994) consider customer perceived quality as a cognitive judgement of a service; although usually based on experience, it does not necessarily have to have been experienced as it can be based on indirect information too. Customer satisfaction however, is based on what value actually was created as an outcome of the production process. Hence, high customer satisfaction but low perceived quality is possible, e.g. when low quality is reflected in low price, and low satisfaction but high perceived quality is also possible, e.g. when the price is not considered to correspond to the actual quality. Customer satisfaction is thus connected to customer perceived quality and together with bonds; it composes relationship strength (ibid.). Bonds between customer and provider can be of different nature; social bonds, technological bonds, knowledge bonds, planning bonds, and legal/economic bonds (Hammarkvist et al. 1982). The provider can use relationship strength to influence customer behaviour and if the level of relationship strength is high, the provider might be able to use more persuasive means without jeopardising relationship longevity (Storbacka et al. 1994).
2.3.1 Standardisation and Customisation Aspects

Even if not developed together with customers, an offering often at least has to be agreed through interaction between provider and customer. As the relationship goes on and services are produced, whether continuously or discontinuously, some evolvement of the offering is likely to take place. The management of the development of customer relationships and offerings and the control of adaptations to customers’ changing needs is a difficult balancing act for companies, as Ford (2001, p. 128) illustrates:

- “In order to control their costs, they must try to minimize the adaptation they make for individual customers and maximize the standardization between them. Customers often also try to standardize the offerings they receive from different suppliers to simplify their own operations.

- The more that a supplier standardizes its offering for different customers and the more that a customer standardizes the offerings of different suppliers, the less they will be dependent on each other and the less chance there will be that they build a strong relationship with each other.”

2.3.2 Internal Competence and Services Marketing Aspects

According to Drucker (1991), the single greatest challenge facing companies was to raise the productivity of knowledge and service personnel. This task might be difficult for many companies but one can assume it is even more complicated for a manufacturing company gradually changing its strategy towards increasing service content than for a company working with continuous improvements only. One problem is that new competences are required, which are difficult to find in-house. Only a third of the product-orientated salespeople in the companies that Krishnamurthy et al. (2003) studied could make a transition in line with the companies’ change towards customer centricity and extensive service offerings. Many companies replaced more than 50% of the existing sales force in the first twelve months because the sales force was not considered suitable for such a major change. As a result, new salespeople have to be recruited, preferably talented people in other company units or people from customers and other industry verticals targeted. Although not as radical, Kindström (2003) also describes that some positions with high degree of customer and service focus were almost impossible to find internally when TP BuS made their strategic reorientation and therefore had to be recruited externally.

As opposed to single services, procurement of more extensive, bundled offerings (i.e. systems selling or solutions selling) is usually of larger scale and the decision-making therefore takes place higher up in the customer’s organisation. Consequently, senior managers might have to be recruited externally in order to be account managers and approach key senior decision makers at target customers (Galbraith 2002). Hence, the need for improving service personnel productivity
arises from both from the requisites to perform existing services more efficient and the necessity to handle increased effectiveness-related requirements of holding knowledge.

Corporate culture is a complex issue, but it is nevertheless essential in companies and requiring a holistic approach. Barney (1986) considers corporate culture as a source of sustained superior financial performance and Grönroos (2000) emphasises that culture, being a service culture, is a strategic matter. If personnel are able to identify with the company’s values they will be less disposed to leave the company, thereby reducing employee turnover and indirectly possibly increasing customer perceived quality (ibid.). Monitoring industrial services personnel, often having a highly uncertain and independent work, by conventional control systems is exorbitant in terms of cost. Instead, shared values and beliefs might be a more suitable method than control through rules and procedures (Bowen et al. 1989). Developing a service culture and striving to change the mindset of people is likely to cause internal resistance and active top management support is therefore helpful (Grönroos 2000; Mathieu 2001; Söderström 2003). Grönroos (2000, p. 368) brings out three favourable conditions for a change process:

1. Environmental pressure; e.g. increased competition, changed customer expressed and latent needs, the introduction of new technologies, or deregulation/regulation of the industry/market
2. New organisational strategies, differentiated from the previous ones
3. New structural arrangements; e.g. new management or a major structural change in the company.

Gummesson (1987; 1991) coined the term part-time marketers for all employees not being full-time marketers, i.e. not being marketing specialists of the marketing and sales departments, carrying out marketing activities and thereby influencing customer relations, customer satisfaction, customer perceived quality, and revenue. Part-time marketers are e.g. the personnel working with the production of all the different industrial services and the part-time marketers do not only outnumber several times the full-time marketers in most industrial markets, they are often the only personnel and thus the only marketers around.

In order for part-time marketers and management of customer relationships to be successful, well-functioning internal relationships are a prerequisite. The internal marketing aims at developing service-minded behaviour and an interest in part-time marketing manners among the personnel. It includes developing a service culture in the company and sustaining a service orientation among employees. Moreover, it strives to make the personnel aware of and accept new goods and services being introduced, to inform and ensure internal acceptance for external marketing campaigns and activities, and to make the personnel accept new ways in which various activities are performed, such as the introduction of new technologies (Grönroos 2000).

In line with the authors in this section, one can conclude that internal competence and cultural factors have major effect on the service offering. Hence, the interplay of internal and
external customer-related factors is something one must be acquainted with, and its importance has to be further discussed regarding service productivity.

### 2.3.3 A Service Productivity Framework

In order to study how both increased cost efficiency and service quality can be reciprocally achieved, a conceptual service productivity model proposed by Ojasalo (1999) and extended by Grönroos and Ojasalo (2004) is used. While productivity can be defined in terms of e.g. revenues per employee (Anderson et al. 1997), Ojasalo (1999) simply define it as revenues from a given service divided by costs of providing it. The service productivity model consists of three elements; internal efficiency, external efficiency, and capacity efficiency (see Figure 2.3). Service productivity is a function of all three elements and the elements are highly interrelated, which means that changing one of the elements is most likely to also affect the two other. Internal efficiency is the service provider’s and the customer’s input to the service process whereas external efficiency is linked to how the service quality is perceived by the customer.

![Service Production Process Diagram](image)

*Figure 2.3 Service productivity as a function of internal efficiency, external efficiency, and capacity efficiency (from Grönroos and Ojasalo 2004, p. 418).*

Although relying solely on customer satisfaction measurements when evaluating services can be misleading (Anderson and Narus 1995), customer perceived quality is a better measure of profit than the output-based measure of units of goods sold (Vargo and Lusch 2004a). Fornell (1992) found that customer satisfaction is higher when the heterogeneity/homogeneity of demand corresponds to the characteristics of the offering and that customer satisfaction plays a more
important role for the provider in industries with low switching costs than in industries with high ones. Establishing a new relationship with a provider can be considered an investment of cognitive effort, time, risk factors (financial, psychological, social), and costs (search costs, learning costs, emotional costs) and thus constitute a significant switching barrier from the customer’s point of view (Storbacka et al. 1994).

The third element in the service productivity model is capacity efficiency, i.e. management of demand, which has to be taken into consideration as services cannot be put into stock (e.g. Donnelly 1976; Rathmell 1966; Regan 1963). Hill (1977) argued that keeping services inventoried is not a physical impossibility, but a logical impossibility as services imply some change in the condition of the good or person, and service stock therefore is an oxymoron. Accordingly, this has been a constraint when comparing many services with manufactured goods even if it is certainly not valid in all cases, e.g. monitoring a process can be a service and does not imply such a change in condition. Further, many services are associated with a temporary provision of capacity and a service such as rental means that the major characteristic of the service is to make the goods available to customers (Gadrey 2000). In similar manner as production capacity in manufacturing can be a constraint, there is only a certain amount of personnel resources in personnel-intensive services. Therefore, both personnel and goods may influence capacity utilisation. If demand exceeds what currently can be managed it will have a negative effect on customer perceived quality, decreasing external efficiency and thereby reducing service productivity. Thus, both low demand and excess demand reduces productivity. In order to improve capacity efficiency, one can utilise various ICT applications, which allow companies to e.g., store performance in electronic or printed form, thereby setting capacity free (Gadrey 2000; Hill 1999; Lovelock and Gummesson 2004).

Capacity utilisation is a main driver of profitability (Oliva and Kallenberg 2003) and the shift in focus from producer to customer perspective is a shift from the means to the utilisation (Gummesson 1995). The optimum combination of service productivity elements depends on the specific company’s revenue generating abilities and cost efficiency. Although this productivity model includes the customer and signals the heterogeneity and intangibility aspects of services, it has limitations as it does not have the ability to show bottlenecks or to explain reasons for changes in productivity. Further, revenues do not always reflect perceived quality and it can be problematic to correctly assign costs to respective revenues (Grönroos 2000). Another aspect affecting service productivity is the relationship continuity. On an individual level, the more frequent personnel interact with one another, the stronger their relationship is inclined to be (Granovetter 1973). Similarly, long-term relationships with customers are considered important as the activities performed are continuously improving as the relationship becomes deeper (Anderson, Håkansson, and Johanson 1994; Hammarkvist et al. 1982; Ojasalo 1999). In value-creation and relationships, one plus one can thereby be more than two as well as zero if interactions work negatively (cf. Nonaka et al. 2000).
2.3.4 Customer Interfaces in Service Production

Although inputs and outcomes have been discussed so far, the actual service production process needs to be further emphasised. The customer is unequivocally a part of the social system of the company, especially in the case of professional services, and this has important implication for the nature of the organisation (Parsons 1956). Because value is co-created, customers themselves participate to some degree in the service production process and thereby influence their own satisfaction and perceived quality. For this reason, Mills and Morris (1986) calls customers “partial employees” of service organisations and Bitner et al. (1997) distinguish between three different levels of customer participation. Low customer participation implies that customer presence is required during the service production (e.g. maintenance services), moderate participation implies customer inputs for service creation (e.g. independent freight transportation), whereas high customer participation implies that the customer co-creates the service in interaction with the provider (e.g. management consulting).

What Bitner et al. (1997) does not fully discuss is self-service, i.e. the case when the customer is producing the service in isolation from the provider. Although not fully discussed, this option, as well as internal aspects regarding front-office and back-office, is mentioned and included in Grönroos and Ojasalo’s (2004) service productivity framework. However, it is important not only to differentiate between differences in customer needs, but also to distinguish between active versus passive customer presence; i.e. the customers’ disposition to participate in the production process. How the service production is divided internally between front office and back office is another important issue. In order to better understand the different service production modes and internal coordination aspects, a refined model with service production process interfaces proposed by Larsson and Bowen (1989) is therefore complementarily used.

Diversity of demand refers to the uniqueness of customers’ demand. This includes both the uniqueness of the customers’ products/processes to be serviced and the uniqueness of the desired outcome. High diversity refers to qualitative differences in demand whereas demand of the same service in different quantities is considered as low diversity of demand (Larsson and Bowen 1989). Therefore, this dimension is related to the customisation-standardisation distinction often discussed (e.g. Anderson et al. 1997; Levitt 1976) but a crucial difference is that this dimension represents external market conditions facing companies. Subsequently, the company can respond to these conditions with more or less customised service design. The level of input uncertainty is another aspect related to the range of customer demands; the wider the range of demand, the less service-specific information is held by the provider in advance of the service production. Thus, a higher degree of input uncertainty faces the company (Larsson and Bowen 1989).

Customer willingness to participate is the extent the customer plays an active role in supplying inputs (e.g. personnel or information) to the service production process. In order to play an active role, customers have to prefer to produce the service themselves (possibly even without a price reduction) and/or they may feel that active involvement is necessary to guarantee quality, and the provider can adapt to the customer characteristics both proactively, through new
service designs, and reactively. The level of input uncertainty is also affected by the customer’s disposition to contribute; a high degree of customer participation implies a high degree of input uncertainty due to incomplete information regarding the customer’s activities before the service encounter. Together with diversity of demand, the customer participation dimension can compose a matrix with four different service modes while the level of input uncertainty constitutes the diagonal (see Figure 2.4). The main locus of interdependencies in each quadrant is the most complex area of coordination in the respective service production process (ibid.).

Figure 2.4 Service production process interfaces (Larsson and Bowen 1989, p. 221).

The high input uncertainty associated with the open production system can make it necessary to control customer behaviour through different means and thus develop modus operandi that facilitate their participation process (Larsson and Bowen 1989; Mills and Morris 1986).

Figure 2.4 highlights different interfaces between customer and provider in service production, and it is of interest for this thesis to use this framework when analysing consequences and implications of new technologies and/or bundling of several unbundled services on present service processes. Such changes may affect the service production process interfaces and thereby have repercussions on the service offering’s premises. Because Larsson and Bowen’s (1989) model is originally adapted to business-to-consumer conditions, the customer is described as one single entity only. In order to reflect the actual situation better the customer too should be described by one front-office and one back-office entity, the front-office entity being the employees having contact with the provider. Nevertheless, for the purpose of the thesis the original simplification with one customer entity is regarded as clearly pertinent.
Pooled Service Design
These services can be relatively standardised and economies of scale utilised through services with quantitative rather than qualitative diversities in demand. This allows for allocating most of the production to back-office operations which are relatively decoupled from most front-office activities and independent of the customer (Larsson and Bowen 1989).

Sequential Standardised Service Design
IKEA is perhaps the most known example of self-service (e.g. Normann and Ramírez 1993); the customer, which is likely to be more price sensitive than other customers, takes an active part in the value-creation process. Examples from the industry could be self-instruction activities or such banal things as customers reading off gauges themselves. These standardised services enable extensive decoupling between front and back office for service production. Nevertheless, the company has to facilitate these standardised service designs (Larsson and Bowen 1989).

Sequential Customised Service Design
Coupling between front and back office is required for these services because front-office personnel often have to receive the customer's specification initially. Hence, the customer's unique requirements precede the actual service production, which is mainly an internal matter between front and back office. Many traditional industrial services, such as installation, repair, and maintenance, can be mapped in this quadrant (ibid.).

Reciprocal Service Design
The quadrant with active customers and a high diversity in demand represents complex and unique problems, implying that customers often are less price sensitive. Hence, interactions between customer personnel and front office are required as in the case with many professional services. The main variable cost for these services is often the front-office personnel (ibid.).

2.3.5 Profitability and Criticality
From a profitability point of view, companies should deliberately build and manage their relationships (Grönroos 2000). Storbacka et al. (1994) advocate companies to actively manage their customer relationships by measuring customer profitability through calculation of total revenue generated and total direct and indirect cost incurred from a specific relationship during a fiscal year. Measuring customer profitability can however be difficult, especially due to problems in allocating costs to specific relationships and identifying cost drivers. A long-term relationship can be seen as a string of service episodes and these episodes can represent the cost drivers, which is particularly suitable for service that are continuous and that include several different types of episode. Although two customers can generate the similar relationship revenue, they can have different episode configurations and therefore differ in terms of relationship profitability (ibid.).

When examining customer relationships and the service process, an inherent factor to take into consideration is how the episodes are handled. The situation when the provider and the customer face one another and when perceived quality is realised was formulated by Normann
(2000) as the moment of truth. Based on the value the customer ascribes to the relationship and the offering, some of the episodes can be described as routine episodes whereas others are considered critical. Critical episodes are considered synonymous with episodes in which the continuation of the relationship is dependent, both in a negative and positive way; thus understanding and managing the critical episodes becomes fundamental for service providers (Storbacka et al. 1994). Different episodes take different forms and have various degree of criticality, and the service production interface in a particular episode can be mapped in Figure 2.4 in order to better understand under what conditions the service is performed.

Pricing

As pricing is a key communicator of the service offering’s value, price-fixing aspects are of essential importance in services and in many industries it is used to regulate demand for different episodes over time (Storbacka et al. 1994). When the customer perceive no difference in value between two offerings, price competition becomes inevitable (Narver et al. 2004); thereby eroding the provider’s margins. The price the customer is prepared to pay for a certain offering will depend on the customer’s opinion about:

1. the importance of the need,
2. the extent to which this offering is perceived to meet this need,
3. the value of the provider relationship for future business,
4. the total cost for the customer to obtain the solution, and
5. the accessible supply of alternative providers and offerings (Ford 2001).

Thus, the price the customer is willing to pay does not necessarily reflect the cost the offering incurs the provider.

Market concentration in terms of alternative providers and offerings is accordingly a factor that indirectly has influence on the price; a relationship in a monopolistic or oligopolistic market will hence differ from one in a highly competitive market. Also, the relative importance of the relationship to both parties influences the latitude for changes in pricing (Storbacka et al. 1994). This signifies that it is often easier to implement changes among small customers, as a large provider usually has many minor customer and relationships with them are asymmetric (Grönroos 2000). In this case, asymmetry refers to the customers’ ability and desire to oppose change initiated by the provider, but a reverse situation can also occur if the provider is highly dependent on a customer.

2.4 Service Development and Innovation

Teece, Pisano, and Shuen (1997) consider inter-firm relationships as strategic assets and sources for competitive advantage. In a relationship approach the customer is viewed as a resource with which the provider can create a solution, and mutual dependencies and cooperation can improve both parties’ results (Ford 2001; Grönroos 2000; Gummesson 1994; Hammarkvist et al. 1982). In addition, manufacturing companies’ increasing focus on exploitation of downstream activities
implies that the customer’s role becomes more important. “A business must be innovative in its approach to (1) learning about and tracking customer needs; (2) the development of new products or services that address those needs; and (3) the development and implementation of internal processes that enhance customer-need understanding and product development. A market orientation, whether responsive or proactive, should be the foundation for a business’s innovation efforts” (Narver et al. 2004, p. 337-338). Thus, innovation can emanate from either internal, company-specific sources (e.g. R&D department) or external ones, involving customers explicitly (e.g. lead users) or implicitly (e.g. customer-need analyses) (ibid.).

Customers can play an important role in contributing to the innovative industrial goods process (von Hippel 1976; 1978) and successful innovators are seen to have significantly better understanding of customer needs than their less successful counterparts (Rothwell et al. 1974). This is likewise applicable to industrial services as “Agile innovation in the core or in the peripheral systems [of the service offering] is considered a key contributor to enhanced performance. New services must be developed in close co-operation with key customers in order to reach an excellent fit with the market” (Matthyssens and Vandenbempt 1998, p. 347). This is supported by Nambisan (2002) who bears out the idea that explicit customer involvement such as longitudinal and “informal” data is more beneficial than implicit involvement and “formal” data from structured inquiry tools. Direct customer involvement in the company’s service development is likely to increase revenues by a beforehand guaranteed sale and it is necessary for the company to have a strategic view on customer involvement (Lundkvist 2003). A continuous dialogue with customers is therefore necessary for companies if they want to stay competitive and have offerings that allow them to retain market leadership (Normann and Ramírez 1993).

Consequently, relationships with key customers are of strategic importance and they can possibly be further developed through partnerships and ultimately joint ventures. With a service-centred and customer-centric view, the service offering can hence be developed by relationship-based interactions. In line with Larsson and Bowen’s (1989) view that customer involvement in service production increases the level of uncertainty, this is also valid for service development (Nambisan 2002) and thus something one must recognise and take into consideration. It is also vital to have in mind that, albeit new industrial services share important success factors with goods, such as market orientation, a formal service development process, and a superior new service offering, customer perception of service quality and other service-specific issues must be addressed (de Brentani 1989).

### 2.4.1 Modes and Models of Innovation

New product development (NPD) and innovation literature and theories mainly focus on goods and manufacturing processes (e.g. Utterback 1994) whereas it is important to consider service characteristics such as customer involvement in the service production process when discussing service development and innovation in this thesis. Gallouj and Weinstein (1997) discuss several types of service innovations and present a service representation as a system of internal as well as
external elements, i.e. customer, characteristics and competences, thereby recognising the co-
creation of value (see Figure 2.5). Accordingly, this representation of services is believed to be
useful when studying the development of industrial service offerings.

Figure 2.5 The general service form as a system of characteristics and competences (Gallouj and Weinstein 1997,
p.546).

The technical characteristics in Figure 2.5 are denoted \([X]\) and can be both tangible (e.g. ICT
systems hardware) and intangible (e.g. modelling methods). Because product and process cannot
be separated in services (e.g. Grönroos 2000), process characteristics related to methods,
technologies, organisational forms, and competences are also included. This vector can therefore
be viewed as the company’s codified and formalised competences that can be used repeatedly in
service processes. Whereas \([X]\) represents the company, or parts of it, the \([C]\) vector consist of a
variety of individual competences gained from initial education, training, experience, and
interactions. Often, many of these competences are tacit. The final characteristics, the service
process output, are denoted \([Y]\). Finally, \([C']\) represents the customer’s competences and input to
the service process, as the quality of the customer’s competences is one criteria for innovation
success (Gallouj and Weinstein 1997), which is in line with Normann and Ramírez’ (1993) idea of
creating value by improving the customer’s competence.

Different researchers classify innovations differently and Sundbo (1997) separate between
organisation learning and innovation. This is in opposite to Gallouj and Weinstein (1997) who
regard cumulative improvements in \([C]\), where the value of a certain \(C_k\) is improved, as
improvement innovations (this also applies to changes in \([X]\), where the value of a certain \(X_j\) is
improved). In line with Sundbo (1997), competence enhancements through cumulative
improvements in \([C]\) are however referred to as organisational learning because innovations are
seen as necessitating the addition or substitution of elements in either of the vectors. One could
argue that this discussion is only a matter of linguistics but it is nevertheless a conscious choice
considered relevant. In accordance with this view, continuous improvements leading to new
elements being added or substituted to \([C]\) are regarded as incremental innovations, not as
organisational learning. Although Gallouj and Weinstein (1997) consider these innovations only
to affect the [X] and/or [Y] vectors, incremental innovations are considered to affect any of the [C], [X], and [Y] vectors. Developing a service-minded behaviour among employees and increasing the market orientation are examples of internal competence improvements in terms of organisational learning and incremental competence innovation that can facilitate other forms of innovation. In Figure 2.6, incremental innovation through the addition of characteristics Y₅ takes place in the service S₂ and incremental innovation through substitution of characteristic Y₅ for Y₄ takes place in the service S₃.

Figure 2.6 Examples of incremental innovations (Gallouj and Weinstein 1997, p.549).

Other innovations presented by Gallouj and Weinstein (1997) and of interest for this thesis are ad hoc, recombinative, and formalisation innovations.

Ad hoc Innovations

Ad hoc innovations are often initiated in the interaction between provider and customer as a solution to a particular customer problem. The number of innovation opportunities is believed to increase with the size of the provider and the customer company as the number of interfaces and possible interactions thereby increases. Often, these innovations are not considered as innovations until after the service provision. They often imply a noteworthy change in the individuals’ competences [C] and the intangible technical characteristics of [X], and constitute “a permanent, non-random change of state produced by the codification of accumulated experience” (Gallouj and Weinstein 1997, p. 550). This is something that distinguishes these innovations from ad hoc service transitions, which often have a random change (by external factors) that is unplanned. This is not to say that ad hoc innovations cannot arise out of reactive
behaviour, as a company can deliberately choose to act reactive towards all or some of its customers.

Although the customer interactions, which are to a certain extent unique for each customer, limit the reproducibility of ad hoc innovations, the innovations contribute to the development of new competences as the knowledge, experience, and service provision methods can be reproduced (Gallouj and Weinstein 1997). It is of imperative importance to offer services that in this way are replicable and profitable if parts of the new input are transferred to other ad hoc situations; unplanned provision of services not possible to replicate is very seldom profitable (Ford 2001; Galbraith 2002). The increased usage of ICT applications makes more and more information dematerialised, possibly enabling increased reproducibility.

Recombinative Innovations

Recombinative innovations are described by Gallouj and Weinstein (1997) as creating new offerings through the bundling and/or unbundling of existing service elements. In Figure 2.7, a new service S3 is produced by recombining the characteristics of S1 and S2, which are two existing services. Furthermore, two autonomous new services (S5 and S6) are produced by splitting up the characteristics of the existing service S4.

Figure 2.7 Examples of recombinative innovations (Gallouj and Weinstein 1997, p. 551).

Just as mass customisation should not be viewed as just another level of continuous improvements (Pine, Victor, and Boynton 1993), these innovations require specific competences and methods, and the bundling process can differ a lot from previous service development. There are elements that offer major potential for these innovations, but in order to provide these services the company may have to require skills and competences externally (Gallouj and Weinstein 1997). The notion of augmented product can apply to services as well as goods, and the service core element can be enhanced by a variety of supplementary services (Grönroos 2000; Levitt 1980) through recombinative innovation.

Recombined innovations require a modular architecture and an important assumption is that the offering can be broken down into well-defined elements, thereby defining [Y] more accurately
Bundling strategies yield higher revenues than unbundling strategies because bundled offerings take advantage of customer’s willingness to pay for value added, but the cost of the bundling process is a critical factor to take into consideration. On competitive markets a mixed bundling strategy (selling both bundled and unbundled products) is the most profitable whereas a pure bundling strategy is more profitable than a mixed bundling strategy if the number of competitors and/or offerings is limited (e.g. monopoly or oligopoly) (Stremersch and Tellis 2002). Mixed bundling strategies increase the variety of offerings, thereby increasing the customer demand (cf. Anderson and Narus 1995).

**Formalisation Innovations**

The various modes of innovation outlined are based on some kind of qualitative or quantitative variation in characteristics and competences, whereas formalisation innovation rather is about the degree of standardisation of characteristics and making also relatively intangible offerings more concrete in the eyes of the customer e.g. through tangible evidence, as Shostack (1977) argued. This objective can be achieved through technical characteristics (e.g. equipment, software, and methods), and the process of rendering various elements, previously rather implicit, explicit very often precede recombinatory innovations (Gallouj and Weinstein 1997). A well-known case is Levitt’s (1972) example of McDonalds, which standardised many characteristics of the service process. Another example is the offering concept developed at TP BuS, Tetra Pak’s internal service company, which forced the organisation to be more concrete about its offerings, with tangible improvements such as product sheets on offerings available on the intranet (Kindström 2003).

**2.4.2 Information and Communication Technology in Service Management**

Utilisation of ICT has enabled manufacturing companies to increase output and at the same time reduce manufacturing costs. ICT applications can – in spite of the interrelationship between customer and provider in service production – make it possible for these companies to both enhance service productivity and reduce costs for providing services (Anderson et al. 1997; Normann 2000). Many processes can be dematerialised and traditional enterprises can be unbundled in terms of place (where they take place), time (when they take place), actor (who performs them), and actor constellation (with whom they are performed) and thereby be rebundled into new offerings (Normann 2001). This line of argument can be further substantiated by Moran and Ghoshal’s discerning discussion regarding how companies interact with markets to create value, where they note that “it is not resources per se, but the ability to access, deploy, exchange, and combine them that lies at the heart of value creation” (1999, p. 409).

Hence, ICT may initiate a radical transformation of customer-provider relationships (cf. Nambisan 2002) and the company’s internal service processes. Factors influenced by the physical setting and the usage of ICT applications in service production are e.g. cost rationalisation,
quality enhancements, beneficial customer linkages, behavioural implications, and technology adaptation. Although these factors tend to merge, one should also pay attention to them individually in order to utilise their individual possibilities to derive advantage from new technology (Normann 2000).

Companies can use ICT to capitalise the flexibility of service provision (Karmarkar 2004; Vargo and Lusch 2004b) but it can likewise be used to improve the internal efficiency through standardisation (and possibly automation or elimination) of processes (Koskela 2002; Pine et al. 1993; Sundbo 1994). Nevertheless, investments in information systems are expensive and often associated with risk taking. Even if initial costs increase, reproduction costs for dematerialised resources have dropped considerably, implying that the ratio average cost/marginal cost have increased dramatically for immaterial resources compared with physical ones (Normann 2001). Similarly to Grönroos’ (2000) view on service management, Normann (2000) argues that a holistic view has to be adopted when implementing ICT and that ICT applications must enhance – and not disturb – the social processes that are associated with service provision.

Customer perceived quality is improved through better quality control and higher quality possible by means of dematerialised information (Normann 2000) and it should be the company’s driving factor (Vargo and Lusch 2004b). Although positioning themselves with a service-dominant view of all exchange, Vargo and Lusch (2004b) believe that customer perceived quality and productivity is totally compatible if there are customers willing to trade price for some level of standardisation and if cost saving ICT applications exist to provide services within a good enough level of customisation. Hence, companies will have to balance customisation with standardisation when discussing quality (Anderson et al. 1997) and furthermore balance quality with service productivity aspects.

Barras (1990) pointed out that ICT will tend to expand large companies’ span of ownership and control as new technological possibilities reduces the transaction costs of internal information flows and in so doing improves the gains to company management. Although this will enable the company to expand through both vertical and horizontal integration, ICT paradoxically also allow a more flexible and decentralised organisational structure as compatible enterprise management solutions and other ICT applications enable companies to overcome some of the coordination problems that arise from companies operating on several geographical markets. Consequently, a major change today compared to some decades ago is that managing an international enterprise with geographically disparate units no longer has to be what Penrose (1955, p. 542), when discussing limits to the growth and size of companies, described as “a matter of efficient operation of virtually independent parts”. This has direct implications for manufacturing companies operating on several geographical markets and therefore has to be further discussed and analysed in connection to efficient and effective service operations.
3 Research Design and Methodology

This chapter deals with the thesis’ fundamental methodological considerations, the research process, and the collection and analysis of data. Validity and reliability aspects are also considered and discussed.

3.1 Methodological Considerations

Although beginning with a tabula rasa, the soft tablet has continuously been written on. Much experience and knowledge has been obtained when achieving my Master's degree in Industrial Engineering and Management from Linköping Institute of Technology. During the last two years as a researcher, I have been influenced by the prevailing research paradigm and traditions of the Marketing Logistics Research Group, which is mainly a systems theory and analytical view as discussed by Arnbor and Bjerke (1994). Thus, I try to apply a mainly systems theory view although I recognise that ideas of both the systems theory and the analytical perspective may be relevant when conducting my research. Assuming that the whole does not equal the sum of its parts (something that can be connected to e.g. Nonaka et al.’s (2000) view on value creation), that the parts depend on the system, and that knowledge is system dependent (Arnbor and Bjerke 1994) are all systems theory postulates germane to the thesis. Furthermore, I have attended a doctoral seminar in service management and marketing at Hanken, the Swedish School of Economics and Business Administration in Helsinki, Finland, which has influenced my theoretical perspective. I believe that achieving complete objectivity is never possible in social sciences although one, in line with critical realism, should strive towards it as the curve strives for the asymptote.

A case study may be defined as “an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between the phenomenon and context are not clearly evident” (Yin 2003, p. 13). Furthermore, a case study research strategy is considered advantageous when the investigator has little or no control over the events and as such, it fits my research agenda. The objective of this thesis is to describe and analyse a contemporary process in a real-life setting and to answer the research questions formulated as:

- How is the service offering extended in terms of more advanced services and increasing service scope, particularly through unbundled and bundled service characteristics?
- What is the customer relationship’s role for the service offering?
How are interfirm and intrafirm service processes and interfaces affected by new services and technological means?

“How” questions are appropriate for case study research whereas “what” questions according to Yin (2003) should be mapped through survey or archival analysis. However, two types of “what” questions exist and one of them is exploratory and therefore justifying rationale for conducting an exploratory study. As such, various research designs can be applied (ibid.) although a case study design is considered pertinent for this thesis.

A multiple-case study can lead to conclusions that are more substantial than a single-case study and different cases may emphasise complementary aspects of a certain phenomenon (Eisenhardt 1989; Yin 2003). However, if one has the same amount of resources when conducting a multiple-case study and a single-case study, a multiple-case study means more breadth but less depth (Dubois and Gadde 2002) and this is something to be aware of. A multiple-case study approach was nevertheless chosen as the research strategy due to the possibilities for several interesting cases that appeared during my research process. Consequently, the choice of case companies was critical (Eisenhardt 1989) as every case must be possible to be justified in accordance with the thesis’ purpose (Yin 2003). In connection to my objective, the service organisations of each case company were chosen as the unit of analysis. Thus, the perspectives given in the cases reflect the views and opinions of central service managers responsible for strategy and business development. To limit the scope further, the emphasis is on the companies European operations as most revenues are generated from these markets and the companies generally have had operations there for a long time compared to other parts of the world. An exception is the Saab Aerosystems case, where the South African customer is also described.

3.2 The Research Process

When accepted as Ph.D. candidate, I was assigned to participate in a specific project together with e.g. my supervisors named IASS, Industrializing After Sales Services, and financed by Vinnova, the Swedish Governmental Agency for Innovation Systems. Eight companies participated in the project, which was divided into three subprojects of which I took part in one, focusing mainly on cost efficient service operations. Thus, it was possible for me to gain synergies, as the four case companies chosen for this thesis (BT Europe, Electrolux Laundry Systems, ITT Flygt, and Saab Aerosystems) were also the companies participating in the particular subproject. Selecting companies participating in the project was considered advantageous due to the regular company contacts and information access from the service managers that chose to participate in it.

Since the companies represented different industries and since their market conditions, service offerings, service organisation structure within the companies and service offering development differed, opting for them was associated with theoretical sampling as discussed by
Eisenhardt (1989). All four companies strive for an increased service offering although they are in different stages of this development due to internal and external factors. BT Europe has been working for a rather long period with service offerings internationally and has been successful with selling rental plans. Saab Aerosystems on the other hand, is a state-of-the-art engineering company and systems integrator, being very dependent on one strong State-owned customer. ITT Flygt is servicing both public and private customers and has a number of solutions agreements although most services are not very complex. Electrolux Laundry Systems is servicing customer segments with very different needs and requirements and the company most dependent on service partners for the service production. Although one may argue that the cases somewhat were decided in advance, there are subsequent choices one can make about people and events to examine (Stake 2000) and I was accordingly not limited to the project participants only. However, I chose to limit the study to encompass central service management’s view at this stage of my research process, which implies that a majority of the interviewees took regular part in the project and that I met a majority of them during project meetings and workshops.

Before participating in discussion forums and conducting interviews, I acquired theoretical knowledge through literature reviews and discussions with supervisors and colleagues to better grasp and problemise the phenomenon, as some pre-understanding is needed in the initial phase of inquiry (Yin 2003). The research process was however not a linear process but rather an iterative process matching theory and reality, were I took advantage of the systemic character of both the empirical world and of the theoretical models. The interview guides (see Appendix 2) were not the same for all interviews because they were partly altered and extended as new lines of thinking emerged during the research process. This must not be regarded as unsystematic behaviour but rather as what Eisenhardt (1989) term ‘controlled opportunism’ where one takes advantages of new ideas in the data collection. Through the project meetings and particularly through follow-up phone calls, I was able to complement my data collection and thus ask questions possibly not asked during the interviews.

The iterative process between theory and empirical data collection is often referred to as abduction and “In studies relying on abduction, the original framework is successively modified, partly as a result of unanticipated empirical findings, but also of theoretical insights gained during the process. This approach creates fruitful cross-fertilization where new combinations are developed through a mixture of established theoretical models and new concepts derived from the confrontation with reality” (Dubois and Gadde 2002, p. 559). This is in line with my research process, which I regard as interplay between deduction and induction. Even if I acquired some pre-understanding before my first interview, my first project meeting took place a week after I started my doctoral work and several project meetings and discussion forums took place before I felt prepared for my first interview.
3.2.1 Data Collection and Analysis

Interviews were conducted in a semi-structured manner with one or two managers from each case company’s central service organisation. Even if senior researchers were present at an interview, asking questions and attending the discussions, I was able to set the agenda through my questions. Discussions were also held with representatives from two or more of the companies at the same time in different discussion forums, project meetings, and workshop (see Table 3.1, or Appendix 3 for an alternative representation). Discussion forums were similar to interviews, as they too were semi-structured but the agenda was set by the two or three researchers, including myself, participating and/or a company representative. The discussion forums preceded the interviews and even if they must not be regarded as focus groups, source of evidence have some similarities with the exploratory approach to qualitative research discussed by Calder (1977), where an attempt is made to generate and identify concepts and terms as a first stage of the research process, orienting to a new theoretical field and generating initial hypotheses.

Table 3.1 Data gathering.

<table>
<thead>
<tr>
<th></th>
<th>BT Europe</th>
<th>ELS</th>
<th>ITT Flygt</th>
<th>Saab Aerosystems</th>
</tr>
</thead>
<tbody>
<tr>
<td># Interviews</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td># Phone interviews</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
</tr>
<tr>
<td># Participations in discussion forums</td>
<td>5</td>
<td>3</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td># Participations in workshops</td>
<td>4</td>
<td>1</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td># Participations in project meetings</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td>7</td>
</tr>
<tr>
<td># Total</td>
<td>13</td>
<td>9</td>
<td>20</td>
<td>20</td>
</tr>
<tr>
<td># Meetings with respondent</td>
<td>(9) Product Manager Service Market (4) European Sales Manager</td>
<td>(7) Vice President Genuine Parts &amp; Services (1) Senior Manager Customer Care (1) Manager Future Care Support Processes</td>
<td>(16) European Product Manager (4) Product Manager Spare Parts</td>
<td>(3) Head of Support Solutions (14) Program Manager Business Development (2) Service Manager (1) R&amp;D Customer and Product Support</td>
</tr>
</tbody>
</table>

Whereas company participants in the discussion forums were from the case companies only, workshops and project meetings involved participants from all three IASS subprojects. The workshops dealt with specific topics related to the project and the agenda was set by the company holding the specific workshop. The workshop about cost efficiency was held at ITT Flygt and unlike the other two workshops; I took some part in the planning. For the project meetings, I had no role in setting the agenda and I had little or no opportunity to take a lead role, which can be both advantageous and disadvantageous (cf. Calder 1977). I did however have the
opportunity to present, discuss, and receive feedback on theories as well as empirical findings related to the thesis on a continuous basis. Initial project meetings served to identify a list of characteristics that were relevant to service managers whereas later meetings mainly treated working methods for service management.

The interviews and discussion forums took between one and a half and three hours, whereas project meetings, discussion forums, and workshops took about five to six hours. I have also held phone interviews, taking between 20 and 80 minutes, with representatives from all companies in order to ask complementary questions and validate the cases. Several other phone calls have also taken place but they are either not considered specifically related to the cases or only a few minutes long. During all data collection activities in Table 3.1, I have been the sole researcher during two interviews only (and during the phone interviews). Throughout all remaining occasions, senior researchers have also attended.

One purpose, and a major advantage, with the workshops and project meetings was the opportunity to present empirical data previously collected, introduce preliminary results, discuss the findings, and receive feedback. Even if the workshops and project meetings were not opportunities for structured or semi-structured interviews, it was possible to discuss and ask specific questions and validate information through e.g. written reports sent to the company representatives beforehand of the meetings and through presentations at the meetings. Because representatives from all companies were present, I also came to a clearer understanding when company managers were exchanging opinions and experiences between themselves. Discussions with and between the different managers were generally very sincere and constructive since most of them were in similar positions within their organisations and none of the businesses they represented were competitors. Hence, it is possible that participants opened up and shared insights that would not have been available from the interviews conducted (cf. Matthyssens and Vandenbempt 1998).

In addition, internal and external written material and company presentations supplemented the empirical data. Some of the internal material has been of particular interest and facilitated the case analysis considerably. Furthermore, attending external presentations and the discussions following complemented the BT Europe case. Since customer co-creation is a fundamental postulation, it would have been of major value to gather primary data from some of the companies’ customers. As the objective nevertheless is focused on the providers, collecting data from these have been a prioritised task.

Analysis of within-case data was made initially, which corresponds to Eisenhardt’s (1989) and Yin’s (2003) idea to firstly become familiar with each case as a separate entity in order to identify case specific patterns before making a cross-case comparison. Data was grouped into similar themes based on the research questions and theoretical framework, and regrouped following the systematic combining process. The Analysis chapter in this thesis, i.e. Chapter 8, contains both
within-case analysis and cross-case analysis although the more descriptive empirical data in the case descriptions in Chapter 4-7 also may be regarded as a form of analysis (cf. Gummesson 2000).

### 3.3 Validity and Reliability

In order to ensure quality of case study research, Yin (2003) suggests four tests that should be used. The tests are presented in Table 3.2 together with suggested case study tactics that may be used during different phases of research in which tactic occur.

*Table 3.2 Case study tactics for four design tests. Original source: COSMOS Corporation, as referred by Yin (2003, p. 34).*

<table>
<thead>
<tr>
<th>Tests</th>
<th>Case Study Tactic</th>
<th>Phase of research in which tactic occurs</th>
</tr>
</thead>
</table>
| Construct validity | - Use multiple sources of evidence  
                          - Establish chain of evidence  
                          - Have key informants review draft case study report | data collection  
                          data collection  
                          composition |
| Internal validity     | - Do pattern-matching  
                          - Do explanation-building  
                          - Address rival explanations  
                          - Use logic models | data analysis  
                          data analysis  
                          data analysis  
                          data analysis |
| External validity     | - Use theory in single-case studies  
                          - Use replication logic in multiple-case studies | research design  
                          research design |
| Reliability           | - Use case study protocol  
                          - Develop case study database | data collection  
                          data collection |

Construct validity is critical for case study research (ibid.) and to achieve better validity, a multiple-case study has been conducted with interviews as well as internal and external secondary material. Throughout all occasions, except two of the interviews, senior researchers have also attended the meetings and I have had the opportunity to discuss with them afterwards. Validation of the cases has been made by one or two representatives from each company in order to avoid errors and misunderstandings. To establish chain of evidence, more empirical data than necessary for the analysis is presented in the thesis. Although the service organisation Conducting interviews with representatives at other levels within the organisations as well, both with employees in the subsidiaries and/or on operational level and top managers would nevertheless have been desirable from a validity point of view.

A potential problem that can be manifested when conducting case studies is phenomena not considered acceptable to study or report for one reason or another and nevertheless of decisive importance for the research process. Such phenomena, which Gummesson (1985) terms taboos have however not been witnessed and I have therefore not been constrained by such aspects in
my writing. The only information that I have been asked to remove from my cases is financial and market figures and competitive strategies whereas my overall interpretation has been approved. A first draft of the case descriptions and a preliminary analysis was sent for validation to the company representatives in May 2005. The complete cases were sent to companies in spring 2006 and I was then able to discuss the cases further and make corrections, thereby increasing the construct validity of the study (Yin 2003).

In a study by Sundin et al. (2005), the three most common departments involved in the development of ‘functional sales’ offerings were found to be product development, marketing and after sales. However, the focus in Sundin et al.’s (2005) study was on remanufacturing and environmental aspects and the unit of analysis being the service organisation is therefore not considered a limitation for this thesis. When discussing service development with the company representatives, the picture given of the situation in the case companies does not seem biased, although interviews would have to be made with representatives from product development and other departments to ensure an even better construct validity.

Internal validity is relevant when making causal claims (Yin 2003), which is not something I am explicitly concerned with. However, I have been looking for patterns between empirical data and the theoretical framework. External validity concerns analytical generalisation and the cases must be regarded as multiple experiments. If two or more cases support the same theory, replication logic may be claimed according to Yin (2003) whereas Eisenhardt (1989) argue that a minimum of four cases must be included in the study. The choice of companies was a deliberate research design parameter to increase the external validity and ensure some form of generalisation (cf. McDermott 1999), i.e. that the findings are applicable on industrial service providers in other industries as well.

A case study protocol was used to increase reliability. All interviews were taped and transcribed, notes were taken during all meetings, and all of this data is filed. Due to the company representatives being very well versed in the service organisation and service market, it is believed that high reliability has been achieved.
4 BT Europe

BT Europe is together with BT Raymond and BT International the three business areas constituting BT Industries Group. All figures in this case refer to BT Europe’s operations if not otherwise specified.

4.1 BT Industries Group

BT Industries Group is a worldwide supplier of electrical powered warehouse trucks, counterbalanced trucks, manual trucks, and material handling services with net sales totalling SKr12.6 billion (€1.39 billion) and orders worth SKr13.3 billion (€1.46 billion) received as in 2004. It markets itself as providing customers with trouble-free material handling operations worldwide.

BT Industries was founded in 1946 under the name Byggekonomi (later Bygg- och Transportekonomi, i.e. BT) and the company started its own production of hand pallet trucks the following year. In the 1950s, electrical powered warehouse trucks were introduced. Together with SJ (the Swedish State Railways); BT developed a standardised load carrier, later known as the EUR pallet, which boosted truck sales. Today, it is the world’s largest manufacturer of warehouse trucks with a 22% market share and it was a Swedish company until acquired by Toyota Industries Corporation of Japan in mid 2000. The BT share was then delisted from the Stockholm Stock Exchange, where it was introduced in 1995.

Almost 8,400 employees work for BT Industries around the globe, of which 43% are within the service organisation, 32% work in manufacturing and product development related activities, 14% with sales, and the remaining 11% are involved in other activities. Accordingly, more than 3,500 employees work in the service market, whereof a majority are field service technicians working in Europe. Service coverage in North America is accomplished through a dealer network.

Headquarters are in Mjölby, Sweden, where most of the manufacturing also takes place. Approximately 140,000 units of manual trucks and 42,000 warehouse trucks are produced annually in Mjölby. Other manufacturing units are located in Canada, Italy and the USA. Toyota trucks are also produced at BT’s entities and 10-15% of all trucks manufactured in Mjölby currently hold the Toyota brand. The BT Industries Group is divided into three business areas, mainly based on geography. The business areas and their net sales are shown in Table 4.1. However, these figures are from 2004 and BT Europe nowadays includes Central and Eastern European countries as well.
Table 4.1 BT Industries as in 2004.

<table>
<thead>
<tr>
<th>Business areas</th>
<th>Markets</th>
<th>Share of Group’s net sales</th>
<th>Net sales</th>
<th>Net income</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT Europe</td>
<td>Western Europe</td>
<td>56%</td>
<td>SKr 7,061m</td>
<td>SKr 525m</td>
</tr>
<tr>
<td>BT Raymond</td>
<td>North America</td>
<td>34%</td>
<td>SKr 4,247m</td>
<td>SKr 303m</td>
</tr>
<tr>
<td>BT International</td>
<td>Other markets</td>
<td>10%</td>
<td>SKr 1,338m</td>
<td>SKr 57m</td>
</tr>
</tbody>
</table>

The Group comprises five brands that constitute different product ranges and cover different geographical markets (see Table 4.2).

Table 4.2 BT Industries’ product brands and markets.

<table>
<thead>
<tr>
<th>Brand</th>
<th>Products</th>
<th>Main market</th>
</tr>
</thead>
<tbody>
<tr>
<td>BT</td>
<td>Complete range of warehouse trucks</td>
<td>Europe, Asia, South America, Oceania, and Africa</td>
</tr>
<tr>
<td></td>
<td>Wide range of counterbalanced trucks</td>
<td></td>
</tr>
<tr>
<td>Raymond</td>
<td>Complete range of warehouse trucks</td>
<td>North America</td>
</tr>
<tr>
<td></td>
<td>Wide range of counterbalanced trucks</td>
<td></td>
</tr>
<tr>
<td>Lift-Rite</td>
<td>Manual trucks</td>
<td>North America and parts of Europe</td>
</tr>
<tr>
<td>CESAB</td>
<td>Primarily counterbalanced trucks, mostly electric powered</td>
<td>Europe</td>
</tr>
<tr>
<td></td>
<td>powered though also diesel- and LPG-powered</td>
<td></td>
</tr>
<tr>
<td>Prime-Mover</td>
<td>Warehouse trucks</td>
<td>North America</td>
</tr>
</tbody>
</table>

4.1.1 Toyota Material Handling Group

Despite singular ownership since 2000, Toyota Material Handling Company (TMHC) and BT Industries Group had autonomous operations and no joint management structure until July 2005 when Toyota moved to formally integrate the two companies by creating one single global organisation; Toyota Material Handling Group (TMHG).

The creation of this new organisation is part of Toyota’s strategy to become “undisputed No. 1” (Toyota Annual report 2005) in the global lift truck market by capitalising on synergy potentials in supplying each other’s brand products, sharing sales and manufacturing know-how, exchange personnel, and jointly procuring goods. The integration will be a stepwise process and the two entities will continue to use multiple distribution channels.

TMHG net sales were $4.3 billion in 2004 and with 170,000 industrial warehouse and counterbalanced trucks shipped annually from its eleven manufacturing units, the Group holds approximately one quarter of the world market for industrial trucks. It has approximately 13,000 employees and the primary objectives are:
• We shall reinforce our position as the global market leader
• Our goal is to have one third of the global industrial truck market
• Our products and services shall have the highest quality in the industry
• We shall have the highest profitability in the industry (BT Industries presentation 2005-10-26).

4.1.2 BT Svenska
BT Svenska is the Swedish sales and service company and part of BT Europe, offering not only BT and Toyota trucks, but also the DanTruck, SMW, and MAFI brands. Additional brands are available in the rental fleet. Of the approximately 500 employees, 330 are service technicians in the nation-wide service organisation with 260 mobile service units. Second-hand trucks are available through TruckHuset in Mjölby.

There has been a lot of discussion in BT Svenska between the service and the sales organisation about where to draw the line between sales and after sales. When trucks are delivered in parts to the customer and have to be assembled on site, salespeople consider it a service market activity whereas the service organisation regards it as a sale-related activity and that the service organisation takes over when the trucks are up and running.

4.2 The Industrial Services Process
The two main objectives for BT Europe are to have a well-utilised service organisation and long-term relationships with customers. The sales process is the same regardless of whether it regard for a traditional SLA or a rental plan, even if other employees might be involved and there can be side issues (e.g. driver training has to be planned in the business system and the time settled with the customer). The larger sales companies usually have well-defined, formalised processes, whereas smaller sales companies possibly have more ad hoc character processes. In the Baltic States and Russia, the organisation is still in its infancy and processes identical to the ones in Sweden would not yet be operational. Since many customers are international, key account deals are supposed to be managed in the same way in all countries. This is in line with the trend towards increased centralised service management and central agreements.

4.2.1 A European Background
BT Europe has approximately 4,800 employees, of whom 2,300 are technicians involved in service and maintenance. Thus, the service organisation employs more personnel than the manufacturing units. Sales are managed mainly through 25 wholly owned sales and service companies that are responsible for the business area’s operations on the local markets in terms of marketing, sales and industrial services. BT Industries began to build its own international sales and service organisation in the 1960s through an acquisition in the UK and the establishment of subsidiaries in Denmark, Germany, and Belgium. BT Europe’s service market organisation is also responsible for the Parts and Service development of BT Industries.
Until recently, BT Europe comprised twelve Western Europe sales companies only but Central and Eastern European subsidiaries have been formally transferred from BT International to BT Europe. Net sales in 2004 were approximately SKr8 billion in the Western European sales and service companies, exclusive of distributors and Raymond trucks, and market shares are increasing in general. In 2004, about 5,000 service jobs were performed per day in Western Europe by the almost 2,000 service technicians. Central and Eastern European companies in total only had approximately 550 employees of which 220 were service technicians.

4.2.2 Internal Organisation
The BT Europe service market organisation is responsible for the company’s service and spare parts development. Among the organisation’s goals and vision are to further develop the service market as part of the core business, strengthen the BT brand and support sales of new trucks, and establish the view on service as “sales between sales”. Furthermore, the service market should generate and support overall profit, improve service efficiency (“make life easy for our service engineers”), and BT Europe should be regarded as the best service provider by having 100% coverage of the active fleet, ensure truck availability, and help take costs out of customers’ operation.

Other tasks are to increase service operation efficiency and quality, intensify business development and improve the sales and profitability focus, and secure and develop service and spare parts support as well as training. At the production start of a new truck line, the parts catalogue, spare parts in the business system Movex, and service information including operators’ manual should be 100% on time. It is also important to establish a common support structure. The service company’s target rate for on-time preventive maintenance is 85%.

Another important issue for BT Europe is to introduce SLAs earlier in the sales process than today. However, it is difficult to make salespeople not only sell products but also services. Instead of emphasising the physical components’ technical specification, the seller should highlight possible solutions to customer needs that include both goods and services, e.g. a logistics function. BT Europe tries to engage with key account managers that are good at selling services and have developed a template for long-term rental selling. In key account deals, much focus is nevertheless on the products during the negotiation and contracting phase whereas services are seen as the remnant. Because the employees’ main motivating force often is to land a new deal with a customer, there is a risk that BT Europe loses potential revenues and business in such situations.

Internally, there are many contending wills with local BT perspective in the subsidiaries. BT Europe is working actively to increase the control of its national subsidiaries of which especially the sales companies on major markets have gained considerable independence and still have a strong position in relation to BT Europe. An example of this is the fact that almost every sales company still has its own warehouse, although it will change in the long term. In order to increase the awareness of services and better coordinate activities, a service market organisation working with business development and with service managers from the sales and service
companies meeting annually has been built up centrally. This has increased the internal focus on the service market; previously there was only an organisation for technical support, but no real commitment towards services. Top management steering from the central organisation is however to some degree necessary in order to accomplish such changes and successful, progressing subsidiaries can serve as references when initiating change processes.

When contracts are signed centrally with customers, truck sales become less important for local companies as much of the sales is managed and coordinated centrally whereas the service market thus becomes more important. An example of centralised contracts is the global agreement with IKEA, where the idea was to manage as much as possible centrally. Both parties however soon realised that it was not only a matter of delivering the trucks, but that customer support was needed in connection to IKEA sites.

The central organisation is striving to standardise such things as marketing material, service cars, prints on cloths etc. but there is often considerable resistance locally. In this aspect, the new EU countries are more open to new ideas than the older ones. A fact that makes it more difficult to streamline local processes is that different sales companies often have different service production processes. Local bonus and incentives systems can also be problematic. An example of a sales company working partly differently than the other European companies is the Spanish subsidiary that plans to employ personnel only selling services. In Spain, BT Europe has different depots and work with dealers responsible for service sales. The new sales service employees, possibly one per region will also sell services and it remains to be seen whether it will be a fulltime occupation.

BT Svenska has a matrix organisation with three business area managers: North, South, and Service Products. The North and South managers are responsible for delivering products to the market, i.e. both goods and services, and the Service Products manager is responsible for service offerings being developed; price, terms of delivery, driver training etc. Thus, the sales organisation started to sell services too as the organisation created one sales process for both products and services. Previously, BT Svenska had two separate sales pipes, one service manager, and one sales manager. This change was executed two years ago and it is not yet fully working. So far, BT Svenska is the only BT Europe subsidiary working in a matrix organisation and it has resulted in 40 white-collar employees being made redundant. The fact that BT Svenska is close to the central organisation might have facilitated the organisational change; people involved believe it would have been more difficult in other sales companies.

**Product Sellers**

BT Svenska started to map sales and service processes some years ago and to change the reasoning among personnel; although tender data and checklists differ, one should view the sales process as one process regardless of whether it is a truck, repair, or driver training. Subsequently, the subsidiary tried to include industrial services at the product sales moment. Organisationally, it would be advantageous for the personnel utilisation to have the same personnel working with product and service sales. In addition, customers prefer few contact interfaces to many. Efforts at
having salespeople selling products also selling services have however not been very successful in Sweden. A possible disadvantage is lack of specific knowledge; salespeople have knowledge about the products but are unfamiliar with the services. Besides, many salespeople like to sell products and have little incentive and interest to learn and sell the company’s service offerings. Therefore, local managers have encouraged salespeople to receive assistance from service employees and bring them on customer visits to ensure that one does not have one meeting where products are sold and an additional one where service is discussed. Although it might not be possible to substitute service personnel fully, better service sales training and marketing material might facilitate for salespeople. Additionally, there could be a criterion for when to bring, or not to bring, a service employee to the customer meeting.

In the service organisation, there is a sales logbook where salespeople write down sales activities, both successful and unsuccessful ones. A recent directive is that salespeople must log the reason why every unsuccessful business transaction failed. Although this is being done, the analysis of this information is lacking. There are also cases when price is stated as the reason why the business failed but the fact is that the salespeople suggested an offering with elements the customer did not need (and therefore did not value) and that the price thereby exceeded what the customer was willing to pay. Consequently, price was not the actual reason. Price is however sometimes used as an excuse when business is lost and it can make it more difficult to analyse the actual reasons.

Salespeople receive commission when selling products but not when selling single services or bundled ones such as e.g. maintenance contracts. In the past, sellers often knocked services and/or spare parts off the price when signing central agreements. As a direct response, a sales manager position came about in order to look after these central agreements and ensure that customers were not able to haggle over the contracts’ service part.

What is essential is to act proactively and be present at the customer’s site when a new potential business is at hand. In addition, there are occasions when service sales would benefit from having a service expert in the local sales organisation, handling some of the customer relationships. Salespeople have knowledge about BT Europe’s trucks but less so about industrial services. Whereas marketing new trucks is straightforward, marketing services, e.g. by demonstrating the mobile order system that service technicians use, is less obvious.

Service Technicians
An idea originally from BT UK but adapted by BT Svenska is to divide service technicians into “ordinary” technicians and rental technicians. This change was made due to profitability considerations. Previously, profitability did not differ considerably between internal work and operation and fieldwork as technicians were working with both types of work. Internal work refers to internal invoicing, e.g. services within the scope of rental contracts, operation work is managing existing service contracts where the customers own the trucks, and fieldwork refers to the work field technicians do for non-contract customers.
By separating internal and external customers in this way, BT Svenska managed to increase service technician productivity. Swedish service technicians receive commission on performed work but for rental contracts, service hours cost the company money instead of generating direct revenues. The rationale for rental technicians is to reduce costs whereas technicians working externally strive to sell services, including spare parts. Thus, separating technicians into these two categories made it less attractive for rental technicians to be wasteful with their time because it directly affected their commission.

This is an example of where different sales companies learn from each other and reutilise successful methods and one central service manager is looking into a possible, harmonised incentive system for all of BT Europe. Today, only Denmark, Germany, Sweden, and the UK have incentive systems for service technicians.

4.2.3 Key Performance Indicators
BT Europe measures service efficiency, both front- and back-office operations. A general Key Performance Indicator (KPI) is direct / indirect service personnel, which target rate is 4.5. In order to calculate this KPI, one has to define the employees’ function, i.e. what they are working with, and not whether they e.g. are white or blue collar.

Another KPI is promised preventive maintenance compared with the actual number. The total number of available service technician hours is also examined, how many of these that are debited, and the division between internally and externally debited hours. Gross margin per service hour is measured and compared between countries and workshops. Profitability per SLA and rental plan is also measured, as well as number of SLAs compared to trucks sold. The objective is to sell an SLA in connection to all truck sales and even though it is not the case today, there is a striking difference compared to some years ago in e.g. Sweden. BT Europe measures financial KPIs differently from competitors, which sometimes makes it difficult to compare.

Furthermore, BT Europe is examining the wheels on some trucks and the number of times that personnel replace wheels in order to estimate the pirate share, although this estimation is easier said than done. The trucks examined are up to five years old, so BT has little knowledge of whether older trucks are still in use or not.

4.2.4 Customers
Customers can be found in many businesses even though most large customers are retailers. Since 2004, BT Europe is segmenting customers according to business: automotive industry, food industry, paper industry, etc. Rental plans are more common among major customers than smaller ones; a customer with one counterbalanced truck only wants to own it. Although large customers are attractive in terms of e.g. capacity utilisation and giving response on market share, price formation is often low on most central agreements. Therefore, many small, locally signed agreements are generally more profitable for BT Europe.
Food industry customers Coop and ICA Ahold have long-term rental plans whereas Swedish paper mills prefer to own the trucks and sign SLAs with BT Svenska instead. In the automotive industry, Volvo has its own service organisation while BT Svenska takes care of Saab Automobile’s truck service through Saab Comao, one of Saab’s subsidiaries. It is mostly larger manufacturing customers like Volvo that do service under own management. Initially, Saab had a Full service SLA but in October 2003, BT Svenska bought Saab Automobile’s fleet of 600 trucks in the manufacturing units in Trollhättan and Nyköping, Sweden, in a payback rental plan. By letting Saab rent the trucks, BT Svenska promised to reduce the fleet by x% annually until year y. Together with Saab, BT Svenska mapped how the original fleet was being used on a daily basis and thereafter adapted it to the customer’s needs. Less than two years into the project, the original fleet of 600 trucks was diminished by 15 percent.

There is a clear trend towards more extensive, central agreements with international customers and not all competitors can offer this. BT Europe managed to sign an agreement with IKEA worldwide on both truck sales and services. Every IKEA store has a BT catalogue with standardised trucks that they can pick from but if a store wants a more customised truck it first has to contact the IKEA headquarters in Sweden. However, one must also remember that many customers also focus on products only, although awareness of services is increasing. It is often a major cultural step to take for the customer when going from product to an extensive service offering/solution. As a rule, a well-managed relationship with the customer is a condition for extensive offerings.

Even if large customers have central agreements on service, it can still occur that customers locally buy services from local service providers instead of contacting the local BT Europe organisation. For BT Europe it is difficult to ensure that a customer locally complies with the central agreement. There are examples of some Do-It-Yourself (DIY) stores that bought services locally and that ignored BT Svenska when their personnel called attention to the fact that the store was not acting in accordance with the central service agreement. The problem was that the customer signing the central agreement did not inform its local organisation about the deal and in this case, BT Svenska had to go further up in the customer’s organisation in order to inform the management.

BT Svenska has had a request for quotation from the Swedish Defence Force regarding truck fleet management. The problem in this case is that access to information is very poor and operations are inefficient, as the military has not focused on materials handling.

Reference Customers
Reference customers depend on what project BT Europe is carrying out and the requirements it has. In a recent project about communication between trucks, BT Europe chose customer depending on what truck fleet the customer had. What always is important regardless of project is that BT Europe has a working relationship with the customer and trust is therefore essential. When comparing BT Europe’s products with competitors' products it can however be difficult to find a long-term BT Europe customer that at the same time has relatively new products from one
or more competitors. These customers are not easy to find, especially not in Sweden, and relationships with reference customers are thus sometimes less developed.

It is often better to have a relatively narrow focus in the project, otherwise there is a risk that not all requirements can be met and that the project therefore never begins. After identifying a suitable customer site, pilot projects are run in order to receive opinions and feedback. Usually, there are no fixed timetables; instead, projects are scheduled rather unbiased. Before the project is initiated at the customer site, the preliminary study is nevertheless thorough, including e.g. payoff calculation and often both involving customer and end-customer. Customers give their opinion regarding the service and potential willingness of payment. Sales companies, key account managers, and sales personnel also give their verdict on the service, although salespeople often believe that there is limited opportunity to charge for it.

4.3 The Offering

Many years ago, BT Europe had systems selling but it involved major losses, so the company withdrew. At that time, the organisation was not ready for such a major undertaking that required significant coordination with the service organisations. Since then, the situation has changed and BT Europe has incrementally increased its number of not only single services, but also extensive offerings sold. BT Europe does not want to be regarded as a truck manufacturer, something expressed as an espoused strategy by their vice president for marketing, Hans van Leewen: “Our business is not just about trucks. We are today essentially a service organisation … it is the total service offer that is the key thing” (Industrial Plant & Equipment, November 2005).

Around 2000, industrial services were seen indiscriminately at BT Svenska and many cost drivers were unclear. Since then, the sales company has divided services into preventive maintenance, corrective maintenance, spare parts sold by technician, etc. Some cost centres turned out to be profitable whereas others were not; BT Svenska was e.g. making substantial losses on Full service agreements. Thus, this measure enabled the company to improve its profitability considerably by having better cost control.

When international service and maintenance agreements are signed, it can be a dilemma that different countries have different salary costs, different distances to customers, and different size of service organisation. Therefore, BT Europe uses country-specific factors when making quotations and having talks with potential customers.

4.3.1 Service Level Agreements

BT Europe has three levels of service packages (SLAs) that it offers its customers:

- Safety inspection; including chain inspection, fork test, and safety function test
- Preventive maintenance; safety inspection, lubrication, and adjustments
- Full service (similar to Rental); preventive maintenance, repairs, spare parts, and emergency breakdown response.
Two other services are Resident engineer, a BT technician working fulltime on a customer site, and Night care, which is service support outside regular office hours. If a customer signs a Fleet Management contract, BT Europe makes a systematic analysis of the customer's fleet, examining e.g. damages, and discussing with the customer what the focus areas should be (uptime, driver training, etc.). Workshop repairs mean that a network of workshops performs jobs not possible to do on site.

In the twelve Western European countries, all services are offered even if they are not always standardised. In the whole of BT Europe, not all 25 sales companies have yet the three mandatory SLA levels. Services may differ between countries due to country-specific laws and regulations on e.g. safety inspection. Many services are adjusted locally, e.g. Full service exclusive of fork test, but international key account contracts imply standardised services and the increasing number of such contracts raise the requirements of standardisation. An international customer like IKEA should be able to recognise that service technicians have the same skills regardless of country. While key account contracts are becoming increasingly similar regardless of the customer's country/countries, smaller customers are more difficult to generalise as they differ in term of background, country, industry etc.

In a five-year contract, about 50% of the customer's costs are directly related to the truck investment and 50% are service-related costs. During a truck lifecycle, services, including spare parts, constitute a majority of the costs. About 95% of repairs take place on customer site, which requires customers to have e.g. an overhead crane to facilitate for the service technician, and the remaining repairs are made through BT Europe's network of workshops. Today, service technicians are able to invoice about 82-85% of their time but the aim is to increase the percentage.

4.3.2 Rental Plans

Rental plans were originally developed due to requests from a few, large customers in Sweden. These offerings have gradually increased, both in terms of number of different offerings and in terms of service market share since first offered in the 1980s. Both long-term and short-term rental markets have grown and BT Europe has doubled the turnover between 1999 and 2004. As of 2004, there are more than 75,000 trucks in long-term rental plans around Europe. In the first three quarters of 2004, approximately 40% of all new trucks delivered in Europe were part of a long-term rental agreement.

The share is higher in Northern Europe except Germany and in France whereas it is lower in Southern and Eastern Europe. In countries such as Germany, Italy, and Spain, customers generally prefer to own their truck fleet. In these markets, it is therefore also more common to have two sales occasions; instead of the salesman selling a rental plan, the salesman sells trucks and the service technician sells related services. Outside Europe, there is often resistance towards rental plans and even if large customers centrally consider rental advantageous, there can be opposition locally. In non-EU countries where BT trucks are sold through external dealers, it is also more difficult to sell rental plans.
If signing a rental plan, customers lease a material handling solution with trucks, financing, maintenance, spare parts, and driver training, thereby having a stipulated cost for the material handling activities. Another selling point is that customers will know costs in advance and reduce material handling’s capital formation when capital tied up in trucks is eliminated. The rental plan can be complemented with additional rental services, supplementing the core fleet with back-up trucks when requirements change or during peak seasons. The risk of ownership and disposal and environmental issues are additional aspects highlighted by BT Europe. Previously, the company has had specific rental trucks that had slightly higher manufacturing cost but lower maintenance cost than ordinary trucks. Today, there is however no difference between different trucks.

When selling products, revenues are instantly generated whereas revenues are received continuously during the rental agreement period. Rental trucks are owned and administrated by BT Europe and not by a finance company. The truck fleet is considered too large to reinsure and the company therefore takes the risk itself. If considerable loss is made locally on rental plans, the employees’ bonus will decrease. Profitability can be measured per service employee and if a technician is not looking after trucks and they therefore break down, this will increase BT Europe’s rental cost and thus reduce profitability. Some people in the service organisation advocate individual bonus for rental plans whereas others are supporters of a group-based bonus system. In BT Svenska, discussions have been held about whether or not to have a group-based bonus system and managers doubt that there will be one consistent system across subsidiaries. Because repair decisions are often made without lifecycle costs in mind, BT Svenska has developed procedures on how to act when a truck breaks down. The remaining length of the rental plan is an example of a parameter that has an effect on whether or not to repair.

If a customer signs a rental plan, BT Europe also serves possible competitors’ trucks in the customer’s fleet, although the objective is to phase out these trucks. In some of the cases when the company is taking over mainly competitor trucks, the customer might have local agreements and be dependent on interchangeable parts providers for the spare parts supply. In these cases, BT Europe prefers that the sales companies procure genuine spare parts from competitors rather than pirate parts. It is however not always possible, because it can be difficult to obtain correct parts information. Thus, BT Europe has a dilemma, as it has to use other sources of information than the internal organisation. A related issue is what measures to take in case of a guarantee-undertaking if parts come from a pirate, and how to show customers that pirate parts will be more expensive from a lifecycle perspective.

When taking over Saab Automobile’s truck fleet, many of the trucks were competitor brands and BT Svenska was therefore working actively on replacing them. This was something that was made clear to the customer before the agreement was signed. Initially, the takeover was a loss, with high service costs and poor spare parts agreements. In one or a few years time though, these agreements most often become profitable. At one site, BT Europe had major problems with the competitor trucks it took over. The trucks did not work and lamps on them were twinkling, and the company therefore had to use the competitor’s service technicians during this period.
However, agreements were signed with competitors beforehand to have a reasonable price for the services in order to keep third-party service providers away.

Customers’ interest in and willingness to sign rental agreements is related to customer relationship longevity. It might take many years for a customer to sign a rental agreement but once they sign they generally continue to sign. BT Europe deliberately works to have more long-term customer relationships and to increase the rental share. Some years into a rental agreement, it is often negotiated again and on these occasions, competitors’ offerings are considered too. Even if most customers resign agreements, long-term relationships are no guarantee for this because the customer might be dissatisfied with the situation, feeling that the agreement lacks transparency. In addition, new management at the customer can mean a discontinuity in the relationship and inadequate communication between the actors.

BT Europe offers five different rental plans: Core fleet rental, Flexible fleet rental, Payback rental, Short-term rental, and Standby rental. Support from the company with specified response time is included in all rental plans whereas other elements may differ. The Core fleet rental plan is designed to match the predictable element of the customers’ capacity and it can be combined with other rental plans to cover current and future needs. The following specifications apply to the rental plan:

- No deposit required
- Predictable monthly charges including routine service, parts and breakdown costs, with no hidden exclusions
- The ability to change or upgrade equipment as customer requirements change. There may be a cost involved but these revised costs can be spread over the lifecycle of the replacement equipment
- The option of including a truck driver as part of the rental agreement
- Guaranteed performance levels with a money-back commitment
- Trucks can be tailored to suit your precise requirements
- Core-fleet rental trucks can normally be held off balance sheet.

The Flexible rental plan offers a shorter-term plan to supply less predictable elements of the customers’ capacity. It is based on pre-used machines from BT Europe’s rental fleet and the plan can be combined with Core fleet and Short-term rental. Compared with Core fleet rental, the Flexible rental plan allows the customer to hand in the trucks earlier as the agreement period is shorter. The following specifications apply to the rental plan:

- No deposit required
- Predictable monthly charges including routine service, parts and breakdown costs, with no hidden exclusions
• The ability to change or upgrade equipment without additional cost, subject to three months’ notice
• The ability to return equipment if it is no longer required without additional cost, subject to three months’ notice
• The option of including a truck driver as part of the rental agreement
• Guaranteed performance levels with a money-back commitment
• Applies to standard specification equipment only.

Payback rental implies that BT Europe takes over the customers’ existing fleet regardless of whether it contains BT or competitor trucks. The following specifications apply to the Payback rental plan:

• The customer receives a lump sum for the existing fleet
• Agreement period according to fleet age and profile
• Predictable monthly charges including routine service, parts and breakdown costs, with no hidden exclusions
• The ability to change or upgrade equipment as required (there may be a cost involved but these revised costs can be spread over the remaining period of the rental plan)
• Guaranteed performance levels with a money-back commitment
• Applies to all types of equipment, which means that the customer can take advantage of a Payback rental plan even if he/she is not yet a BT truck user.

Short-term rental provides peak time backup to supplement customers’ core fleet capacity and include the following specifications:

• The customer can rent a truck for any period – from as little as a single day
• A rapid response to ensure that customers’ operations keep running
• Guaranteed performance levels with a money-back commitment
• Full range of equipment specifications available: over 5,000 machines, including counterbalance trucks
• Wide range of equipment available.

The Standby rental plan is an alternative way to ensure peak time backup as trucks remain on the site but the customer only pays for the use of the trucks. It can be combined with other rental plans as part of a total rental package and include the following specifications:

• Use and pay by the hour (subject to a small standing charge)
• The ability to change the specification of the standby fleet as required
• Guaranteed performance levels with a money-back commitment
• Full range of equipment specifications available

Within the service organisation, there are ideas about whether there should be additional rental plans, e.g. one plan with leasing only and another one with complete report system that could serve as potential customer lock-in.

The product lifecycle for trucks initially belonging to BT Europe’s rental fleet is illustrated in Figure 4.1. After being in short-term rental contracts, used trucks sold usually end up at medium-size companies before being further sold to small-scale companies.

![Figure 4.1 Rental truck lifecycle.](image)

However, receiving new trucks is not primary since rental customers pay for uptime and not for buying the product as such. It is possible for BT Europe to offer used trucks with lower capital cost, inferior to new product lines, instead of new ones as long as it is a BT truck.

Customers generally compare prices between different rental offerings but seldom compare them in detail, which has led the company to take away parts of some agreements since they included more elements than competitors’ corresponding offerings. One example is when BT Svenska removed driving wheels, worth SKr1 million annually, from a rental plan because it was only included in the company’s rental plan and not in the competitors’. The customer concerned did not react and BT Svenska is now considering whether to offer the rental plan in two versions, one basic and one complete. Driving wheels are now optional and there are customers requesting all options. BT Europe’s service organisation has begun to examine the possibility of standardised rental plans across all European markets. Today, a central agreement e.g. implies that a certain version of a rental plan might not exist in one of the countries referred to and that the subsidiary concerned has to create this rental plan and develop additional routines required.

### 4.3.3 Availability/Uptime Agreements

There is an increasing demand among both Swedish and other European customers for different kinds of uptime agreements where truck availability is quantified. In the truck industry, defining and measuring availability can be problematic; when is the truck available, when is it charged,
when is it fully operational, etc. An example of this is if some feature is not working on the truck and, in that case, what degree of availability to attribute.

When uptime agreements aiming at process or equipment optimisation are signed and penalty clauses included, it is crucial to have clear definitions of availability. If the customer informs the company that the process is not working optimally, both parties have to be able to agree upon what the level of availability is. Previously, BT Europe has leased trucks and received fixed, monthly payments but more and more customers want to sign contracts where the payment is connected to their industrial output.

At some mills in Sweden, BT Svenska has agreements where payment is directly connected to the cubic metres of timber produced. A rail customer has special trucks that go on the railroad cars and if the trucks are down, the customer cannot load the cars and consequently the train cannot move. A dairy customer wants to rent equipment but pay in relation to the number of litres of milk produced, i.e. indirectly how much the truck fleet is utilised. Thus, BT Svenska previously has had fixed monthly revenues from these customers through rental plans whereas revenues now are dependent on the customers’ production output. This calls for increased customer knowledge; a customer in financial difficulty is likely to be far less attractive and associated with a much higher risk than a profitable, growing customer is.

4.3.4 Profitability Aspects

Year after year, the service market has increased steadily as a contributor not only to BT Europe’s total revenues but also as per cent of the total consolidated contribution. In 2004, the service market share was 48.2%, which can be compared with a 2000 share of 42.4%. When customers are choosing between different service agreements and rental plans, BT Europe helps to compile a basis for calculation. Salespeople can spend days analysing customers’ operation before giving a quotation and this analysis is not something the company is retroactively paid for.

Rental plans are more profitable than Full service and other SLAs, partly because when customers haggle on SLAs, they haggle directly on services. For rental plans, services are bundled together with the trucks and salespeople have no right to reduce the price of the service element specifically. On the other hand, if a service technician does not complete the number of weekly working hours, it is more difficult for him to fill in and send an invoice for an hour or two to a customer than to invoice it internally on a rental plan. This conduct makes external agreements (i.e. SLAs) sometimes look more profitable than rental plans even if it is not the case.

An example dealing with different aspects of service production in service agreements is a discussion held at BT Svenska regarding contactors. Service technicians replacing a sheet metal shield consider themselves doing a good job in spite of the fact that it would be better for both the company and the customer to change the complete contactor and avoid further turnouts in the future. In manufacturing, the same principle would be not to focus on manufacturing costs but rather on the lifecycle cost. This new logic is being communicated towards service organisations as well as manufacturing units but a lot of work remains. For instance, there are 330 service technicians in Sweden only, making it difficult to effectively disseminate information.
In countries with sparsely populated areas, like northern Sweden, a service technician arriving at a customer’s site often does more activities than a technician elsewhere does where the cost of travelling is lower. In Sweden there are ten technicians working with cooling equipment, i.e. air-conditioning, and doing work on customers’ lorries and consider repairing customers’ private cars too. If BT Europe can only utilise a service technician e.g. 50% of his time at a customer’s site, a question is whether it is better if the technician would e.g. drive a truck or nail cases during the remaining time or if this is outside the job description. Thus, where to draw the line about how much more service personnel should do, what they should do, and decide on what activities that can be regarded as relevant and high-quality work are issues being discussed internally.

Some years ago, BT Svenska declined an offer from an international low-price food retailer for a Full service SLA of the retailer’s Swedish operations because the margins were insufficient. The competitor that accepted the offer has to construe a very rigid agreement and charge for every hour not explicitly included in the agreement in order to make a profit. In addition, the competitor uses what it calls “customer damage” for damages caused by the customer and not covered in the agreement. By applying this on e.g. knocked about sheet metal, the customer has to pay for things that otherwise might have been covered by the agreement, if the customer would not have focused strictly on downward pressure on SLA price. The BT Svenska manager responsible preferred however to refuse the offer instead of taking it and then take every opportunity to take advantage of all elements not included in the agreement.

4.3.5 Transparent Agreements
An increasing number of customers want increased transparency into BT Europe’s pricing and ask for open books so they can scrutinise every element of the agreement, something BT Europe generally refuses. The company gives customers a price on services that they can get a discount on, not the cost of providing the services. Some customers want one quotation on Core fleet rental, one on Full service SLA, one on trucks only, etc. so that they can compare which offer is the most favourable one. Usually, BT Europe examines the customer’s site and suggests an offering but if customers want various different quotations, it burdens the personnel working with quotations and the result becomes partially like open books.

In 2004, some major Swedish customers who do service under own management requested not only product prices but also a list of spare parts and consumer goods on which they wanted a total sum. Rental customers too are demanding more transparency; previously most customers have accepted one figure for the goods part, one figure for spare parts, etc. whereas many customers want detailed information on all different cost items, e.g. what a driving-wheel costs, and service and maintenance data per truck. There are also cases when customers want to dictate what spare parts margin BT Europe should have, something e.g. one service manager in BT Svenska refuses to consent to. Some large customers negotiate jointly in order get a more favourable agreement and save money and several customers want bonus, i.e. money back, if they buy products and/or services for more than a certain amount.
4.3.6 Other Services

Many of the rental plans are BT Europe’s own ideas whereas much of new agreement concepts and ideas are initiated by customers. When customers are suggesting new ideas and concepts, the company is not always interested in examining possible revenue generating opportunities and act rather sceptical instead. Service managers also consider it more difficult to achieve local monopolies and to come up with new ideas in the service market. On the large agreements BT Europe has, there is a clear cost pressure and BT Svenska has initiated “Service and Future”, a project aiming at improved cost efficiency through an analysis of service processes and offerings and by identifying opportunities and improvement potential.

BT Europe offers not only basic unbundled services but also consultation services regarding materials handling and warehouse management implementation and optimisation. This service can however be further developed and measure single truck units by reading off truck performance data. The company emphasises that regardless of how ergonomic the truck is, what performance it has, and how well-planned the driver training is, someone who does not have the necessary qualities of driving a truck will never become a good driver. Therefore, a method of selecting truck drivers, based on five psychological tests, is offered. The service is PC-based and meant to be a complement to traditional recruitment.

From the turn of the year 2004/2005, BT Europe runs its driver training services through a franchising model. The objective is to strengthen the service and become more competitive. Local decision-making processes are believed to shorten for customers as the franchisees usually have a local connection and experience of being contacts for customers. The franchisees are responsible for all running customer contacts, administration, and driver training in the geographically specified franchising area. The franchisees in turn engage subcontractors, of which many previously have worked directly with BT Europe. Nevertheless; the service is developed and marketed as an integrated part of the company’s offering. BT Europe still has the proprietor responsibility, including service development, training material, central marketing, and to ensure that the training lives up to the quality standards set.

Another service offered is an exchange system for wheels that are compatible with most trucks on the market. BT Svenska delivers wheels from tire manufacturers Bergougnan and Trelleborg already mounted on a rim. The customer then sends the used wheel back to BT Svenska that recycles it and gives the customer a credit entry for the used rim.

4.3.7 Spare Parts Handling

There is a central warehouse in Mjölby, Sweden, for the BT brand and local warehouses at the European markets except for Denmark and Norway that also use the central warehouse. The central warehouse for the Raymond brand is located in Syracuse, New York. Service level for BT Industries’ warehouses is measured on complete orders to customer and the aim is to have 90% order fulfilment. The supply of A, B, C, and D articles is based on inventory turnover rate whereas articles classified as I are critical and must be available. The company targets at
generating SKr100 million more contribution during 2004-2006 from spare parts. The majority of spare parts are sold through the own service organisation and not over the counter.

Regarding the development of spare parts handling, the supply chain has developed organically over the years. Strong service-market sales have led to a sharp increase in spare parts volumes and assortment handled. This has in turn resulted in a number of logistical problems and challenges. First, it has made it more difficult to maintain a good delivery capacity, secondly it has caused logistics-related costs to rocket, and thirdly it has put constrains on an otherwise, according to BT Industries, optimised service process. BT Europe even considered outsourcing the spare parts handling some years ago but chose not to.

The FOCUS Project
In order to improve the logistics situation, BT Industries has initiated the FOCUS project aimed at pull-through distribution and information sharing based on POS (Point Of Sales) data. By using knowledge from different functions, the aim is to improve forecasts significantly and thereby better dimension the supply chain. Utilising POS data is expected to enable a better execution of physical flow and dramatically reduced lead times. A condition for the project is centralised management of the European warehouse locations.

The first step to carry through is to get the present structure into shape. Subsequently, the supply chain will be changed by e.g. reducing the number of warehouses. BT Europe’s warehouse locations are managed through the SCP (Supply Chain Planning) system from Syncron and the Movex business system from Intentia used by sales companies. POS data is continuously registered and communicated to the suppliers. Spare parts is delivered from supplier to BT Europe, then to the sales company and finally to the service technician. A web-based portal between suppliers and BT Europe that will facilitate operations has been launched in early 2006. Today’s local warehouses in the sales companies will be replaced with a few regional warehouses in the long term. Possible future coordination between BT Europe and Toyota’s European operation has not been announced.

Centralised management of European warehouse locations implies new main processes, Prepare (forecasting, safety stock, etc.) and Execute (when need occurs), and that these processes have measurable interfaces. A new organisation, which is a prerequisite if the change is made, is based on the main processes and a new business system, Movex and SCP, for forecasting, pull-through distribution, and order handling will be implemented. When the pilot project was carried out, the service level improved significantly, the total stock level was down approximately 30%, and the cost for express deliveries was down 70-80%. In addition, stock moved upstream in the supply chain, which meant spreading of risks, information lead-time was reduced from 32 days in the worst cases to one day or less, and the lead-time from suppliers was reduced too.

The vision is to have eight warehouse locations: one central warehouse for spare parts and trucks and seven locations for spare parts and trucks respectively. Such structure would also be designed to handle possible increases in future flows. Expectations are that a successful project will improve the quality in all processes, increase delivery capacity, and reduce inventory levels
and transportation costs. The spare parts supply is managed by the sales companies today but in connection to the changes in the logistics infrastructure, BT Europe’s central service market organisation will take over the responsibility. Delivery capacity is 95% on average and the remaining 5% are solved in consultation with the customer.

BT Europe has three different order types: Normal order, Express order, and VOR (Vehicle Off Road) order. Normal orders imply that the delivery capacity has a high percentage for high-frequency deliveries and that it is delivered with timetabled vehicles, whereas Express orders are delivered by courier or plane. A VOR order means 100% delivery capacity and it is handled through a separate organisation working around the clock. The ordinary organisation does not work nights and weekends when these situations occur. This order type is reserved to critical needs and must not be abused. It is piloted on some markets and will possibly be launched in the whole of Europe soon. Global visibility is critical for VOR orders and knowledge about customer demand is advantageous.

4.4 Information and Communication Technology Applications

There are several possibilities to develop services based on ICT applications further. Although BT Europe usually does not provide customers with detailed information regarding performance, service, and maintenance data, there is a possibility to offer bundled report packages. It is technically possible to calculate service cost per hour and the reports could vary in degree of detail and allow customers to see how much they pay for spare parts, repair, customer damage, etc. If the cost reduction is not carried out in the rental agreement with Saab Automobile, there is a substantial risk that a competitor will take over the agreement. Thus, increased complexity in the offerings requires increased capability to handle the more advanced service offering.

BT Europe keeps a record of trucks sold, i.e. what BT products the customers have, but there are occasions where the buyer and the user are not the same, making it more difficult to trace. It is also difficult to see if customers have turned to competitors for service and if any of the exchanged components are not genuine parts. The company has little knowledge of trucks older than five years and installed base data for these trucks is hence unreliable.

4.4.1 Mobile Business System

Since 2002, BT Europe’s service organisation is using a mobile business system developed in-house called EASY (Engineering Administration System). Service technicians each have a PDA (Personal Digital Assistant), i.e. handheld terminal, linked to an ERP (Enterprise Resource Planning) system through GPRS where they receive and report work orders. Furthermore, invoicing, planning overviews, and information on service history, contracts, and inventory are functions included. In 2004, approximately 1,500 service technicians had PDAs connected to EASY and they performed a total of 5,000 service assignments daily, both planned and emergency jobs.

The development process took four years and much time was spent on mapping existing processes and designing new ones. Most of the development took place in Sweden but also the Belgian and the UK subsidiaries were involved. In the EASY project, there were many individual
desires that the project management did not take into consideration. In this case, the focus was on improved cash flow and other possible, positive effects were seen as additional. Additionally, the scope was limited to order handling. Break even was about one to one and a half years but would have been shorter had the EASY system been implemented today. When implemented, the most critical cost for the mobile solution was the operator cost of synchronising the PDA with the ERP system. The depreciation time for the PDAs is three years and the estimated lifetime is five years.

Initially, the trade union interfered in the process but possible apprehension was allayed. Subsidiaries were involved early in the process, which was considered a critical factor. It was not enough to have central support only and subsidiaries had to be “seized as hostages” by the central service organisation and involved to agree on common processes. Intentia, the Movex business system provider, and the software supplier Cap Sogeti were also involved early, which facilitated the rollout. In 2005, Movex was used in 15 of the 25 European subsidiaries. The PDAs communicate with the Movex system through AT&T’s global GSM network through a middleware.

**Service Processes before EASY**

A service assignment is started either when the customer contacts BT Europe to order service or when BT Europe has scheduled a contractual service activity to take place. The different steps in the service production process are visualised in Figure 4.2.

![Service Processes Diagram](image)

*Figure 4.2 The service process.*

**Initiate assignment**

The service assignment is most often initiated from the customer via telephone, fax, or email. The call centre receiving the assignment compiles necessary information and forwards the assignment to the planner.

**Plan assignment**

The planner receives the assignment either electronically or on paper and schedules it to service technicians available. The choice of technician is based on task complexity, geographical area, and individual competence. In addition, other contacts with technical support and technicians take place.

**Perform assignment**
The service technician receives the assignment via phone or on paper, and visits the local warehouse to pick up service notes and spare parts. During the service production process, the call centre and technical support can assist with supporting information such as customer details, equipment, and contracts. Some documentation is also available in the technician’s van. The ordering of spare parts is done via phone and inventory control can only be done manually.

**Reporting/Invoicing**

After the assignment is completed, a service report where time and spare parts usage are listed is produced. The service report is then stored in the business system by back-office personnel before an invoice is sent out and contract management is usually done manually.

During the service process described, many phone calls between the service technician and the call centre had been necessary due to uncertainty as regards the assignment and the customer. For the technician, there were few possibilities to make adjustments in the work plan or to schedule in advance and if future maintenance was scheduled, the technician was not aware of it. Typically, service reports were not handed over to the call centres more than once a week, implying longer invoicing time. Besides, inventory control was insufficient since there was no connection between the service assignment and spare parts information, which meant that the service technician had no control of what parts should follow which service assignments.

**Service Processes with EASY**

The implementation of EASY implied changes in the different steps of the service production process, discussed in this section.

**Initiate assignment**

Contacts between customer and call centre are still managed via phone, fax, or email and thus unchanged. However, information such as customer contracts is now stored in the business system and the service technician is able to search for information when receiving the assignment. In a near future, it will be possible for service technicians to initiate the assignments themselves.

**Plan assignment**

As a subproject within EASY, the ERP system was configured for automatic planning of service orders based on service technician competence or geographical area. The introduction of PDAs has facilitated the reception of assignments and re-planning done by technicians is easier. Hence, the service technician does not need to visit the local warehouse to receive assignments and both emergency and planned maintenance can be performed at the same time. On Fridays, the technicians receive instructions about next week’s preventive maintenance. Field service activities can be monitored by the call centre through a web application, which can be of assistance for manual planning sometimes needed for emergency calls.

**Perform assignment**

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When service orders are sent to technicians, also service history, SLAs, rental plans, and planned maintenance can be shown to the service technician in the PDA. It is also possible to view drawings and other supportive documentation and to make ordering of spare parts and items available in the van visible in the field.

**Report**

After accomplishing the assignment, the work is reported digitally through the PDA in a formalised, systematic process where used time and material is specified. At this stage of the process, the data quality is substantially better than before the implementation of EASY.

**Invoice**

The invoice is sent automatically, or by an intervening manual check up, to the customer after the work report is completed and signed. In addition, customer contracts are checked automatically during this process.

It is possible for BT Europe to centrally put barriers in the system, e.g. that all invoicing activities a certain technician does towards a specific customer have to go through the customer centre, if a process is particularly critical or if the company is uncertain about an employee’s performance. Therefore, it is also feasible to send an “alarm e-mail” to the customer centre if the technician has not sent the invoicing-related information within an hour.

**Assessments of EASY**

The project had two main objectives; reduced invoicing lead-time and reduced administrative cost. Lead-times were reduced dramatically, from 1-4 weeks to only 1-3 days, and the number of customer centres was reduced from six to two in Sweden. Although successful, the service technicians have taken over activities from the call centres and therefore, to some extent become less efficient in their operative work. In connection to the rollout in Sweden, Belgium, and the UK, BT Europe held a three-day education/training for all service technicians to teach the new planning procedures.

The evaluation phase of the EASY project was a key aspect already integrated in the initial plan. After the pre-study and the implementation in the three countries, the project was evaluated and related to the investment cost by calculating payback times, changes in return on capital employed, efficiency gains, and return on investment. Examples of indicators from these evaluations can be seen in Table 4.3.
Table 4.3 Some evaluation indicators of the EASY project.

<table>
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<th>Indicators</th>
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<th>Current state</th>
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<tr>
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<td>1-14 days</td>
<td>&lt;1 day</td>
</tr>
<tr>
<td>Parts replenishment</td>
<td>3-14 days</td>
<td>1 day</td>
</tr>
<tr>
<td>Rolling planning</td>
<td>Monthly</td>
<td>Daily</td>
</tr>
<tr>
<td>Input of information</td>
<td>2 or more</td>
<td>1</td>
</tr>
<tr>
<td>Order spare parts direct</td>
<td>No</td>
<td>Yes</td>
</tr>
<tr>
<td>Auto directed allocation</td>
<td>No</td>
<td>Yes</td>
</tr>
</tbody>
</table>

While BT Europe benefits from reduced cost for administration, increased cash flow and efficiency, and improved quality and planning, customers have benefited from faster response to service calls and service technicians that have all customer information at hand through the PDA. Administration is also reduced for the customer, who signs the completed work order digitally directly on the PDAs display and who can choose to receive work reports through mail, fax or e-mail. Since all front-office personnel have access to relevant data about the customer fleet, the service assignments have been performed with fewer unnecessary travels to the customer sites. This has led to higher perceived quality by the customer, something that has been measured in customer surveys on several occasions. Hence, the quality of service has incrementally increased and the service availability has become better too. On the other hand, there have been negative effects on personal communication between customer and provider.

Several synergies have derived from the EASY implementation and the mobile business system has been marketed towards customers as a more time-efficient tool. Communicating to customers that ICT applications are used to enhance the service processes has made customers view BT Europe as high-tech also in services. One of the most appreciated things was the possibility for customers to receive work reports electronically, something the company offered free of charge. In 2005, this was something none of the competitors was able to offer and it was thus an advantage. However, BT Europe underestimated the positive reactions since sending work reports through e-mail was only a side effect of the EASY project. It is nevertheless a success and makes it possible for the company to include attachments, e.g. customer surveys, in the e-mails. Possible technical extensions are to connect a web-based interface with customers and to change the work routines for the field technicians. In addition, the solution has given BT Europe an opportunity to facilitate a possible restructuring of the organisation of the field service technicians.

The second phase of the EASY project was rolled out in 2005 and service technicians can now search spare parts information, although not yet for counterbalanced trucks. In addition, the
goal is to reduce the synchronisation time by half and to enable minor software updates on the field. PDAs otherwise have to be collected and updated at a BT site and the possibility to update software during the technicians’ regular work would save time and make the update process easier. Having the complete spare parts catalogue on a flash memory card is discussed internally but there are some technical obstacles and the cost must be reasonable.

**Trucom**

The third phase of the EASY project includes “Trucom”, a system for communication between trucks, PDAs, and BT Europe’s business system. There is already today a system with real-time information, e.g. how different trucks are driven by different drivers, and it is possible to package this information in different services. Knowing the status of trucks in real-time is valuable for service technicians, as it would enable them to better know what parts to bring and where to go. Since approximately 40% of all new trucks from BT Europe are in rental plans, every unnecessary trip is a cost. Before the service technician arrives, one possibility is that the truck announces to the driver to go to a certain spot so that the service technician will save time at the customer’s site and instantly find the truck in question.

This technology can also be used to create customer value by enabling customers to view the real-time utilisation of the fleet, to view how trucks are driven, and how different sites perform. It also allows BT Europe to offer consultative services where this information is analysed, e.g. to explain the situation on the sites and why it may differ between them. For many customers, e.g. in the food industry, it is of considerable value to reduce goods damage caused by the truck drivers. These costs can amount to more than the truck drivers’ annual salary, so being able to show what driver causes damage and when it takes place could save a great deal of money. If a customer does not pay for his trucks, another application could be to reduce the truck speed to a crawl. When payment is received, the trucks return to normal working order.

Another service discussed in connection to more detailed truck performance data is the ability to offer short-term rental on a shorter basis than currently possible, e.g. rental per hour. An example could be that a customer having a short-term rental truck on his site and needs additional capacity during peak time, enters a pin code which enables him to use the truck. Invoicing is handled automatically, meaning that administration is minimised for both parties. Enhancing today’s fleet management system will also be possible for the subsidiaries working with Movex and thereby have a more competitive offering.

**4.5 Competitors**

There is fiercer competition in the service market due to some interchangeable parts providers also offering services such as training and preventive maintenance. Even if these pirates generally hold low prices on spare parts, they only offer the most elementary components. Legal aspects are possible constraints for BT Europe’s battle against pirates; the current trend in the EU is in favour of increased competition in the service market. In the future, it may therefore be more difficult to withhold spare parts information from pirates.
4.5.1 Truck Competitors
Two major actors have about 20-25% of the global truck market each. Except TMHG, German company Linde Material Handling also has approximately a quarter of the market. Linde Material Handling has 18,900 employees and is the number two company worldwide and number one in Europe, with 2004 sales of €3.37 billion. Other significant actors are US company Nacco (Hyster & Yale), German Jungheinrich, Mitsubishi/Caterpillar, and US company Crown (see Table 4.4).

<table>
<thead>
<tr>
<th>Company</th>
<th>Sales 2003</th>
<th>Market share</th>
</tr>
</thead>
<tbody>
<tr>
<td>Toyota Industries</td>
<td>€ 3,385m</td>
<td>22%</td>
</tr>
<tr>
<td>Linde</td>
<td>€ 3,063m</td>
<td>20%</td>
</tr>
<tr>
<td>NACCO</td>
<td>€ 1,574m</td>
<td>10%</td>
</tr>
<tr>
<td>Jungheinrich</td>
<td>€ 1,471m</td>
<td>10%</td>
</tr>
<tr>
<td>Mitsubishi/Caterpillar</td>
<td>€ 1,010m</td>
<td>7%</td>
</tr>
<tr>
<td>Crown</td>
<td>€ 964m</td>
<td>6%</td>
</tr>
</tbody>
</table>

Linde’s service business amounts to 40% of total sales and more than 50% of profit. Services include rental and leasing plans, SLAs, and fleet management.
5 Electrolux Laundry Systems

Electrolux Laundry Systems (ELS) is one of the world’s leading manufacturers of professional laundry equipment, offering a wide range of equipment, including washer extractors, dryers, hydro extractors, ironers, and finishing equipment, as well as services to the needs of individual businesses – from the laundries of apartment houses, hotels and health care institutions to commercial laundry operations and coin-operated launderettes.

The company has approximately 1,500 employees in the sales companies and in manufacturing, located at three manufacturing plants in Sweden, France and Denmark. The headquarters are located in Copenhagen, Denmark, and the company has 23 national sales companies around the world. Approximately 12% of the employees are working with services in the field. A network of 120 importers also serves the global customer base. ELS is part of the Swedish-based Electrolux Group, which has more than 80,000 employees and is the world’s largest producer of powered appliances for kitchen, cleaning and outdoor use.

5.1 Industrial Services – A Background

The professional laundry equipment has a long life span. Although used equipment can be adjusted to new detergents, new equipment is more water and energy efficient, less worn out, and allows more combinations of detergents and washing programmes. The industrial service market is important for maintaining the installed base in a professional environment but also as an entrance to new product sales. Spare parts and maintenance services are key factors for ELS and a potential area of improvement.

Earlier, industrial services have been seen as something necessary evil and not regarded as a strategic element to manage customer expectations properly. However, the increased price pressure on equipment requires growths in all parts of the product life cycle and especially in industrial services. Due to the relatively long life span of the installed base and the laundry equipment becoming increasingly similar among actors in the market, the industrial services are what more and more distinguish the actors. Therefore, ELS views service quality as a chance of demonstrating and marketing ELS in comparison to the competitors.

According to the company, the aftermarket starts with the installation of the laundry system and should eventually lead to a repurchase of the next system (see Figure 5.1). The main areas are Maintenance, Technical support, and Spare part management.
The financial goal is to increase the customer base as well as to gain shares in the net sales of industrial services including spare parts. In 2004, ELS’ net sales were SKr2.2 billion, of which 80% are existing customers and the remaining 20% are new clients. Only 20% of the service contacts and net sales go directly through ELS; 70% go through partners and 10% are estimated to be lost to competitors. The aim is to have 50% of the service contacts and net sales directly through ELS and 50% through strategic partners on a global basis. Nonetheless, this may vary between markets and it is principally about optimising the organisation and having ELS management where it is profitable and utilise service partners in remaining situations. Today the quota between indirect and direct costs is 1/6 and the ambition is to have a quota of 1/10 back office not included.

5.2 The Customer Care Concept

ELS emphasises customer relationships and retention, and has therefore chosen to call the aftermarket Customer Care and the aftermarket online portal Customer Care Centre. The choice of name is also intended to increase the internal awareness of industrial services, and the concept was considered as the most beneficial one at an evaluation session with the European Service Manager Team.

By improving its offerings with focus on customer care, spare parts, and knowledge management, ELS wants continuously to increase operational effectiveness (both internal and for the customer), customer satisfaction, business growth, and cost efficiency in all service-related activities. This is referred to as the Customer Care Concept and is aligned with the overall ELS strategy.

Major objectives of the Customer Care Concept are to both improve customer satisfaction and generate profitable growth in services by increased focus on preventive maintenance and service level agreements (SLAs), simplifying the service delivery processes, and developing an organisation that can provide required services for the forecasted sales figures. In addition, the goal is to increase service and spare parts net sales by improving the quality and availability of
service offerings within the existing customer base as well as taking sales away from competitors and service partners. As the number of installations, the product complexity, and the service requirements are increasing, an objective is to increase the efficiency, capabilities, and knowledge within ELS and its partners and to keep costs under control.

Furthermore, a key element is to create common and consistent offerings by centrally coordinated and managed customer interfaces. Depending on e.g. customer type, regional aspects, system requirements, and required skills, services are executed locally by either internal or external service technicians. By implementing ICT-based solutions, ELS strives to reduce internal inefficiency and improve information and knowledge sharing.

An internal evaluation of the organisation has pointed at several strengths, such as a high share of spare parts sales, well-managed warranty costs, good customer contacts enabling more efficient positioning and marketing, and a dynamic set-up allowing streamlining of internal processes, thereby reducing reporting complexity. The main weaknesses identified were costs due to investments in training and equipment and high fixed costs of personnel, which may result in a dent in the operating margin.

5.2.1 The Importance of the Customer Care Concept for Profitability

Regarding cost efficiency, ELS is becoming profitable on all industrial services although installation services have been particularly difficult to make profitable. This is due to regulations on some markets, where ELS personnel have not been allowed to carry out the complete installation because personnel working with e.g. electrical circuits and gas must be certified.

Industrial services have profitability similar to product sales but the industrial services figures have been increasing steadily; margins lost on products have been compensated by services after the sale. It makes it important not to view product sales and industrial services as two separate activities, but to recognise and take into consideration the synergies and common denominators between them. Industrial services are an opportunity to demonstrate quality and manage customer expectations during the product lifecycle and to influence repurchases positively.

Profitability is measured both per equipment type and per customer. Due to the amount of data, this information is limited to equipment and/or customer segment per country or country specific only. This is information obtained by the sales companies and it is used both locally and centrally for follow-up.

Installation generates no profit unless internally invoiced, as it is often part of a sales discount given by third parties. Neither is profit made when training customers’ staff, which is part of sales service and performed by ELS personnel, unless internally invoiced. Services conducted by ELS generate profit margins of up to 20% but result in no profit for ELS if invoiced by service partners. Preventive maintenance contracts make an average profit of 9% on top of service profits. Spare part sales are the most profitable activity, a 37% profit margin if sold directly by ELS and a 10% profit margin if sold through partners. The sales made by service technicians make up about 40 units per year and per technician in some countries.
Annual Growth
The last two years there has been an annual growth of 15-20% on SLAs whereas some older contract forms have been lost in some markets. These older contracts have not been coded, meaning that it was not specified whether it was a service contract covering ELS equipment only or if they also involve competitors’ products. Nowadays, these two types of SLAs have different codes and the number of SLAs covering ELS’ products only is increasing while the mixed SLAs are reduced. The decrease in the number of mixed SLAs has a negative effect on cash flow but it is regarded as positive for further strategic decisions. Therefore, correct coding of SLAs is important and it is easy to overlook if only focusing on industrial service revenues.

5.2.2 Internal Organisation
The industrial service organisation is part of the sales organisation, which consists of local organisations in the countries where ELS operate and that are not represented by third-party service partners. An internal report has pointed at industrial services potential being lost due to a suboptimal organisational model and inconsistent execution standards. The majority of service technicians are employed at independent service partners that are connected to ELS through service agreements. Third-party service providers can also be retailers at some markets. As more than 50% of the potential net sales of industrial services are generated by third parties and there is an estimated potential profit of about SKr105 million, ELS is carrying through an acquisition of service partners worldwide. When services are conducted by service partners, the only revenues ELS receive are from spare parts sales.

The service organisations differ from country to country depending on if own service technicians are used or if the service is handled by third-party service providers, thereby also differing in call handling. The services are executed and invoiced directly by third-party service providers, giving no profit to ELS. If spare parts are ordered via a dealer, it also decreases ELS’ margin. The country organisations recognise the importance of centrally managed activities and are positive if it leads to increased profitability, while e.g. central control of local sales processes can be interpreted negatively. However, there is no overall and consistent way to manage industrial services across the different countries and the understanding of the impact of services is rather different between the country organisations. The top ten markets have the same business systems and new countries are continuously joining in. As the ICT systems are developing and becoming more centralised, costs are reduced locally as the local sales organisations no longer have to put their own resources on e.g. ICT development as more development and administration are handled centrally.

ELS has regular service manager meetings where the managers from each country meet, share experiences, and discuss (i.e. the European Service Manager Team). The central service organisation tries to add to the knowledge spreading by informing the management so that they also can receive information and participate in the local companies’ discussions. Historically, industrial services have mainly been seen as additional but non-core support functions managed in the different countries by the local organisations and executed in different ways. Hereby, the major focus has traditionally been on low cost performance. Nevertheless, there is an increasing
awareness that service personnel – both service technicians and call centre staff – influence ELS’ impact on the customer satisfaction as they are in contact with the customer during the complete lifecycle of the product. New products are launched twice a year and the training of service technicians has to be completed before the product launch as part of the process. As from 2006, the local companies cannot receive and sell new products if the technicians’ knowledge requirement is not met.

**Organisational Responsibilities**

The organisational responsibilities in the Customer Care Concept are divided between the global Customer Care organisation and the country-specific organisations. The global organisation is responsible for the execution of:

- Definition of common standards (Type of contracts, SLAs, education requirements)
- Operation of a common call centre (in specific regions)
- Central management of spare parts stock
- Central management of ICT systems
- Central monitoring and benchmarking

The country organisations are responsible for their own profit and the local losses, and also participate in the losses through the global functions. In addition, the local responsibilities include:

- Collaboration with the sales force
- Selection of certified service partners
- Training and education of internal and external staff (selected partners)
- Customer interfacing in the remaining local call centre solutions and invoicing customers
- Reporting to global headquarters.

**Bonus Parameters**

If a service technician tips a salesman about a business, depending on country and equipment, money is approved to the technician. The idea is to (1) motivate the service technician to respond to the customer signal, (2) ELS can replace used machines and thereby improve the reputation, and (3) reduce operation problems for the customer. Furthermore, if an SLA is signed ELS can reduce its costs.

Bonus parameters are based on KPIs and the same parameters are used across Europe but with different unit size depending on country specific situations. In order to reduce the existence of freebees, these free services have been linked to the salespeople’s accounts and cost centres, which has had a positive effect.
Service Technicians
The same service technicians are used regardless of contract form, but there are different technicians depending on product type and segment. It is considered important that the technician is familiar with the customer and his equipment, making the start-up time relatively long before he knows the processes. Thus, knowledge about the customer is more important than types of SLAs when segmenting technicians. An experienced service technician knows when the right customer representative is available or not. This is important because if he is at the customer’s site doing maintenance work or a repair without meeting anyone, he will receive no verbal signals and he will have no opportunity to discuss future work.

A risk connected with technicians having a more active selling role is that they may risk losing their credibility as technical specialists; the technician should be the employee catching customer signals and steer them to a salesman and the salesman should not start working on a machine but instead inform the technician on possible digressions. Hence, interplay is needed between the two types of personnel. Pricing of the personnel’s service hours is a matter decided locally and the customer is debited for every started 15 minutes. Based on time studies made centrally there are also standard times measured in minutes that are used towards e.g. third-party service providers.

In general, ELS has many service technicians at markets with few service partners and vice versa. An exception is Sweden, where ELS had 20 technicians and 22 service partner technicians in 2004. At the ten most important European markets, ELS had 146 technicians in total.

5.3 Customers
Regardless of customer type, the top four requirements on ELS are the same: (1) quality of delivery and installation, (2) product usability, reliability and running costs, (3) spare parts and services, and (4) pre-sales. A significant part of the customer base is international hotel chains and national commercial laundries. Especially larger hotel customers strive to have similar laundry solutions worldwide and for them capacity and cost per unit of laundry become important buying points. This knowledge is obtained through industrial services and lifecycle costs, which requires ELS to acquire information from its salespeople and service technicians.

There is a cultural difference between Southern and Northern Europe in terms of product ownership; customers in southern markets and in Germany tend to prefer to own their equipment whereas customers in the north (UK customers in particular) buy more SLAs and leasing agreements. These traditions prevail although they are affected by the purchasing patterns of larger, often international, companies.

When a new hotel project is initiated, a consultant asks ELS about a certain laundry capacity and ELS subsequently gives a layout suggestion in order to sell its laundry equipment. As the consultant does not have detailed knowledge about all activities associated with a new hotel construction, these information exchanges are rather common. When the guarantee time expires, ELS has to establish a relationship with the future customer, i.e. the hotel owner. The hotel company either buys the completed hotel or leases it and ELS has to find out who the owner is, who manages it, and what the activities are.
5.3.1 Customer Segments
There are three main customer segments defined by ELS:

1. Self-service: the customer manages the machines himself, e.g. laundries of apartment houses and coin-operated launderettes
2. On-premise laundry (OPL): both minor and major customers, e.g. hotels
3. Commercial: customers specialised on laundering to someone else.

OPL customers are usually profitable, especially customers buying large machines and much service. The opposite is customers with heavy-duty laundering around the clock and with very demanding terms of delivery. These customers’ machines are usually worn out much faster than others.

Some years ago, ELS decided not to serve the heavy-duty laundry segment where “tunnels” are used and where the largest commercial laundries operate, and these manufacturing plants were consequently sold. The tunnel construction is very different from washers and it can carry tons of laundry. Tunnels are constructed with one cleaning drum after another, up to 20 metres in total and with the pre-laundry taking place in the first part of it, the main laundry in the second part etc. All segments below this one are however served and ELS has developed laundry processes in which e.g. four large washers are used instead of a tunnel, which reduces operating costs and stoppage as nothing can be laundered if the tunnel is out of order.

As many new competitors, especially from Asia, are currently entering the market ELS considers it important to be present in all three customer segments. Due to this situation, it is not considered as easy as before to prioritise certain segments or customer groups, but instead to optimise the offering and offer high-value services regardless of segment. A major customer study was made in 2003 where the company mapped the customers’ opinions about industrial services, selling, and financing alternatives for the different segments.

5.3.2 Lifecycle Cost Awareness
As long as the machines are in operation and monthly costs of water and electricity remain the same, customers are not very interested in the lifecycle cost. In connection to a product replacement, this aspect often comes up as variable costs will be reduced and fixed costs will increase. ELS works with a financial partner and offers the customer a leasing alternative when he buys new products. This is risk-taking for ELS as the company guarantees its financial partner to repurchase the machines to a fixed price if the customer is unable to pay the monthly leasing fee.

5.3.3 Customer Relationships
There are three main variants of SLA selling: (1) to sell it at the same time as the product is sold, (2) when the guarantee time has expired, or (3) after a product upgrade has been made. If a customer not having any previous SLA signs a SLA in connection to a product upgrade, he rather often signs it for the remaining machines as well.
ELS would like the company to contact the customer when the guarantee time is about to expire and suggest a service contract. This should be in consultation between the service technician responsible and the salesman but today often only one of the two is involved. Similarly, when the customer upgrades or expands the machines, the customer should be offered services and SLAs. As more than 90% of customer contacts during the product lifetime are made by service staff, the quality of the service organisation plays a critical role in how the company is perceived by the customers. This situation is very different if ELS personnel are involved or a retailer, as the retailer cannot be managed directly.

There are no de facto obstacles to begin working like this, other than to prioritise and structure internally. The question is if it is important enough strategically and what it would take to implement it, as it is technically very easy. The information about all customers’ guarantees is available but there are no formal processes for taking advantage of it.

As most customers are not up-to-date on what savings new products offer in terms of e.g. reduced energy costs, it is important to have good customer relationships and/or SLAs in order to “prove” when an existing machine should be replaced. In this way, the customer’s life cycle costs could often remain unchanged or possibly even be reduced. ELS wants the customer to buy a company product in the first place, then develop the relationship, having the customer to expand his assembly of machinery with modern ELS equipment, and then optimise the internal and customer processes.

It is both the service technicians’ and the salespeople’s role to address the customer when the products should be replaced, but most often it is the service technician who notices that e.g. a nine-years-old machine is beginning to wear out and informs the salesman that a visit to the customer should be considered. This process is working well in countries where ELS has its own service technicians. In the UK for example, a single service technician indirectly sells 20 machines per year, which for 40 technicians gives 800 machines in total.

No SLAs are sold on headquarters level; it is always broken down at an operational level. Extensive agreements are therefore more difficult to handle, as operational personnel not always have the authority to negotiate them. Besides, prices, offerings, and service levels differ between countries, which means that none of ELS’ global service agreements seems to have the same content in all countries. This is something the customer accepts as most of them operate their activities locally; for example, Hilton UK is responsible for the UK market while it is part of the Hilton Group.

**Customer Relationship Development**

If ELS has had a long-term relationship with a customer or if a customer is considered to have future potential, ELS might reduce the customer’s repair cost if the equipment is not operational and the time of guarantee is passed; e.g. if maintenance work is made after 18 months while the SLA only has a 12 month guarantee. If the customer mismanages the laundry equipment so that ELS has difficulties to live up to the agreement, there are cases where the company neither can nor wants to have the agreement. The customer can e.g. deteriorate the laundry process through
changes in the management information system and a conflict can arise about whether the error is due to the equipment or handling failure.

The number of customers seeking an increased undertaking from ELS is believed to increase and the question is how to match this demand, what information is required, what competences will be needed, and if the company has the required resources or not. If the customer to a larger extent than today outsources activities and wants to pay per unit of laundry there can be a mismatch in the offering, if ELS is not able to respond to these new demands. In the same way, there can be a mismatch if the customer is not on the same phase as ELS when it continues to develop its offerings, including new SLAs, detergent, linen, water and energy, and laundry personnel. It is therefore important that the sales and service organisations together discuss their future roles and define what each party should do, e.g. in order to reduce the risk of having service technicians selling SLAs while salespeople sell products.

Impact on New Offerings

There are differences in how new services and new technical solutions are received by the customers, depending on ELS’ relationship with the customer in question. Customers who experienced training and support by ELS before the online parts store was implemented found it easier to adapt to the new order system as they felt that ELS was committed. Customers who had received less support were more sceptical of changing to a system without a human interface. Similarly, customers with working SLAs are often more positive to new and/or more extensive offerings than non-SLA customers and unsatisfied SLA customers. It is regarded as vital to listen to the customers and to propose new offerings gradually instead of instantly offer the complete package.

Open Books

Some customers are demanding reports and summaries of service visits, which ELS can provide them with, but the company does not want to go any further and inform customers about e.g. profitability per contract or machine. As one of ELS’ service strategies is to increase the number of SLAs, a scenario could be that customers will demand more insight; when you have bought an SLA you probably want to know what is included and what it costs, which would lead to a kind of open-book relationship. However, open books are not seen as a competitive advantage from ELS’ point of view. As the technology nowadays exists, it is possible for the customer to sign in on a webpage with the contract number and receive the service history of every machine and eventually also pricing information. Nonetheless, this is still not a customer demand.

Customer Lock-in

Generally, the more extensive the offering, the better the lock-in effects. Instead of only approaching the offerings from a traditional industrial services perspective, ELS tries to start from the customer needs and problems. Customers are demanding more competence and more extensive offerings from their suppliers and an increasingly important lock-in effect is based on laundry process knowledge and handling customer relationships. Traditionally, ELS has had lock-in effects through spare parts handling but this is not only being reduced by fiercer competition
from third party suppliers but also by extensive SLAs. As spare parts are included in full-service SLAs and these contracts are expected to increase, spare parts lock-in will gradually disappear.

Customer Relationships’ Role in Innovation
In every segment ELS has lead users, customers with whom they have close cooperation, where the company can test pre-series products and components. In these cases, there is a well-established relationship and the customer knows that the product is a prototype. The customer consents to having this equipment at his site and in almost all cases ELS takes the product back and the customer purchases a new one. All new product launches have been preceded by this kind of field test.

When it comes to services, CMIS, the management information system for laundries, has been tested in the field whereas full-service contracts are not tested in this way. Certainly, these more extensive services are initially piloted on a small scale but it is not considered a systematic process. Whereas the product development and production organisations have very clear and evident development processes, the industrial service organisation lacks the corresponding processes. One problem is that the long-term time aspect must be taken into consideration; monitoring and following the service up after the guarantee time has expired is one thing, but waiting for several years before an introduction is made would mean that the service is outdated, or at least less competitive, when finally launched. Therefore, the service portfolio should be balanced and not only containing one or a few types of offering. If 100% of the sales would consist of SLAs it would be an extremely risky undertaking as an epidemic error could cause significant consequences.

5.4 The Offering
In a first phase of the Customer Care Concept, the service offerings should be common and consistent at all markets if possible. Therefore, ELS has to synchronise its pricing models and technical documentation. Coupled to the implementation of common ERP systems across country organisations, the aim is to use the same data standards across countries as well as across external service providers. Another prerequisite for a consistent service is a common knowledge base for both internal and external service staff, including technical manuals and other product and spare parts documents. Finally, regular customer satisfaction monitoring is part of this more customer-centric strategy.

The biggest obstacle for standardising industrial service offerings is that the customers’ laundry facilities differ a lot, affecting especially installation services. Except for access to water or gas, and electricity, ventilation is an important aspect to take into consideration for washing machines and especially dryers. ELS has to know if e.g. a 1.5 metre metal pipe is needed or if a 300 metre pipe with a fan on the roof and a complete ventilation system is needed. Therefore, there is always some degree of customisation. Even if large customers provide ELS with high revenues, they often have considerable service costs. Due to their high procurement volumes, these customers can put pressure on the price and they often have high demands on minimising operation disruption, very often making small customers more profitable than larger ones.
ELS offers a one-year guarantee on its products on most markets, but two years in Sweden and Norway due to competition and local laws. New entrants from China/Asia offer prolonged guarantees to prove that they too have quality products but they are not always familiar with the service costs, as the cost of technicians and also components tend to be higher outside their home markets. Although the guarantee time is longer than ELS' and other established, major actors’, it is according to ELS not certain that everything is included and the company does not consider these offerings to have more customer value.

5.4.1 Service Level Agreements
In countries where ELS has its own technicians, there are most often three levels of SLAs: (1) service one or a few times per year, (2) service plus included spare parts, and (3) ELS having a complete undertaking in a full-service agreement. The SLAs may differ depending on the age of the equipment; it is e.g. not possible to sign a full service SLA on 15 years old machines. In those cases, it is preferable to replace it instead. It is estimated that too much working time of ELS technicians is spent on warranty cases, which decreases the number of more profitable chargeable working hours. As many major customers want to work with only one or a few key partners regardless of location, the number of global service contracts is also increasing. Centralised procurement is favouring major actors like ELS although there can be problems if the company has no partner in one of the customer’s countries and for that reason has to create a new market channel for a single contract specifically, thereby taking an increased risk.

ELS aims at standardising its SLAs as no consistent standards are in place today, as well as to offer customer-specific SLAs in all countries. Furthermore, ELS is continuously increasing the number of SLAs, although more extensive contracts do not necessarily imply higher margins. In 2004, SLAs were offered on many but not all European markets, like the populous countries of Germany, Italy, and Spain. For some customers, the optimal contract form from ELS’ point of view may be to visit the customer once or twice a year and having the customer pay for spare parts and service hours. These visits can be planned to times when the service organisation is working below capacity, whereas full service SLAs with short appearance time can have an effect on planned working orders. Hence, it is believed that although the number of SLAs is increasing, not all customers will purchase SLAs.

A development seen in e.g. the cleaning industry in Germany is that companies like the facilities service company ISS move their floor-cleaning machine depending on where the customers are located. If this situation would occur in the laundry service industry with ELS’ customers, it would add another dimension to the SLAs; how would the agreement be affected if the machines were physically moved from one site to another? Consequences on the guarantee undertaking if non-ELS personnel remove and reinstall the machines, if proper protection has not been used during the transport etc. would also have to be agreed on. Furthermore, it is possible that ELS does not have a service organisation in the place where the machines are moved.
The company nowadays offers some customers complete laundry solutions with laundry, detergent, linen and some personnel. In Sweden, the trend is that more and more customers are buying full-service SLAs when laundry systems are being purchased because the customers do not want to have to worry about unexpected costs and operational disturbance. These SLAs give ELS better long-term statistics on equipment functionality and costs, thereby getting an improved long-term SLA basis. ELS also receives basic data from SLAs on the consumption of spare parts, which can be compared with non-SLA customers’ spare parts usage in order to estimate how much spare parts is lost to competitors for these customers and possible reasons behind it.

5.4.2 Development of Contract Forms
Most development of new contract forms comes from customer requests, although input also comes from within the organisation. New offerings have implications on the technical platform, e.g. a need for all equipment to have the same signal point regardless of whether it is a washing machine, dryer or mangle. Leading the technical development is believed to be important not only for being in the frontline with processes and solutions, but also for setting the same component standards for all equipment. An example of this is to have electronic timer systems in all machines and to differentiate them by having different levels of functionality depending on the cost of the laundry system, instead of using both mechanical and electronic timer systems.

5.4.3 Rental Contracts
ELS’ service organisation is working actively with testing new offering concepts and e.g. the idea to offer leasing/rental contracts is considered. Possible rental contracts will have an effect on the industrial services because the customer per definition will receive a kind of full-service contract. For that reason, it will be crucial to obtain historical data in order to calculate and estimate costs. A consequence of the customers having variable costs only is that ELS will have to be able to handle a considerably increased number of used machines. The machines have to be able to record the number of wash cycles (regarding ironers, the customer may pay per hour or piece of laundry instead).

Hypothetically it would be possible to offer rental agreements to all three customer segments, but in reality it is generally better for smaller self-service customers than for major commercial laundries, both from ELS’ and the customer’s point of view. A coin-operated launderette often has many machines so the effect is rather small if one machine breaks down. On the other hand would the effect be much more significant at a major commercial laundry with few heavy-duty machines and strict delivery conditions. For these customers the effect of SLA is often substantial, whereas it can be insignificant for self-service customers. New equipment with lower water and energy consumption can have a considerable economical impact on major customers, but less on self-service customers who have a lower degree of coverage on their machines. While commercial and many OPL customers are used to regular investments and are ready for unforeseen expenses, smaller customers often prefer to avoid cost fluctuations. If e.g. a coin-operated launderette earns SKr10 per laundry cycle he can, instead of investing in machines and
service, rent the machines and pay SKr3/cycle to ELS, not having to worry about any product-related expenses.

5.4.4 Selling Capacity
Offering capacity/availability is not yet common, even if there is a tendency that some customers are interesting in such offerings. A problem is where to draw the line between ELS and customer personnel, and most customers are not sure where this line should be drawn. Capacity/availability contracts would have been easier to offer if ELS personnel would be operating the laundry equipment, but it would put other demands on the company. ELS has however signed these contracts with a few customers and in those situations the design and the choice of equipment become decisive for the profitability; instead of e.g. one larger machine, two smaller ones are chosen in order to always have some capacity available.

5.4.5 Operating the Laundry Process
Internally, discussions have been held regarding whether or not to operate the laundry equipment at some markets. If ELS would decide to have their own laundry personnel, the customer can outsource its operations and only has to provide the facilities. Some competitors are showing signs of moving in this direction, as there is a general trend to offer more extensive customer solutions. A major risk with the operation is the reduced flexibility with having one’s own laundry personnel. Optimised processes by also managing operations could be an advantage and ELS would have a possibility to learn the operational processes better and use that knowledge when marketing the offerings to customers who manage their own operations. Besides, planning operation maintenance and other activities would be simplified if ELS controlled the complete process but it would demand a lot of the company in terms of new skills and competences. If this is something that ELS will eventually offer, it is most likely that it will be introduced gradually at one market at a time similar to when other offerings have been introduced.

Working with laundry handling is a low-status and low-wage job, and many of the employees are unmotivated. Making the customers’ personnel more interested in their work and understand their role in the laundry process better is also desirable for ELS, as it is believed that the personnel thereby will handle the equipment more correctly, resulting in fewer operational problems. Training the customers’ personnel is therefore a way for ELS to reduce the problems. One possible way to increase the personnel’s awareness of their role is to use for example the management information system for laundries to make the customer’s personnel conscious about the individual role in guaranteeing the correct laundry cycle and individually sign the laundry receipt.

5.4.6 Process-Orientated Services
As energy and water issues are increasingly important topics globally, consultancy services and optimisation of laundry processes are services that are believed to increase in demand. Regardless of what laundry equipment and concepts are being marketed and sold, ELS aim is to be seen as a knowledge intense company by developing such services. This can be made by SLAs and new laundry programmes but also by developing relationships with detergent suppliers and their
product development organisations. As developing local processes in every country is considered too expensive, ELS is working with local input that is being processed centrally. Similar to the e-learning idea (see Chapter 5.5.3), training the local markets will be done centrally.

If ELS is able to discuss laundry management – crucial issues in the laundry process and differences between operating and outsourcing the laundry processes – at e.g. hotel management colleges without talking about its laundry equipment, the company might be regarded as a knowledge-based company. The idea is that this will affect potential customers also to trust the company when it comes to its products and services.

Another role for consultancy services, desirable for both ELS and customers, is during the period before the customers’ repurchase of new equipment. The risk with repurchases is that less effective functions are kept although better technical solutions would be possible to achieve. Customer information can be used for optimising laundry processes when new equipment is being sold but this option is not available as an industrial service.

Profit sharing contracts – where ELS will obtain a percentage of the cost reduction if customer costs are reduced – have also been discussed. Before this type of offering can be introduced, ELS has however to define it and make pilot projects with some customers. Guarantee costs are believed to decrease with such offerings but the long-term costs are still not known. There are further opportunities to increase the knowledge component in the service offerings but the organisation is still partly a constraint.

5.4.7 Servicing Competitors’ Products
ELS has chosen not to serve any competitor equipment because it wants customers to switch to ELS’ equipment; if ELS can service competitor equipment as well as its own, the customers might not see any reason to purchase ELS equipment. There are three main reasons why the company opposes servicing non-ELS equipment: (1) ELS wants to sell their own equipment, (2) it is costly to provide parts to competitor equipment, (3) there is a lack of competence in servicing non-ELS equipment and they do not receive any service information from competitors. These reasons apply to ELS’ competitors as well.

Except for already existing agreements, the company does no longer offer any extensive SLAs on competitor products. There is however a difference if the equipment is e.g. one year old or eight years old and perhaps possible to commute. Therefore, the time aspect is crucial when estimating possibilities for long-term agreements. It is a balance walk where there is no general right or wrong and ELS considers these issues to be best dealt with at a local level.

When it comes to equipment, it is important to be active and look at the competitor’s product development. Although ELS is also looking at what service offerings competitors develop, it is not a strategic priority for the company and there is no clear process for this. The focus is instead on the customers and their demand.
5.4.8 Internal Divergence
While ELS offers services and integrated solutions to its customers, Electrolux Food Service – the Group’s equivalent to food service solutions to restaurants, canteens, hotels, offices, and hospitals – has decided to offer only products to their customers and no additional services. Potential synergies can thereby be missed at customers like hotels where ELS offers laundry solutions and a third-party company, instead of Electrolux Food Services, offers food services. Besides, a third party can complain on his Electrolux products, develop badwill towards the Electrolux brand, and choose to change to another supplier, something that can be noticed by the third party’s customer which is also an ELS customer. Thus, the interfaces towards the same customer are reduced.

5.4.9 Spare Parts Distribution
ELS has 70,000 articles of which 30,000 are in production. The company is able to replace a function (not an identical component) up to ten years after the equipment has stopped being produced. Due to the fast development in miniaturisation, the most critical components are circuits. The service partners are obliged to purchase ELS’ spare parts. Long-term statistics about the service partners’ spare parts usage is therefore needed. Otherwise, it is very difficult to prove if a partner is buying competitor parts or not.

Web Shop
As a complement to the existing spare parts distribution and the regular ELS online store, the company launched a new web shop in 2000 (see Figure 5.2). This new offering has a centralised, web-based order system coupled to real-time information, and the possibility to choose e.g. ways of delivery. This is done locally today as the country organisations choose which third-party service partners can purchase genuine parts online. This online solution is more convenient for ELS than traditional sales, as the company does not have to invoice customers when they are paying online. The system handles both spare parts and machines sales and it is considered a major success handling approximately 100,000 order transactions per year.
The next step is to offer centrally the same service to importers, which would enable distribution to them or direct to the end-user. This sales channel can help ELS to receive information on which end-users are and where. It has so far been a success with increased customer satisfaction and cost efficiency regarding ELS usage of personnel. In addition, it saves time for all parties involved.

Establishing this channel is mainly a response to pirates; turnover is taken away from the other channels but especially from the direct competitor-counterfeiting channel. Many third-party competitors sell spare parts via webpages, although these differ from the ELS’ website. These companies sell many different brands and have e.g. only 200 top articles, compared to ELS’ 30,000-60,000 articles. When the company is out of an article, they often simply remove it from its range.

One part of the strategy is to lower the price on some spare parts and on consumption articles. However, not all components sold by ELS’ retailers will be offered. A complete control unit that requires considerable technical expertise to install will not be sold online, whereas a sewer valve that the user easily can replace will be offered. The portfolio offered will be adapted for the customer segment targeted, and there will be components sold fitting competitors’ machines also in order to increase the volumes.

The online channel is a low-cost solution containing components that are considered competitive with third-party parts. As the sales process is making some internal resources redundant, less manual labour is needed. The customer pays with his credit card and ELS’ financial partner handles the risk and pays ELS the day after the purchase is made. Initially, the price level will reflect the average international gross price as it is still a trial version and as ELS does not want to interrupt the existing price formation. The company used the following steps in order to implement the web shop:
1. Evaluate which counterfeits to ELS spare parts are marketed through competitor channels
2. Define which components are to be marketed via ELS’ open web shop and which components are to be marketed with ELS services involved only
3. Define pricing/margin guidelines for the web shop product list
4. Define competitive pricing guidelines for the dealer web shop
5. Set-up the open web shop
6. Communicate the open web shop to the public
7. Monitor the open web shop and competitors’ offerings
8. Adjust and manage the open web shop offering

There is no difference between the online channel and the traditional one in terms of the physical spare parts. What differs is the layout of the packaging and possibly the sender. In order to inform the competitors that there is a new actor, ELS might not want to have the central warehouse as the sender. The offering will be named ELS in some form but the question is whether the components will be considered as genuine parts or not. If it is a genuine part and used on a competitor’s machine, the question is if it by definition is a genuine part. ELS has not yet decided how to act, but implementing the online channel at some markets should give an indication of how to put it into operation.

Connection to the Overall Strategy
Selling spare parts online is on the borderline of what strategically has been decided should be ELS activities, as the company should not have direct sales via internet. When this decision was made some years ago, product and not spare parts sales were in mind, so it has been a question of how to interpret the strategic decision, and the service organisation has so far chosen to exclude spare parts.

Internal Profit Sharing
Although the total spare parts sales should have increased after the launch, the traditional sales are believed to decrease. An important internal difference between traditional sales and the web channel is that the latter is centralised. Consequently, local sales companies have demanded a corresponding share of the sales and the agreement that has been set up implies that the country organisations receive a share equivalent to their own sales of the same component. This is considered important, as ELS does not want to take away the profitability and motivation at the local level. Hence, there has been no resistance from the local managers.

5.4.10 Service Development
A closer integration between service technicians and personnel involved in other activities is believed to contribute to better development of products and services.
Feedback to Product Development

Technically responsible personnel from the customer care organisation participate in the product development process, although this input has been too insignificant from the customer care organisation’s point of view. The main driving power in this process is rather increased cost efficiency in the manufacturing than efficient industrial services. Focusing more on long-term customer relationships than on individual product sales will however make an industrial service and lifecycle perspective an important input to product development.

An example that illustrates this is the case with former laundry machines, which had the aperture gasket in the culvert, wearing it every time laundry was put in and out. The aperture gasket on newer machines is on the door, which is better for the customer despite the fact that the sales for those specific components decreased. The service organisation believes that there is a balancing between the two perspectives of what should be carried out, depending on e.g. if the focus is on component sales or solutions selling.

Organisational Obstacles for Development of New Services

There is a clash between the traditional hierarchical organisation with strong product focus and the new customer-focused management style. When it comes to organisational aspects and obstacles, the main issue is how ELS views its customer relationships, e.g. if company representatives should handle the operational relationships or if they should be handled through service partners. The probable scenario is that ELS will strive to have customer relationships whenever it is considered possible and that there will be countries and/or segments where the service relationships also in the future will be handled through partner companies. The relationships with service partners can differ considerably depending on customer segment; self-service (e.g. laundry rooms, coin-ops and laundromats) is a very different business from commercial laundries with heavy-duty equipment and high demands on response time.

Most probably ELS would have chosen a different organisational model if the company had started from scratch today. There is an example of a country where ELS originally had no own service organisation and where it bought the largest service partner with the intention of gaining profitability, obtain customer relationships, and avoid a possible situation where a competitor would acquire the service partner and thereby attain a monopoly situation.

Strategically, ELS is moving towards a situation where it acquires key partners, have ELS personnel where profitable, and use third parties where needed. A third party can also be a traditionally good partner to whom ELS has well-developed relationships and where a part of the partner’s business is servicing ELS’ customers. In this situation, it might not be desirable to weaken the service partner by taking over the industrial services.

Proactivity

Regarding the development of new service offerings, it is deemed that salespeople, service technicians, and development engineers should be involved. It is difficult to determine if any specific customers are generally for or against buying and signing new offerings, but it is partly depending on the customer segment. The existing strategy – to strive to have the customer
relationships and work with their own service technicians to the extent possible – is believed to result in a new type of sales organisation; one organisation working with existing customers and one working with new ones. The aim of the service strategy will not be to have a specific service strategy but to have a customer relationship strategy, as the industrial services will not be viewed as something separate but as an integral part of the long-term relationship.

5.4.11 The Cooperation between ELS and AGA Linde

On the initiative of AGA Linde, ELS has developed laundry equipment that uses carbon dioxide instead of detergents. ELS delivers this equipment and attached services to AGA Linde that sells it further to customers with different capacity and availability agreements. The estimated potential is considerable due to future legislation that will replace current laundry processes with less ecologically harmful alternatives and one of very few competitive alternatives today is the ELS/AGA Linde solution. The carbon dioxide equipment accounts for about half of ELS' sales to AGA Linde; traditional laundry machines, dryers, and finishing equipment are also sold. AGA Linde purchases complete laundries and in order to work with carbon dioxide equipment a complete laundry process system is needed. ELS is responsible for the guarantee undertaking towards AGA Linde and manages it through the local companies on an operational level.

With this technical platform, AGA Linde is considered to have a very favourable position; selling gas, controlling the technology, and offering a new business concept, where customer solutions and not only equipment is sold. The gas technology has initially been developed by ELS and the company could have taken a lead but made a strategic decision not to; instead, AGA Linde has taken in and adopted the concept, thereby increasing its opportunity to sell more gas. ELS' decision not to invest further in this technology came at about the same time as the heavy-duty equipment segment was sold out. The carbon dioxide equipment belongs to the medium-size segment and the question was whether to continue with investments in heavy-duty equipment and technology or not. Initially, further investments were decided but they were later discarded and AGA Linde became a partner, willing to sell the concept. Having a partner selling these new customer solutions could be a threat to ELS if AGA Linde decides not to sell the offering to some laundries. These customers will not have access to the equipment and will therefore be buying from a competitor instead. However, this is a contractual issue between ELS and AGA Linde.

Historically, a competitor introduced the carbon dioxide concept in the USA some years ago but the equipment has not been working very well. When ELS managed to construct a well-functioning machine, AGA Linde learnt about it and discovered the value of the concept if the laundry equipment is well functioning. The carbon dioxide solutions have a huge potential and already today, local laundries are demanding this equipment because it is better from an environmental as well as running cost point of view and because there are increasing restrictions on investments in dry-cleaning equipment. As a decompression chamber is being used, the equipment price is significant; a roughly estimated cost for a household machine would be SKr200,000. Therefore, ELS is moving from customers using 200 litres equipment to cover
customers with also 400-800 litre capacity machines rather than to sell to segments with smaller customers.

5.5 Information and Communication Technology Applications

Consistent ICT solutions are seen as major success factors regarding improved response time, data accuracy, and service quality in the customer relationships and for improving operational efficiency. On top of continuous improvements and additional features in ICT and ERP systems, PDA solutions for service technicians, web shop for spare parts, installed base database, and a centralised call centre solution are solutions being implemented or discussed. Call centres are managed locally in the subsidiaries and most European countries did not have a call centre solution as in 2004. A web-based warranty system aimed at increased quality during warranty periods is also being discussed. The top 10 markets have the same PRMS ERP systems and new countries are continuously joining in. Web systems are often developed locally by ELS in Ljungby in Sweden and in Copenhagen, Denmark. If, and when, new technology for service technicians (e.g. laptops, scanning) is implemented, the payoff time has to be less than six months.

New technologies enable ELS to obtain much more data about the service operations and the usage of the installed base. Thus, a change is taking place in the way information is perceived. It is not only about what is technically possible to make and how to enable the extraction of even more data, but in what ways value can be created and enhanced. The local service organisations have however limited time and resources to process the data and this is therefore handled by the central service organisation, which also has access to the data. ELS is used to work quantitatively and e.g. look for peaks in error types and measures and has only recently started using product information and error codes in order to obtain the information needed. The company’s databases are based on the logic that error codes are put into the system, making it possible to search the model number and error code to obtain previous errors and the solutions associated. These databases are not quantitative; if there e.g. has been a specific problem once or 100 times does not matter for the service technician’s repair solution. The quantitative data on where and how often an error has occurred is however stored in other databases but it is not information used by technicians in the field. There is still an educational task in internally explaining the differences between the traditional qualitative databases and the databases handling problem causes and solutions.

Technical documentation is another issue being discussed, e.g. document sizes. Images and other documents have to be in a different format if used in PDAs, especially if the cost is based on the amount of data being transferred. Therefore, a critical factor is to optimise the document flows and sizes with respect to the receiver’s situation, in this case the constraints set by the service technicians’ equipment and the data transfer connection. Instead of having a service handbook as a starting point, discussions will rather be centred on specific problem areas, thereby requiring new ways to handle and present service information. The implementation of PDAs is made gradually country-by-country. As a technician costs regardless of degree of capacity, an important part in the development of mobile solutions will be to utilise information about where
the technicians are located in order to improve route planning. An extensive SLA with short setting time can cause a drastic change of plan in work orders, resulting in reduced service quality.

5.5.1 Installed Base Database
An installed base database is currently being created and a method used to receive the necessary information from customers (equipment type, application, installation date, customer site, actions taken, etc.) is to make the guarantee of purchased products valid only if this information is provided. Customers are accepting to supply ELS with this information, as they believe it will enable ELS to provide maintenance and repair services faster than before.

5.5.2 Call Centre Solution
A lack of common service strategy for handling customer requests (call entry and call handling) has been identified and there are plans to implement a centralised call centre solution. A major strategic target for ELS is to have a continuous customer relationship during the operations phase. Today, there are retailers and local service partners with well-functioning customer relationships and systems, and they feel that ELS is trying to take those relationships away from them. Other service partners have less developed Customer Relationship Management (CRM) systems and those companies are instead grateful that ELS will provide them with working orders, that ELS stands for the financial risk, and that no credit information handling will be needed. The implementation has slowly started but it differs considerably between countries. In countries where most sales historically have gone through retailers, it is very difficult to break in, whereas in countries like Sweden where most sales go through ELS directly it is a natural development.

A common call centre system would have ELS as a contact point regardless of whether ELS or a third-party service partner performs the services. Customers of all countries in scope will be able to call a free local number that is available via a label on the laundry system. The call handling will be managed in the ELS call centre system, which is operated by ELS staff during office hours and by an external provider during after-office hours, ensuring around the clock availability. The ratio between own ELS and external personnel will have to be decided. After the call has been handled, the customer's request is routed to local ELS technicians or a third-party service provider depending on availability, skill profile, and type of SLA and the service technician executes and reports the transaction. Finally, the local ELS organisation invoices the customer and eventually pays the service provider for the reported service execution (see Figure 5.3).
Customers of all countries in scope call a free local number that is available via a label on the laundry system

- Call management in the ELS call center system
- Operated by ELS staff during office hours and by an external provider during after office hours, ensuring 24x7x365 ELS availability
- Ratio outsourced / own ELS staff will be optimised

The request is routed to local ELS technicians or a 3rd party service provider as of availability, skill profile and service level agreement
- Technician executes and reports the transaction.

The Local ELS organisation invoices the customer and pays the 3rd party service provider as of reported service execution.

Figure 5.3 The common call centre system.

ELS has listed the steps required to implement the call centre solution and the processes related to it:

1. Select and acquire phone numbers for free/local cost service calls
2. Negotiate the approach with third-party service providers
3. Place free/local cost service call numbers on all new laundry systems and start replacing old labels on existing laundry systems
4. Route new service number into local call centres
5. Set up a common call centre
6. Route local service numbers into a common call centre system and to call centre agents in the transition plan per evaluated country
7. Run a common call centre solution
   - Routing to ELS and third-party technicians as of routing rules
   - Reporting to global and local ELS organisation
8. Hand over transaction invoicing to ELS country organisations

5.5.3 E-learning

In connection with the laundry systems becoming increasingly complex, ELS has recognised a need of knowing not only what product knowledge the service partner has, but also the knowledge profile of each individual technician. A wrong measure by a non-trained service technician in one country might not affect that specific business deal, but can lead to ELS missing business opportunities in other countries and possibly not becoming a preferred supplier. Therefore, an online certification programme has been launched to assure a homogeneous quality of industrial services and that external service personnel too have the skills needed. It was
developed by a local IT company in Växjö, Sweden, and the investment costs were for that reason considered as moderate. The payoff time can consequently be considered almost non-existing. However, there is a minor running cost of managing the certification system.

The e-learning certification programme is free-of-charge and the aim is to comprise 1,000 service providers. It is also a way for ELS to find out better who the service partners actually are. Husqvarna, an Electrolux business unit that offered outdoor power products, has implemented a similar certification programme successfully. So far, it is too early to evaluate the success at ELS, but the reception among service partners has been positive.

None of ELS’ competitors has a similar certification system, which is one of the reasons why ELS developed the system. The system cannot only ensure that the service partner has the right competence, but also that the customer/user has the knowledge needed. Furthermore, online information, technical bulletins, and the spare parts catalogue can be linked to it, and it can serve as a training package whether it is e-learning or not. It can be used for the customers’ operational personnel in the laundries so that they do not only receive information verbally but also through the system to make sure that they know how to handle the equipment correctly. The customers pay for the training that is either bought separately or bundled in a service package.

5.5.4 Certus Management Information System

Certus Management Information System (CMIS) is a management system for laundries that is used for better optimisation of laundry programmes and flows. With the CMIS system, it is possible to change laundry times, batch sizes, and shorten down centrifugation times slightly and still handle more laundry per day. By monitoring and governing the customer’s process through CMIS, ELS can help to improve the software and laundry programmes. It is possible to have CMIS in up to 30 machines in one location.

The selling point is that CMIS can help the customer to maximise the equipment uptime in three ways:

- CMIS keeps a log of the maintenance work performed on the laundry machine. The customer has access to the logged maintenance statistics and can thereby see what has been done to the machine, when, and by whom.

- If minor errors and/or human errors occur, the system alerts the customer and one automatically receives suggestions on a PC on corrective measures. This feature is considered especially useful when trying to see if one is dealing with a human error related to the customer’s handling or an actual equipment error.

- The customer has access to alarm statistics, showing the five previous error codes.

Input can be obtained via CMIS, especially to the installations ELS can connect. CMIS can be run as a local network only or there can be a gateway to ELS so the company can monitor processes, error codes, and when the laundry system is out of operation. Not many competitors have systems similar to CMIS, which has been offered for some years but the sales have not yet
been extensive. It is a standardised product regardless of country and ELS personnel install it at the customer site.

The Wash Program Manager is open software that the customer can use from a PC in order to create new wash programmes. If the customer has a poor knowledge of CMIS, there is a risk that the wash programme created will wear out more on the laundry and the machines and increase the water usage compared with the original programme. For this reason, it is discussed whether to possibly include e-learning in the next step or other means to ensure that the customer knows how to optimise the laundry process. However, the risk with poorly customer-designed wash programmes is not only limited to this software because on many machines the customer can create programmes via the keypad on the machine.

The customer buying the CMIS software often gains economically rather fast according to ELS. The company can (1) help the customer at stoppages and downtimes and connect to his laundry system to analyse what has happened and provide the service technicians with correct information, and (2) answer to a customer request and charge for this service. Charging customers is however depending on what relationship there is between the two parties as there is no standardised pricing today. When it comes to organising CMIS, ELS is in the beginning of this process, if it is to be managed centrally by the headquarters or locally by the sales companies. As a rule, the customer wants the local organisation that has sold the laundry systems to deal with it.

The machines that support CMIS all have a CMIS port as a standard and the new generation of products will all have a CMIS port. Nevertheless, the major impact of CMIS will come when a majority of the customers has internet access. An idea not yet discussed internally is that customers that bought booking systems via internet can login and view the degree of booking, and specify at what times and days visits of ELS technicians are preferable. Although much new data can be extracted through CMIS, ELS has to have strategies and methods on how to use the information so it can enhance the company’s service offering.

5.6 Competitors
An analysis of market share by country, as reported by sales companies, shows that about 60% of potential turnover in services is lost to third-party providers, either service partners or competitors. However, the market share of both service handled by ELS and service handled by its service partners vary substantially between different markets. There is e.g. one market where 90% of the services are handled by ELS and the remaining 10% by its partners, whereas a market at the other extreme shows a 60% share of service partner business and the remaining share taken by competitors.

According to the same analysis, at least 22% of ELS’ potential spare parts sales are given away to interchangeable parts providers as many customers and dealers order counterfeit products from competitors. There was even an incident in Sweden in 2005 where an interchangeable parts provider offered a heater element with protection of designs by ELS, and it illustrated how some suppliers fail in their obligations towards ELS and sell exclusive components to competitors as well.
A trend in the laundry industry is that some of the major interchangeable parts providers not only supply spare parts but increasingly also offer training and other services traditionally associated with companies like ELS. Among the measures ELS can take to prevent these third parties to gain further success, is to lock some service providers out from accessible information about spare parts and to give authorised providers better provision. Another move taken is to put up labels on the products with a toll-free number to ELS in an attempt to make the customer more inclined to contact ELS.

The quality of the new Asian competitors’ products has improved over the years and they sell products in order to enter European markets although they start in a limited scale and do not offer any extensive service offerings as they still lack the local service organisations. The German company Miele is considered ELS’ main competitor in Western Europe and in customer surveys, it has been selected the best company in meeting customers’ service requirements. Among the services, Miele offers lease financing to its wet cleaning customers. In the USA, Milnor is the market leader having the highest scores in customer surveys, ahead of Wascomat, which is ELS’ USA retailer.

A part explanation of Miele’s high scores in customer evaluations is possibly that Miele has proactively worked with the brand both towards professional customers and towards consumers offering quality laundry equipment and white goods. They have the same service technicians for both professional customers and consumers, but do not serve the heaviest segment which ELS supplies. Hence, the evaluation results might be more correlated to brand building than to the offering itself. Nevertheless, Miele has technically well-equipped service technicians and were early in implementing a PDA-based mobile business solution, although the company has no equivalent to CMIS.
6 ITT Flygt

ITT Flygt is a leading supplier of submersible products, solutions, and services for use in environments ranging from water and wastewater treatment, raw water supply, abrasive or contaminated industrial processes, mining, and crop irrigation. Sales amounted to $873 million (SKr6,550 million) as in 2004. The company was founded in 1901 and its corporate headquarters are located in Stockholm, Sweden. In the 1940s, the world's first submersible close-coupled motor driven pump was developed and today the most common products are:

- Submersible drainage pumps for building sites and dewatering of mines
- Submersible sewage pumps and mixers for treatment plants and pumping stations
- Submersible propeller pumps for prevention of flooding and irrigation.

A wide variety of products is offered, ranging from SKr2,000 to SKr2 million each and from 10 kg to 10 tons. The enterprise has approximately 4,070 employees of which about 2,500 are employed outside of Sweden. Further, it has 44 sales companies, fully or partly owned. Two manufacturing entities are located in Sweden, one in Germany, one in China, and one in Argentina. Europe is the most important market as a majority of all sales takes place there (see Figure 6.1).

![Figure 6.1 ITT Flygt's turnover per continent in per cent of 2004 turnover.](chart)

Since 1968, ITT Flygt AB is part of the New York-based engineering company ITT (International Telephone & Telegraph) Industries Inc. with 2005 sales of $7.4 billion. The adjusted operating margin is 11.8% and the Group has approximately 40,900 employees around the world. ITT Industries is a major supplier of fluid technology pumps, systems and services,
and military defence systems. The Group also makes industrial components used in e.g. telecommunications, computing, aerospace, and transportation. A majority of sales derives from the US market and Fluid Technologies is together with Defence Electronics & Services the Group’s most important segments (see Figure 6.2).

The Fluid Technology segment had 2005 sales of $2.8 billion, making ITT the world’s largest pump producer. North America and Europe are the two major regions and the largest product segment is wastewater handling (see Figure 6.3).

Brands include Flygt, Goulds, Bell & Gossett, A-C Pump, Lowara, and Vogel. As in 2004, 11,950 people are employed in 137 countries and the company has more than 2,000 independent distributors/agents at disposal. Together with AWT, Flygt is the subsidiary constituting the Wastewater part of ITT’s business (see Figure 6.4).
6.1 Industrial Services – A Background

Of ITT Flygt’s total sales of $873 million (SKr6.5 billion) in 2004, services and service-related activities constitute an obvious minority. Spare parts sales make up approximately 14% of total sales whereas activities categorised as Service (i.e. workshop repair and maintenance) constitute 5%, which corresponds to $41.8 million (SKr313 million). The activities categorised as industrial services are, except Service (i.e. workshop repair and maintenance) and Spare parts, Installation, Rental, and Replacement pumps, making service sales approximately 35% of total sales.

In recent years, ITT Industries has made increased demands on profitability and cost efficiency regarding services. The Lean Europe project currently running clearly denotes the increasing importance and internal awareness of industrial services. In the project, the service organisation is analysed in order to improve efficiency and effectiveness of service production processes. Today, whereas sales of spare parts are highly profitable, the company often makes losses on service hours. ITT Flygt is a rather decentralised company that the management strives to centralise further. Most subsidiary companies have both own service workshops and use service partners when necessary.

6.1.1 Internal Organisation

ITT Flygt is organisationally divided into four business areas: Product Management, Operations, Marketing and Sales, and Finance. The Marketing and Sales organisation is divided into three geographical zones and three business units (BUs) based on customer segments: Public Utility, Construction & Mining, and Industry (see Figure 6.5). The service organisation is part of the BU Industry but service all three BUs/customer segments.
According to central service managers, there is a lack of dedication to industrial services in the company. There is also an organisational problem connected to roles and responsibilities; it can be unclear who is selling, who is in charge of business development, who is responsible for pricing, etc. Since the central service organisation provides little help on pricing issues, subsidiaries work independently on price models for different service contracts. While the operative service selling is being made in the subsidiaries, the ambition is to an increasing extent prepare common service strategies centrally. This is however encountering strong political resistance from local management as especially well established subsidiaries at major markets do not wish to lose some of their power and degree of independence. Therefore, top management commitment plays an important role in changing the current processes to more centralised and service-orientated ones.

In the subsidiary companies, personnel working within the service organisation are devoted to it and are focused on the aftermarket, whereas product sales personnel show little interest in services and lifecycle aspects. By assigning more resources to one of the two groups, the management can change the relative strengths through active involvement. Centrally, support is given to the service organisation as more personnel are allocated to services both centrally and in the subsidiaries in spite of a strategic focus on cost efficiency. In the subsidiaries, there is more decision-making and prioritisation myopia and more resistance to change, although more focus is given to industrial services than before.

A central service market organisation has been built up at ITT Flygt; previously there was an organisation for technical support, but no one was working actively with the service offering. The new central organisation is working with service business development and all European service managers from the subsidiaries meet four times per year, something that has significantly increased the focus on services.

**Key Performance Indicators**
A parameter commonly used is cost per sold service hour and level of utilisation of personnel and besides, different financial KPIs such as cost and revenue ratios are frequently used. Gross
profit margin per hour and type of contract is also measured and compared between different countries as well as workshops. Another interesting KPI is the ratio spare parts sold through the own service organisation compared with total spare parts sales, which can give a picture of how widespread the use of non-Flygt parts is. Attempts have been made to obtain this information cumulatively – comparing the number of sold units with the percentage of products that customers buy spare parts to – but it turned out to be difficult and imprecise because many parts can be used in very different products. Only a few spare parts are unique for specific products.

KPIs that can be regarded as objective and that measure the degree of maturity are desirable, but the problem is to know how to best measure this service development. One KPI used is the relation service market, in terms of spare parts and services, compared to product sales although it is considered an improvised solution as it does not cover all important dimensions. From the turn of the year 2005/06 a new service report system, where it is possible to compare KPIs between different subsidiaries, was implemented. A common business application system is not needed when calculating the KPIs and as the instructions are the same to all subsidiaries, the hope is to generate comparable KPIs such as direct/indirect cost quotient, degree of invoicing, and time lost.

Customers are not directly interested in the KPIs used to measure internal performance, but rather information about equipment performance, product benefits, water and energy consumption, and utilisation, as well as broad outlines of what work has been made by ITT Flygt personnel. This could e.g. be a spreadsheet containing work history, when visits have been made, when future visits will take place, and what parts have been replaced. Some customers are requesting online lists containing this information.

Incentive Systems
Today’s incentive system is product-based only, something solely rewarding sales of new products. Furthermore, the sales personnel do not take into consideration whether the customer is creditworthy or not, as this aspect does not make any difference for the incentive system. If services would be comprised in the incentive systems it would probably be advantageous to service sales.

Service Technicians
ITT Flygt’s internal service organisation is used for most activities, but service partners are also used and are more common on some European markets than others. Four hundred service technicians are employed in the European subsidiaries. Focus on customers’ needs is a company core value that according to ITT Flygt should guide service technicians and other personnel in their daily work.

6.1.2 Profitability
Although service market activities (including spare parts sales) constitute about one third of the total revenues, few resources in terms of financial resources, KPIs, etc. have traditionally been allocated to the service organisation. However, the situation has improved compared to some
years ago. Norway, Austria, Denmark, and the Netherlands are the markets delivering the best results from their service organisations, something considered partly derived from the national management's focus on services. Salary level and competition are other factors affecting profitability. There is a major difference in service hour break-even between e.g. Norway and Italy; Italy reaches break-even through spare parts sales since the price per hour possible to charge for is low due to competition from small service companies. Norway, on the other hand, reaches break-even on service hours only. Well-functioning CRM systems are an important tool in becoming more profitable.

The national subsidiaries have major overhead costs and they are working with the service market relatively independent of one another. Only five of the 15 European subsidiaries make profit on service hours, which nevertheless is an improvement from 2002 when only two companies were profitable, and the target for 2006 is a zero-sum result for companies making losses today and increased profits for companies already making profits. In order to improve the efficiency, national subsidiaries were divided in a number of regions in early 2004 (see Figure 6.6).

![Figure 6.6 ITT Flygt's European regional division.](image)

Historically, the line of argument has been to obtain profitability on spare parts, whereas losses often have been made on service hours. Service production has been viewed as something different and difficult, and this approach partly can explain the losses made and why many activities have been given away to small third-party providers.

Many contacts are inadequately designed, with rebates on product units and sometimes on services, which has lead to the company trying to standardise its contract forms. For instance, the sales organisation at one major European market signed a contract with a large water company including a rebate on products and to a certain degree on services too, without informing and receiving approval from the service organisation. The contract resulted in losses on service hours and the local sales and service organisations disagree with each other on who is to account for the
loss. From central direction there is however no indications of rebates on services, in connection to new product sales, being frequently used. So far ITT Flygt has not been able to follow-up the profitability of contracts in general, only some occasional customers.

In contrast to goods, which have a certain production cost regardless of what market they are sold on, for example service personnel salaries can vary considerably between different markets. As a result, services cost differently depending on the market. ITT Flygt has therefore chosen not to include services when international contracts are signed, and instead negotiate their price locally. Moreover, because wage levels differ between countries it is a complex task always to be updated on all local service costs when centrally negotiating with customers. Furthermore, it is believed to be more difficult to reach a consensual agreement locally if the complete contract is signed centrally.

**Annual Growth**

The service and spare parts sales (including replacement pumps), internally often called aftermarket, today stand for approximately 35% of the product sales, but the potential is considered 80-300% in three different scenarios that have been presented internally. If the installed base lifecycle length is taken into consideration, the figures can be even higher. Today the annual growth of service sales is the same as for products but a major potential has been identified through internal benchmarking between different geographical markets. New services offering higher value are recognised as having an even higher potential for growth and profitability, although resources, competences, and purposefulness are insufficient. In addition, the degree of maturity for new service offerings is changing slowly both internally and among customers, of which the latter is an important aspect to recognise.

**6.2 Customers**

In general, customer demands are continuously more challenging and difficult, products are improved, and the service needs are therefore being reduced. At the same time, ITT Flygt is offering more and more services, which is difficult to communicate to some customers. In addition, contact points between the company and its customers are becoming fewer, which implies that more of the sales will go through the service organisation not usually working with and having experience of sales activities. Local relationships are important in the operational phase of the customer relationship whereas relationships with managers higher up in the hierarchy are needed when more extensive and international contracts are signed since their authority is required.

**6.2.1 Customer Segments**

When handling services, customers are segmented in the same manner as products: Public Utility (wastewater), Construction & Mining, and Industry of which public utility customers are the most important ones. Although marketing activities and service delivery are adapted to specific customer segments, today’s offering is much standardised with the same contract forms being offered to all customers. There are contracts where ITT Flygt has made some customisation, but
these contracts have often been seen as segment-crossover activities that the company is trying to perform as efficiently as possible. An adaptation to the customer segmentation made for product sales – Public Utility, Construction & Mining, and Industry – has been discussed internally as it is not considered reasonable to have the same offerings to all customers.

One solution is to have a separate organisation/process for each customer segment as mining customers can have very specific needs that differ from public utility and industry customers. Establishing a workshop in a mining area with many pumps is an example of this. However, products and services are not necessarily divided according to customer segments; both industry customers and municipalities can e.g. have very similar wastewater treatment systems.

### 6.2.2 Lifecycle Cost Awareness

Minimisation of customers’ lifecycle cost, i.e. total cost of purchasing, operating and disposal, is a sales argument used in ITT Flygt’s marketing; it is even marketed as the driving force behind the company’s products and services. A possible reason why many customers especially in the public utility segment hesitate about taking lifecycle costs into consideration when buying products is that the extent of the offering increases many times over. Customers often prefer to purchase the pump equipment and continue as usual instead of considering lifecycle aspects and become anxious to reduce cost and risk. A likely reason for municipalities and other local authorities to be reluctant of signing more extensive contracts is that the issue is then taken from an operational level to the utility manager’s and local politicians’ desk. Therefore, it is seldom brought up unless there is a driven politician who wants to privatise parts of the operations.

A problem with signing arrangements aiming at minimised lifecycle cost with private customers can be that, when discussing a major maintenance or outsourcing contract, a customer with one or two pump stations do not only want to include the wastewater pumping, but also e.g. fans, faucets, taps, and freshwater, which is usually not within ITT Flygt’s field of competence. Possible activities included could also be such things as mowing the lawns surrounding the pump stations. Although ITT Flygt has experience of equipment maintenance, there can be products the company has no knowledge about and even if the competences needed exist, there can be a lack of competence for calculating the cost and price associated. Therefore, the risk becomes too high and the company unwilling to take it.

Even though these problems exist, there are many possibilities to take a more extensive responsibility when customers are outsourcing parts of their operations. A limitation so far from ITT Flygt’s point of view is that these contracts in general include many service hours and few spare parts, and service hours are far less profitable. Therefore, it is hard to justify taking those contracts today, and the number one priority is to become more cost efficient so these types of agreements will be possible to offer.

### 6.2.3 Public Utility Customers

Contacts are often well established with the public utility customers’ operational personnel, officials, and sewage-treatment plant managers in Europe. The same relationships most often do not exist at the local political level and it can therefore be more difficult to have an impact on
public customers’ strategic decision-making process. In the UK, previously public water companies have been privatised, which has had implications on the way they are organised and do business. In addition, it has resulted in fewer, larger actors than before. There are now about seven major water companies covering the market and having significant purchasing power. A clear change similar to the one in the UK is not taking place in many other European markets, but there is a trend in e.g. Sweden towards rationalisation and building larger organisations with economies of scale and a stronger position towards suppliers.

Previously, wastewater treatment was seen as a local duty that the water company was handling solely with own personnel. The last 10-15 years customers have been privatising some, but not all, activities. Most utility markets are still regulated and public utility customers have thus little motive of signing extensive contracts since operating a plant is a large share of their business and employs many people in the local area. For that reason, municipalities are reluctant to outsource too much and thereby making their own personnel redundant, something politically impossible in many smaller municipalities and sparsely populated areas. A small municipality might have 20-30 employees involved in operating the pump stations and feel politically restrained to dismiss three quarters of the personnel at once. Instead, they wait until employees leave the utility company or retire, and then outsource operations at one pump station at the time.

6.2.4 Regional Differences

There is a major difference between European markets in penetration of industrial services; small markets tend to have a higher number of service sales than larger and less mature ones, something indicating a latent growth potential. While the ratio product sales (pumps, accessories, and resale) to aftermarket sales (parts and service hours) is approximately 60% at one smaller market, it is less than 20% at a larger, less established one (based on sales 1998-2002). There is also a considerable variation in spare parts sales between markets. Customers with large installed bases often have some forms of contracts whereas customers on more fragmented markets like the Polish one are less willing to sign contracts.

There are varying needs depending on geographical market, where customers at some markets like the Swedish one are more interested in lifecycle aspects than at others. Large variations in service market penetration between markets indicate a growth opportunity, and smaller markets tend to show higher penetration while larger markets lag behind. In summary, three alternative analyses point towards a major service-market growth potential.

6.2.5 Customer Relationships

ITT Flygt values the relationships with customers and this is generally mutual. A marketing and business development employee after visiting his first customer was surprised at the time the customer took to discuss matters. Previously working for another company, he was used to quick, half-hour meetings with suppliers. When on the other hand visiting ITT Flygt’s customer, he experienced a very good dialogue for hours and felt that there existed both a personal relationship and a professional relationship with the company, ITT Flygt. Relationships are
valuable not only for the continuous feedback received from customers, but also for updates received on what projects the customer is involved in and when they are estimated to begin. The earlier ITT Flygt is involved in the sales process, the more it is able to exert an influence on the interested parties.

Relationships regarding industrial services are however mainly on an operational level only, with personal bonds between service personnel and customers’ employees. In an example from France, the customer did not want the pump to be sent by lorry, but preferred to personally come over and have some coffee. Nevertheless, this example also illustrates that relationships can be costly in terms of time, and a question is how to account for these events.

A way of thinking that has existed in the company for many years is that the objective is to offer a solution to the customer’s problem, regarding both product sales and services. Employees do not talk about selling a pump and that an invoice will follow, but rather about jointly solving a problem. Often the customer has a problem in an existing pump station and this might lead to a new sale or a replacement deal in the end.

ITT Flygt has had sales training for the sales force where strictly businesslike relationships have been emphasised but this was met with opposition from the personnel as the present corporate culture differed significantly. Since the company wants to work with long-term relationships that are beneficial for both parties, this sales training was questioned internally. Sales and service organisations have similar corporate culture although they are independent. Nonetheless, the relationships must be based on an economic exchange and the service production must be efficient. This can therefore be an internal balancing act; employees should not sit and chat with customers but they should not act strictly businesslike either. Therefore, focus is on improving back-office operations so that customers can receive better service in spite of lower costs.

6.3 The Sales Processes
There are important distinctions between the goods and the service sales processes and therefore, both these processes have to be examined separately.

6.3.1 The Goods Sales Process
The public utility market (including privatised water companies) is ITT Flygt’s most important market. One problematic aspect of this market is that it is fragmented and vertically structured with several different actors involved in the product sales process. In addition, the different actors have very different interests and priorities.

When a customer is about to purchase for instance a pump station or a sewage-treatment plant, a consultant is called in to prepare a specification. This procedure usually takes from a few months to several years depending on the extent and complexity of the project before the customer receives the specification. It is then sent to a contractor, or to several if the project is large; e.g. one builder, one dredging contractor, one civil work contractor, one mechanical equipment contractor, and one electrical and control systems contractor. Sometimes there is a
prime contractor having contact with the customer and buying from several subcontractors. The contractor/contractors in turn procure equipment from suppliers such as ITT Flygt. ITT Flygt delivers the products to the contractor and sends him the invoice, and the project site is handed over to the customer after the final inspection (see Figure 6.7).

This sales process is similar on different markets; what can differ are the strength and size of actors and the industry structures. Customers in the UK are private enterprises and in Central Europe, there are a few very large contractors, which sometimes have significant power. ITT Flygt seldom takes responsibility for the installation of the equipment at the customer site.

The process means that none of the actors involved in the purchasing process is interested in lifecycle aspects. There are some variants where the contractor is assigned to operate the plant 5-10 years to spur him to take a more comprehensive approach. The contractor then often has to make the consultation, specification, and procurement himself and also include lifecycle aspects, as he is to manage the plant himself initially. In the more common set-up illustrated by Figure 6.7 it is only the customer who has the incitement to include e.g. energy and service costs in the specification. In addition, financing is a possible aspect in foreign projects or support projects, but it is not discussed further in this thesis.

ITT Flygt tries to maintain good relationships with all actors involved in order to ensure that Flygt products are sold. Discussions are continuously occurring regarding how to behave towards the actors and regarding which actor is the most important one in the sales process. The contractor is important, as the one who is sending the formal product order and with whom the company negotiates. It is also advantageous to be prescribed by the consultant, i.e. that he includes ITT Flygt specific equipment and/or designs the plant so that it suits the company’s equipment, and it is therefore advantageous to have an established relationship.

Having relationships with end customers is important not only during the products’ operational phase but also in connection with the projection. Some customers are powerful compared to consultants and contractors, and are therefore able to suggest whether to choose ITT Flygt’s products or not. However, it happens that especially the contractor does not consider end customer recommendations, claiming that another tender has been offered that also complies with the consultant’s specification but is considerably cheaper. Since the contractor follows the specification issued he can choose the most favourable supplier in his opinion and therefore, it
sometimes happens that an end customer offers to pay the difference between the most inexpensive product offer and the preferred one; either from ITT Flygt or a competitor.

The consultants can be everything from one-man firms to larger companies covering a geographical market (e.g. former K-Konsult in Sweden) and international enterprises that also can act as contractors and build plants worldwide. If the project is a minor assignment, the customer on occasion copies an old procurement document similar to the new one, changes the name of the object, and skips the consultant in order to save project costs.

Service Aspects
Regarding service sales, ITT Flygt usually approaches the customer when the equipment is delivered and installed or, if the customer has no interest of discussing it earlier, when the guarantee time has expired. Typically, the service manager who has the customer within his district brings up the issue of services and service contracts. Contractors are generally only focusing on price and they are uninterested in service contracts, lifecycle costs, and energy consumption aspects. As they usually only operate the plant a few initial months they have a short-term mentality that ITT Flygt has to comply with. As the customer often turns a blind eye to lifecycle costs initially due to internal political reasons (e.g. different budgets), it has every now and then backfired when ITT Flygt has brought up lifecycle aspects and service offerings in early discussions with customers. The company believes that the customer is unwilling to be reminded of all operational costs in the procurement phase, and therefore instead turns to a competitor not mentioning running costs.

Some public customers in Sweden have e.g. an Agenda 21 programme and they have been advised by local politicians to increase their environmental awareness, which means that energy consumption is a parameter that must be included in the information given to the consultant for the specification. Lifecycle costs are then included and sometimes there are calculation models of how to balance between product price, service cost, energy cost etc. Sometimes consultants have included a clause in the specification stating that the supplier is fined if the energy efficiency stated is not achieved. Suppliers like ITT Flygt, which do not compete with lowest unit price, are keen to help consultants with such specifications because they do not want to be involved in a product price war.

Industry Customers
In principle, the sales process and market structure is the same for industrial customers as for public ones, even though more private companies than public ones are willing to try new solutions and contract forms. Some larger companies have in-house knowledge about water treatment and do not have to call in external consultants, but most often still use contractors in the projects. Most industrial customers have however only one or two pump stations and are therefore more dependent on consultants as they do not have the specific knowledge themselves. Consultants are also hired if environmental demands are presented by the County Administration.
Possible Increased Role

One possibility for ITT Flygt to take an increased role in the sales process is to have a much larger responsibility for the contracting part. A lot of competence is however needed, competence that the subsidiary companies have not always got. Some subsidiaries have been working successfully with installations whereas others have been less profitable and no longer offer it. The subsidiaries working with installations act as prime contractors and coordinate different local actors. Offering installation services is both a business opportunity and an increased risk for ITT Flygt, and sometimes the customer wants to do business with one large actor responsible for products, project coordination, and installation instead of engaging a local contractor to do the installations.

Being a contractor is associated with relatively small margins; often no more than 3-5% gross margin and therefore seen as a risky business. In addition, ITT Flygt’s average market share is only 10-20% and the remaining 80-90% of the actors in the market are also customers to ITT Flygt. For that reason, it is generally considered better not to compete but to strive to maintain a good relationship with the contractors. Nevertheless, it is a matter of what position and market share one has and there are markets where ITT Flygt has 70-80% of the business. On these markets, it is possible to refine and improve profitability whereas a small market share is associated with high risks and jeopardising existing relationships with contractors.

Discussions have also been held internally about whether to compete or not with the consultants and so far, the decision has been not to. If offering consultancy services and competing with existing consultants, there is a potential risk that consultants will recommend another pump brand in their specifications and in that way respond to ITT Flygt’s market break-in. Instead, the company assists consultants not having enough knowledge about the submersible pump business. Consultants receive support to make a correct specification according to customer needs; some only erase ITT Flygt’s logotype from the specification received and sends it to the customer. ITT Flygt has computer-assisted tools to write specifications for pump stations that are then given to consultants who can adjust them in accordance to the prerequisites with e.g. specific ground level, pressure, and flow. The MS Word document ready to send to the customer has ITT Flygt’s logotype printed on it and states that the company is the preferred supplier. According to the Act on Public Procurement, the clause “or equivalent to” nevertheless has to be included in the specification.

Influencing customers indirectly by emphasising that specifications should include not only equipment characteristics but also lifecycle aspects is a deliberate choice. The company has run projects about lifecycle costs in general but also many projects specifically calling attention to electrical high-efficiency motors. In a current project, discussions are held with representatives from one country’s Department of Energy about potential energy savings through utilisation of more modern technology.
6.3.2 The Service Sales Process

After the product sale and installation, the customer contacts either the local service workshop or a third-party service provider for service sales and resale. A standard product might need annual inspection and extensive attendance every third to fifth year, and contacts between the company and customer representatives are made in connection to these supervisions. Major customers have daily contacts with their service provider, discussing when to make a repair or replace existing parts. These relationships and processes are what ITT Flygt calls their aftermarket processes. Apart from this, there are some direct spare parts sales where the customer effectuates the service himself and only orders the parts (see Figure 6.8).

![Figure 6.8 Actors involved in the service sales processes.](image)

Usually ITT Flygt is offering customers Service Level Agreements (SLAs) during the end of the guarantee time as the customer at this point of time has become aware of the operating costs, although most customers already are aware of this as they have more than one plant.

How the contract forms are designed if the customer signs an SLA, whether the local sales manager or the service representative is responsible, or if more internal people are to be involved in the contract negotiations is not yet standardised. Often there is a sales representative having a Key Account Management (KAM) responsibility for the customer but in practice, his focus is product sales, so the service manager has to step in and visit the customer and promote SLAs. This approach is however not unproblematic as service managers often are former mechanics that have been more structured in their work and performed better, and therefore been promoted, but they are seldom appropriate salespeople. The result is that latent business opportunities are lost since fewer contracts are signed.

The cost dominating the customers’ total lifecycle cost is energy consumption; in Sweden, it can be more than 90% of the lifecycle cost. In Sweden, where the climate is colder than at most other markets, the heater element in the pump house sometimes consumes more energy than the actual pumping. The explanation is that the pumps are dimensioned for maximum flow and often not in use more than five hours per day, whereas a heater element can have almost the same
effect as the pump but be switched on around the clock. Due to working environment reasons, ventilation is also installed in the pump house to prevent gas from rising and this too consumes energy. After all, there is a lifecycle cost and environmental awareness among customers, and ITT Flygt has e.g. spent much time and money to increase the coefficient of utilisation from 70 to 75% on pumps. Consultants are quick to adapt the new efficiency requirements when compiling a specification and if the provider cannot deliver equipment efficient enough, he is fined. As seen here, however, pumps account for only a fraction of the energy cost, which is something of which most customers are not aware.

At most markets, ITT Flygt sells prefabricated pumps with lids, and in the Nordic countries, a standard version superstructure is offered as well. The pump house can either be delivered prefabricated or in components for which the excavation is either made by a local contractor or by ITT Flygt. Quite often, it is a combination; the local contractor makes the calculations because the municipality has to bury the pipes and then ITT Flygt lowers the pump house and makes the necessary connections. Not all subsidiaries are successful and profitable as local competition can be severe, especially when local authorities favour local contractors to international companies.

Resale
If customers purchase accessories, product upgrades and replacements, and other equipment during the product lifecycle, it is handled directly with the provider. It is not until the customer plans to rebuild the entire plant or pump station after 30-40 years that a new procurement process in accordance with Figure 6.7 takes place once again. Then, conditions can have changed considerably, for example a changed catchment area for residences. 40 years ago, Swedish plants were dimensioned for water consumption four times higher than today’s volumes de facto. Together with e.g. size of pumps and sump volumes, real volumes are therefore also taken into consideration. In connection to a new procurement, ITT Flygt is often at the customer site putting up measuring devices in order to analyse existing flows and number of working hours. There can be superfluous effect in pumps and distribution boxes, and costs can be reduced if the electric connection is changed from e.g. 64 to 32 ampere.

6.3.3 Critical Factors
Different customers have different preferences and demands; there are customers always choosing the lowest unit price, selecting the cheapest products initially, and ignoring lifecycle aspects. These customers act rather shortsighted and since ITT Flygt is a price leader, it is difficult to take such low-cost orders. On the services side, there is possibly a similar situation where some customers prefer a quick repair from a local third party instead of a thorough repair from a major company’s more competent service personnel.

The fact that a customer, public or private, has a long-term relationship with a local service provider due to historical reasons makes it difficult for ITT Flygt to enter the local service market and take orders. Small third-party workshops cost less and the customer is used to receive instant service, also on bank holidays such as Christmas Day. If ITT Flygt would have a similar service
degree it would be very expensive, and it would not be possible to take such an order without offering contractual obligation to e.g. a whole county.

Surveillance equipment and alarm monitoring are rather common and if something unexpected happens, a pump station can automatically call either through a landline or through a GSM network and inform an emergency service centre. The alert is prioritised in the report system as e.g. an A, B, or C level alarm and sent to service personnel’s’ pagers and mobile phones. The personnel can see on their laptops what has happened and based on this knowledge makes a judgement whether to go to the site straight away or wait until the next day. Due to new technologies, this process has improved considerably compared to e.g. 15 years ago when emergency service personnel received an alert but did not know the gravity of the situation when going to the customer site.

This type of remote monitoring solution exists at some European markets and it has also been discussed in for example Sweden. The case in Sweden is that most municipalities have their own personnel and if it is not large enough, some adjacent municipalities sometimes cooperate and have a rolling schedule with one municipality always on duty. One possibility for ITT Flygt would be to offer industry customers a corresponding solution with pumps equipped with an alarm system connected to an own emergency service centre. There are already situations today where some private companies sign contracts with municipalities to connect to the publicly run emergency service centre.

Another critical factor for some business exchanges is to make more extensive offerings, such as SLAs. In some countries, ITT Flygt has almost 100% of the SLAs on their own installed base, while the number is 70-90% in other countries. Although this can be seen as a strength and SLAs are profitable, managers would prefer to have an increased number of repairs, as SLAs do not generate revenues from spare part sales. A key issue is the ability to plan and manage the different forms of SLAs and different episodes efficiently, thereby minimising the slack time. From a relationship perspective, SLAs is advantageous as it creates continuity and regular customer contacts compared to occasional repairs; repairs are only necessary when the pump is broken down, which means that a long time might elapse before the next contact with a minor customer takes place. In addition, if personnel is visiting a customer site, e.g. making a safety inspection, and note that an extensive repair is approaching, ITT Flygt is in a favourable position of getting the deal.

6.3.4 Third Parties Involved
Local service partners ITT Flygt turn to use in average only about 50% genuine spare parts compared to the company’s own service organisation; the remaining share is considered cheaper pirate parts. The figure differs however noticeably between different markets; partners in Norway and Denmark have more than 50% genuine parts whereas Italy, Germany, and France have less than 30%. Particularly in Italy, there is fierce competition from local competitors which to a high extent can be explained by the fact that ITT Flygt lost a major spare parts market share when, several years ago, a decision was taken to outsource all service activities to service partners. After
that, the company has returned to having an internal service organisation in Italy. Expansion in the service market is based more on organic growth than on acquisitions. Due to insistence on a well-run economy and environmental aspects (e.g. asbestos) from the owners, ITT, acquisitions of third-party service companies is not a major issue for ITT Flygt.

6.3.5 Side-selling

When a customer has signed an SLA, ITT Flygt takes the initiative to perform maintenance work and repairs although the relationship between operational personnel is similar to a situation with no contract. If service technicians have been instructed to sell more spare parts and contracts, they continue to talk to the customer and the repair/meeting takes longer, e.g. four hours instead of three and a half. This implies that productivity, as measured, is reduced if technicians strive to sell and it is not clear where in the books to enter the last half-hour. Depending on the KPI focus, guidelines will partly differ. Currently there is an overall focus on cost efficient service hours, but when this KPI has improved sufficiently it is possible that the repair-related selling will be more emphasised. When talking to service technicians, the message is that there are either longer visits at customer sites and side selling, or time efficiency and no selling.

There is no direct division of service hours in workshop and field activities today even though workshop hours correlate to repair hours, and field hours usually are maintenance activities. Repair is however made at the customer sites too and this can be difficult to see in the enterprise management system today. A better follow-up in the system would enable ITT Flygt to determine whether a work order is conducted in the workshop or in the field.

What is possible to see in the enterprise management system though is how much services and spare parts the service technicians sell. A criterion is that these working-hours also are invoices; technicians must not visit a customer only to sell. If service technicians replace a component instead of repairing it, the time spent is invoiced to the sales department instead of to the customer. If “pure” service hours and side-selling time are summed up most subsidiaries show a positive result, but a positive bottom line is not enough for ITT Flygt centrally. This is because profitability on service hours is considered a prerequisite for new services; building up a modularised service offering requires that the various cost units are profitable.

6.4 The Offering

Although the service offering mainly consists of single, unbundled services or basic forms of SLAs, there is an ambition to increase both the number of contracts and their scope. In the marketing toward customers, ITT Flygt highlights not only its products but also tries to communicate the image of a frontrunner in knowledge-demanding service offerings, e.g. with slogans such as “We are famous for our products. But our job is to create solutions”. The ability to offer customers of all sizes trouble-free operations at the lowest possible maintenance and energy cost through e.g. advanced monitoring and control systems is emphasised.

An aftermarket value ladder is used for internally communicating and marketing the development of service offerings (see Figure 6.9). The extent of the offering depends on the customers’ willingness to outsource service activities to providers like ITT Flygt. Spare parts and
MRO (maintenance, repair, and overhaul) are traditionally offered, whereas long-term service contracts are a more recent offering. Condition monitoring, asset management, and operations are all more extensive offerings very much connected to the customers’ outsourcing intentions and to the conditions in the local service organisations. There are some condition monitoring and a few asset management contracts, but there are hitherto no operations agreements where the customers pay a fixed price per volume of liquid. A first step towards new offerings is to improve the profitability, particularly on service hours, before fine-tuning offerings towards customer segments.

One service-related target is to complete 90% of all tasks on the first visit to customer sites; today it is common with more than one visit and ITT Flygt does not know how much its service personnel travels. Service activities take place either at the customer sites or in workshops partly depending on country and the subsidiaries’ knowledge of the installed base. In some countries, the service organisation has no knowledge of the customers’ installed base, resulting in unnecessary travels when e.g. wrong spare parts are delivered to the customer on the first visit. Another ambition is to have equal focus on the three relationship phases of product selling (i.e. before, during, and after the sale), which requires an organisation that is not too much focused on product selling activities. The average business is relatively small with approximately 100,000 customers in Europe and 160,000 pumps sold annually.

The need for service and spare parts is very wide-ranging, depending on the equipment and under what conditions it is used. A drainage pump in a mine needs at least one general overhaul annually and tear-and-wear parts exposed to dampness must be exchanged every one to three months. This can be compared with a sewage pump in a sewage pump station where oil control takes place in one to three year intervals and a general overhaul is made after 3-20 years.

Figure 6.9 The aftermarket value ladder.
6.4.1 Product Ownership
In the cases when ITT Flygt is involved as a contractor, the company operates the plant for a couple of years. This is generally managed locally in each country and sometimes ITT Flygt owns the plant during these first years, sometimes the customer. The service-market growth rate is about the same as for product sales but the potential is considered higher, especially for new and more value creating offerings. However, the process of maturity for an increased service scope is slow, both internally and among customers. Some subsidiaries show a large share of SLAs, which can be linked to the readiness among customers and/or industries in that market.

There has been a change going on for a considerable time with respect to ITT Flygt’s service market. Previously, when the company made many repairs and had few SLAs it saw advantages with a larger number of SLAs, as agreements level the utilisation and facilitate the planning. Today however, SLAs and preventive maintenance constitute 70-80% of service sales in some countries whereas repairs are lost to local competitors. Repairs imply spare parts sales, so there is a major source of revenues that might be eroding as genuine parts are replaced by pirate parts.

6.4.2 Guarantee
The service organisation or possibly an authorised service partner is involved in guarantee undertakings. The guarantee period on products is between one and two years, but in practice the service organisation seldom makes sure whether customers have made the service prescribed for the guarantee to be valid or not. Often there is no need for maintenance during the guarantee period but even if e.g. service personnel instruct the customer that the pump requires an annual oil change during the guarantee period it is seldom observed. The customer does not do anything until the guarantee period has expired and then refers to the guarantee and expects it to cover the repair.

Upgrade of existing products can be problematic as it requires a continuous product development process, and time-to-market for a new product generation is often 10-15 years. The product life is usually 10-15 years too and the customers are thus usually recommended to replace the old product with a new, more efficient one. New investments amount to approximately 20% of the lifecycle cost whereas energy is the largest type of cost. Because customers rarely purchase any maintenance during the guarantee period, the result is higher wear; focus is rather on separate items of expenditure than on the total cost.

6.4.3 Service Level Agreements
ITT Flygt’s service contracts are packages of services and goods offered to customers on an annual basis and they include preventive maintenance visit(s) to installations along with various packages of included parts. The selling point is that SLAs create value for customers in terms of reliability (i.e. maximised pump uptime), extended product life, cost control, and expert advice including statistics and visit reports. SLAs also serve as a possibility to outsource activities. ITT Flygt in turn obtains a fixed, predictive income, better management of the service technician utilisation, and comes in a better position for replacement business. There is no difference in
service personnel regarding the different agreement levels. However, for some contract forms, ITT Flygt can let a service partner do some of the services.

If a customer has signed an SLA with ITT Flygt, it is the type of assignment and not the contract as such that dictate how the work processes are performed. In many countries maintenance is divided into preventive and corrective; corrective maintenance is generally made in the workshops whereas preventive maintenance takes place in the field. Thus, these are two different processes and if both are included in an agreement, they are still passed through the existing processes.

Regarding service agreement levels, the ambition is to sell more extensive forms of agreements, even if the focus is on the first two service levels today partly due to lack of customer interest for more extensive ones. An SLA customer seldom starts with an extensive agreement but rather, starts by signing the minimum level agreement (i.e. Bronze) and after some years when the customer finds the relationship well functioning, ITT Flygt strives to sell a higher-level agreement. The company has a pocketful of SLA on the highest level on some major markets only, and the contract value is not very high. Risk increases concurrently with the extent of the offering and ITT Flygt has become increasingly suspicious about what products are taken over in terms of e.g. standards and upgrading possibilities. Even though the aim is to increase the number of higher-level agreements, there is a reservation vis-à-vis the number of service hours; nonvalue-added service hours must be avoided in order not to erode the SLA’s profitability.

On rare occasions, a customer has a leasing contract, which is considered a high-level service agreement, on a pump station, which means that ITT Flygt operates it for e.g. ten years. When the agreed time has expired, the pump station operations and ownership are succeeded to the customer who after that might sign a first-level service agreement. Outsourcing is often more interesting for industrial customers who do not have wastewater treatment as their core business, but on deregulated markets like the UK, utility customers outsource wastewater operations although it is a core process.

On most markets, ITT Flygt offers its customers four SLA levels with reports, analysis, and advice available to a varying degree in all agreements. In the UK, SLAs are called Flexicover and customers can apply for them online. The contract levels are marketed as Bronze, Silver, Gold, and Platinum:

- **Bronze** is a basic SLA allowing an annual preventive maintenance visit whereas spare parts, repairs, corrective maintenance, and other site visits are charged for at going rate.

- **Silver** includes preventive maintenance twice a year, whereas corrective maintenance and other visits are at going rate. Consumables, i.e. impeller, wear rings, o-rings, and oil, are also free whereas other parts are at going rate too.

- **Gold** includes preventive maintenance twice a year and corrective maintenance and free pump parts as well. Any breakdowns between regular services are covered whereas remaining services are at going rate. If the customer’s pump station is not the size or type
to warrant a complete Gold contract, ITT Flygt personnel can recommend a Silver contract instead.

- **Platinum** includes preventive and corrective maintenance, spare parts, and repairs. At this level, agreements are very often customised, whether it is just a check-up to give the green light or a full maintenance visit weekly for arduous duty.

A selling point used for service contracts is that ITT Flygt’s “planned maintenance is a safeguard against expensive failure and keep the units working at optimum efficiency. With Flexicover your annual maintenance cost can be budgeted in more detail” (from the UK webpage). The service contract logic is that the SLAs are bundled offerings composed of various unbundled service components. As the SLA’s service scope increases, the pricing moves from mainly variable to fixed (see Figure 6.10).

**Components of service portfolio**

- Installation & start-up
- Planned repair on-site
- Emergency repair on-site
- Planned repair in workshop
- Service competitor pumps
- Pump pick-up
- Service exchange units
- Consultancy services
- Training programs

**Bundled offerings**

- Service contract 1: "Basic preventive maintenance"
- Service contract 2: "High-end preventive maintenance"
- Service contract 3: "Trouble-free operations"
- Service contract 4: "Total offer"

**Pricing**

- Variable price (based on hours, parts, travel)
- Combination fixed/variable price per product/time period
- Fixed price per product/time period

*Figure 6.10 ITT Flygt’s service contract design.*

Having a contractual undertaking often involves complex situations where the customers possess a maintenance and operations competence that ITT Flygt to some degree has to take over. Risks associated with SLAs are not clear for all application areas, which means that it becomes more difficult to make money on these agreements. The introduction of new monitoring and control systems and new products can however change the situation in the long run. The more advanced the SLA, the more risk is assumed by the provider and although the customer owns the equipment, e.g. vandalism is covered by ITT Flygt in fixed-price Platinum contracts, which also include personnel checking the electricity meter and sending the information to the energy company.

Besides being profitable, SLAs enable the company to have 50-70% of the turnover ready already in the beginning of the year and possible to schedule. Nevertheless, it can be difficult to have a satisfactory process and ITT Flygt has not assigned enough resources to selling SLAs; it has rather been a sideline for the service manager or the salesman responsible for the customer.
Therefore, an operative model for how the sales process should work and how internal cooperation can be improved is being elaborated.

The SLA design and content are formulated by ITT Flygt and therefore relatively standardised. Different types of undertakings might have different requirements regarding service processes, but it is not something ITT Flygt has focused on. Since the majority of contracts are either Bronze or Silver, the service processes have been streamlined for these two contract forms primarily. It is thus believed that there is potential for SLA processes to correspond more efficiently to the agreement level and the customer segment. Since all contract levels except Platinum in principle are standardised, service personnel are familiar with the work routines, administration is minimised, and the customer knows what to expect. Service contract levels are also relatively standardised between countries, even if the company has cut out some details from the SLA at some markets, which made it more difficult to sell.

Although the Platinum contract is the most extensive offering, it does not include e.g. gain sharing or explicit energy reduction aspects. Selling fixed price contracts to an industry customer having a critical product mass for the contract level could be interesting, but if the customer wants Flygt to serve all pumps in a specific category it becomes more difficult as sewage pumps only would not make the scope extensive enough. However, companies with a sewage-treatment plant can be interesting for those contracts. Although not common, dewatering of mines is offered at some markets, which means that the customer receives a dry mine/workplace for a fixed price (e.g. monthly).

Less qualified services are also included in some customer agreements. These services are priced differently as the customer is not prepared to pay the same for e.g. mowing the lawn as for the job of a service technician. It has a negative effect on the company’s margins, reducing the Return of Sales figures. Flygt has therefore to be either very cost effective on these services or accept making a loss on them, as there will be a profit on the total offering.

### 6.4.4 Fixed Price Repairs

The essential elements of the SLAs turned out to have spin-off effects on the service processes in general. When the service offerings were clearly specified it was possible to rationalise them in fewer numbers of processes, and to design support systems linked to these processes. In connection to the service contracts, ITT Flygt developed four types of fixed price repairs to offer customers: from a basic form that only includes inspection without repair to the most advanced one where all components in the pump are replaced. Spare parts for these repairs are likewise ordered in four levels only: from no parts to very many. Hence, structuring the offerings has enabled ITT Flygt to better structure deliveries, service production, and service development.

The fixed price repairs are offered to customers at a predefined fixed price regardless of the exact time and amount of the parts needed to solve the particular repair. The different repair levels are intended to suite common repair types and advantages for the customers are simplicity when ordering and faster processes, i.e. less downtime. For ITT Flygt, the fixed price repairs save
time for inspection of the pump and calculating costs, facilitate internal streamlining of administration, and enable personnel to easier specify and communicate customer benefits.

The different fixed price repairs are, from lowest to highest-level repair:

- **Level 1**: inspection and diagnostics, including oil change
- **Level 2**: replacement of wear parts, i.e. o-ring, outer seal, cable, impeller, diffuser
- **Level 3**: major overhaul including bearings
- **Level 4**: major overhaul including stator.

The largest future gain with this classification and standardisation of repairs is believed to be lead-time reductions in the repair process. Currently, the average repair lead-time is 40 days, of which half of the days are time the customer takes to make up his mind about the estimate of cost. With the new system with four repair levels, service technicians will be able to say: “this is a level three repair that will cost this much according to the price-list and a new pump costs this much; do you want to repair it or not?”. In that way, ITT Flygt hopes that lead times will be reduced by more than half and that accounting for different products will be possible to follow up.

### 6.4.5 Process-Orientated Services: Energy Reduction and Lifecycle Aspects

Energy is the single largest cost for customers but many of them are not very interested in more energy efficient processes. Some years ago, ITT Flygt considered starting a company that would offer energy efficiency services, as they thought that there was a huge potential in cooperating with public utility and industry companies in some form of gain-sharing contracts. A major Swedish energy group had a company that was interested in cooperating and discussions were held, but it never took off because ITT Flygt considered energy reduction services to be a non-core activity. Although the business idea was interesting, the company chose to prioritise investments in traditional service development instead.

If ITT Flygt nevertheless would introduce an energy reduction service, it would probably initiate new investments in existing plants to demonstrate for the customers how much they can save annually. There is in-house competence to offer this service today but there are limited resources for e.g. marketing the service and being able to charge for it. Furthermore, this offering would have to be partly separated from the other business in order to prevent the personnel from also selling ordinary offerings. There is also internal resistance due to pricing models as the company would receive revenues for customers’ future savings and thus, have an initial cost before any revenues were generated.

Even if different cost parameters dominate the lifecycle cost, depending on the type of system and the type of application, in the great majority of cases the purchase price of a pump or mixer constitutes only a minor part of the lifecycle cost. The combined costs of energy and of maintenance have a far greater impact on the lifecycle cost than the purchase price, and ITT Flygt
therefore tries to make them the prime considerations when reducing lifecycle costs. When ITT Flygt makes a lifecycle cost analysis, all costs over the lifetime are summed up and recalculated at net present value. The selection of pump components starts by personnel estimating the losses in the complete system, and this in turn allows a more accurate planning of overall system efficiency.

6.4.6 Process-Orientated Services: Monitoring and Control

When a salesman or service technician visit a public utility customer and find out that the pump station is on the municipalities list for reconstruction or exchange, ITT Flygt usually becomes involved in putting up measuring and control equipment at the site to monitor existing liquid flows and checking how many hours per day the pump station is working. If the effect is unnecessarily high, considerable savings can be made by reducing the effect but despite the savings, it is difficult for ITT Flygt to charge for these types of services.

ITT Flygt produces monitoring and control systems for many different pump and mixer applications and supplies hardware such as pump controllers, sensors, electrical start equipment, and cables. The company also has software for running the system. The PC-based supervision software applications range from those operating in wastewater treatment plants and pump stations to products pumping groundwater from building sites. Sometimes, the customer has its own monitoring equipment but if this is not the case, a salesman can discuss the matter with the customer and lend him equipment for some months. The customer enters the result, e.g. 100 litres per second, and gives the information to ITT Flygt or to a consultant who in turn may pass the information over to ITT Flygt. Sometimes, a consultant enters the result and turns to ITT Flygt for help.

If the customer has a service contract, ITT Flygt can monitor how much the maintenance cost is and when it is time to rebuild or exchange it. Often the customer has a long-term policy that states that ITT Flygt has to rebuild or exchange 3-5 pump stations per year and the company can itself plan and prioritise the work. Although these services add much value for the customer, it is difficult to obtain payment for them as the customer expects help with those issues. The only situations when ITT Flygt receives payment for these services is when a study is made on pump stations, when there are is a competitor pump, and when it is not a potential business opportunity. However, these situations only occur in 2-3% of all cases.

There are internal discussions about whether there are any scale advantages in ITT Flygt’s service offerings, as the company is competing with smaller, local, and less professional companies. Those companies have no effective ICT systems but compete by being fast and flexible. When it comes to advanced services, there is no competition and ITT Flygt has a major competitive advantage compared to e.g. consultants but it is very difficult to charge for these services since they are often connected to new product investments and customers can then claim that ITT Flygt cannot charge for making a quotation. ITT Flygt believes that it is not possible to charge for e.g. an energy consumption analysis when the customer signs a service contract as it is considered as included in the contract, but when selling only products it should
not be included. Nevertheless, if ITT Flygt has an ambition to sell many products to a customer it generally has to include these services.

6.4.7 Servicing Competitors’ Products
If requested, it is possible for ITT Flygt to serve competitor pumps and mixers as well. There are also situations when customers need help with products such as fans, which are connected to the pump or mixer but not produced by ITT Flygt.

6.4.8 Spare Parts Selling
In 1999, ITT Flygt went from a traditional decentralised distribution system with every subsidiary having its own warehouse, to a centralised system with one European Distribution Centre in Metz, France, receiving goods from the manufacturing entity in Lindås, Sweden. There are significant differences in spare parts sales between different European countries. On average, 60% of spare parts sales in Norway and Denmark as of 2003 were conducted by the sales companies whereas the remaining part is sold through authorised and independent service partners. This can be compared with Spain, Hungary, and Finland where the majority of spare parts were sold through service partners.

If pirate parts are found at a customer’s pump station any possible guarantee time left is no longer valid. Sometimes the local service organisations receive peculiar parts that they forward to the central service organisation for further inspection. There are examples of pirates using the ITT Flygt logotype and the company’s article numbers and while the article numbers are not possible to protect, copying the logotype is illegal.

When discussing with customers, it can be difficult to find economical arguments for convincing them to buy genuine parts instead of cheaper copies. Although lifecycle costs might be lower, the company has not been able to come up with marketable calculations on long-term savings in terms of e.g. reduced maintenance and wear. Instead, arguments are often more about playing on customers’ feelings about the brand, security, and simplicity.

6.4.9 Service Development
Development of new products and technical solutions is usually driven by ITT Flygt themselves. Examples are solutions for self-cleaning pumps, superstructures, ventilation systems and other competitive means. Consultants are not urging on development that much but they do like new control and monitoring systems and electronics, which they include in their specifications, sometimes to the customers’ chagrin. There are examples of customers who have received complicated pump stations where a control cabinet cost three or four times as much as the pump components and which have brought about considerable costs for operation and repairs. Through trade associations, customers are sometimes pursuing some issues.

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2 It is however possible that sales companies at these markets account for spare parts sales differently, which could explain the low share of sales through the own organisation.
Feedback to Product Development

There are internal difficulties when it comes to business development across different functions. Employees involved in consultation, calculation, taking measurements, and analysts belong to the technical department, or possibly to the installation department, whereas employees working with industrial services and operation belong to the service department. These two groups of personnel hardly communicate with each other, although it is possible to make them cooperate by putting them in the same business case. As a line organisation however, there are rather sharp dividing lines between them.

The subsidiaries are relatively independent and little feedback is received from them to the central organisation if nobody from the central direction explicitly asks for it. Subsidiaries can inform about what contract forms they have and the division between them but the central organisation seldom knows about specific contracts unless they are large. This is because reporting must be made on an aggregated level only, showing total number of contracts per country. Sometimes this is regarded as a shortage of information but on the other hand, the central service organisation cannot necessarily assimilate all information received.

As soon as goods are phased out of production, so is the documentation connected to it. This is made in spite of the fact that the documentation will be needed during the equipment’s lifetime. The service organisation is aware of this problem but according to service managers, the manufacturing organisation does not seem to understand the importance for the service operations.

6.5 The Lean Europe Project

Lean Europe is a service business project that is running until 2006 and the purpose is to make an extensive analysis of the organisation and find improvement potential. It consists of five subprojects; Sales and Marketing Efficiency, Service Business, Logistics, Finance, and IS/IT. IS/IT was withdrawn at an early stage due to e.g. resistance among sales companies and difficulties with coping with the number of different ERP systems. Even if the Lean Europe project consists of several subprojects, only one of them is discussed and analysed since it is considered directly relevant for the objective of this study. In addition, information access to the other subprojects was noticeably more difficult to obtain.

Dividing the national subsidiaries in a number of regions in early 2004 was one of the cornerstones in the changes suggested. The other cornerstone is to create an organisation that emphasises direct focus on creating and handling the different end customer segments. The service organisations have no financial responsibility and some central managers therefore believe that making the service organisation a separate business unit would improve the cost efficiency, benefit customers, and lead to increased product sales.

6.5.1 The Service Business Project

The Service Business project aims at increasing the service market penetration and improving profitability through more efficient service processes. Today, too few resources are devoted to
service sales and too little time is spent on proactive service sales. The majority of time in the service organisation is spent on other activities than maintenance/repair charged to the customer. Better understanding and exploitation of the installed base potential and strengthened service sales capabilities would increase the service market penetration whereas an increased utilisation of direct personnel and decrease of indirect costs through redesigned service processes and a restructured service branch network would increase service delivery efficiency. A more reliable reporting of service business performance is also considered to lead to improved cost efficiency.

Being one of five Lean Europe projects, the Service Business project in turn is divided into five subprojects; Service Portfolio, Service Infrastructure, Service Delivery Process, Service Sales, and Service Business Reporting. The Service Delivery Process project aimed at mapping the current delivery processes in three countries and designing a new common process with a reduced share of non-value adding activities and the objectives with the Service Business Reporting project was to define a new service business reporting structure and implement a temporary version across Europe. The three other subprojects are of particular interest as they are relevant for this study, and these subprojects are therefore described more in detail in the following chapters.

**Service Portfolio**
Managers at ITT Flygt do not consider themselves good enough on formulating offerings and communicating customer benefits. The main purpose with the Service Portfolio subproject was therefore to identify more competitive, bundled offerings and a common European service portfolio with guidelines for value-based pricing. In addition, possible gaps in the portfolio as of 2004 were supposed to be filled with new services. Although the pilot project implementation at a European market was not successful, the subproject resulted in the four service contract levels being specified and principles for pricing were developed. In addition, the fixed price repairs came out as a spin-off.

**Service Sales**
The objectives with this subproject were to develop a system to gather and manage customer and installed base data and to develop routines for segmentation and differentiated treatment of customers and for marketing and sales within a new European account-team organisation. Subsequently to these targets, implementation in a pilot region in Europe was planned. An important measure towards increased service market penetration is to better identify, prioritise, and manage the customers.

A first step is to build customer insight by gathering and managing key data on customers, including installed pump base per customer and site, and a complete transaction history per pump, i.e. service and spare parts data. In addition, market and competitor data is needed. Secondly, ITT Flygt classifies customers and prospects based on defined key segment variables including estimated potential and other factors such as market channel and geography. Customers can then be prioritised based on current and potential future value. The third step is to allocate a budget to each customer segment, decide on customer management strategy and
what marketing resources to allocate, and to set targets and plan detailed activities for the key accounts. The fourth and final step is to perform marketing activities according to the key account plans, follow-up on results for each segment and key account, and then to revise segment prioritisation and key account plans. Much data needed to implement this strategy are available in most sales companies’ ERP systems already today (e.g. historical sales data) but is not utilised.

The average repair value per product is approximated based on working orders in several European countries. The profitability for a repair order has been estimated by studying the breakdown frequency per product for some of ITT Flygt’s customers considered as loyal, i.e. the proportion of pumps repaired one year belonging to the customer compared with pumps sold to the customer. Work orders show, among other things, that small, old pumps are less frequently repaired than larger ones. It is also possible to filter suppliers and contractors in the ERP system when preparing the basic data that the estimations are based on. Through these estimations, customer potential is seen as breakdown probability multiplied by average repair cost. By comparing estimated potential and actual revenues, this information can then be utilised for identifying segments that from a profitability point of view are attractive to increase the market share in.

**Service Infrastructure**

The subproject purpose was to analyse the cost effectiveness of a service delivery process in order to create a more cost-efficient and flexible service delivery infrastructure. The background is that the existing infrastructure with service centre workshops has a too limited reception area. In addition, it is not matching current demand fluctuations and the assumption is that workshops that are more mobile would enable more service on customer sites and thus make it possible to reduce the number of service centres. 80% of ITT Flygt’s products are relatively small and can thereby be served by a mobile workshop, either a light service vehicle or a heavier mobile unit. Figure 6.11 gives an example of a heavier mobile workshop, equipped with lifting equipment for heavy goods and compressed-air apparatus, spare parts, and 230-volt electricity.
The structural changes initiated imply that e.g., the UK market is going from eight local service centres with workshops to only three or four ones (see Figure 6.12). Instead, the service centres are complemented with a mobile field force working in mobile workshops for site-based work and pump pick-up and with service partners in mostly remote areas.

![Figure 6.12 Structural changes initiated in service delivery infrastructure (example from Great Britain).](image)

The new infrastructure will have maintained or increased capacity in terms of number of service hours produced and type of repairs. The concentration of equipment and personnel resources are believed to lead to better capacity utilisation and the total cost is estimated to decrease by 10-15%. However, even if lead-times are improved, the actual service production takes longer. A repair that takes e.g. three hours in a service centre workshop may take half an hour longer in the mobile workshop due to limitation of space.

As part of the subproject, a service analysis model is created, intended as a simulation tool for creating an action plan towards set up service profit goals. Other objectives with the analysis model are to enable service managers to compare service analysis files at a detailed level and see how workshops, site areas, and countries perform. Additionally, one hope from the central management is that it will improve the managers’ understanding of the financial side of their business, force increased communication between service managers and the controller function, and increase the awareness of the fact that the national level is the most important one for the company. The model enables service managers to easy access. Differences between data from different subsidiaries in terms of e.g. service hour revenue and direct labour utilisation do however exist and managers must be aware of that. Therefore, they are encouraged to visit other countries and share ideas and knowledge.

### 6.6 Information and Communication Technology Applications

An example of an ICT application being developed is a black box that can be put at the top of the switch box. A small pump memory will collect data and communicate with equipment in the control cabinet. When the pump is in the workshop, it will be possible for service technicians to receive information previously not available, such as number of running hours, number of start-
ups, and data on when it has previously been served. This ICT application will facilitate not only service technicians but also customers who also will be able to obtain this information.

ITT Flygt will charge for the black box and the modified control cabinet, and it will probably be an option in small pumps whereas it will be included in larger ones. The motive for developing this specific application is internal; to be able to make better follow-ups, analyses etc. It will most likely also be something appreciated by consultants, as it is easy for them to specify and thereby possibly set aside competitors not offering this function. In general, much of the technological development takes place having in mind that it will facilitate the consultant and reduce competition.

There are many different ERP systems in the sales companies, which makes it more difficult to get transparency and to synchronise information. It also involves higher costs since e.g., IT departments are needed in all companies and this structure has so far been difficult to change. In addition, service market managers feel that few ICT resources are allocated to the service market organisation.

### 6.6.1 Installed Base Database

The Lean Europe subproject Service Sales is much dependent on a reliable installed base database. When studying the sales companies some years ago, all of them used ERP systems that registered all sales and most often one knew what serial number the sold product had. However, no one used this knowledge as a marketing tool, for instance to use this knowledge when sending e-mails and making lists of customer site visits. Having correct installed base information is critical as sales companies compare service market shares based on the known number of products and not the factual one. By doing so, numbers look better and there is little willingness for changing this.

The problem for ITT Flygt is that the invoice is sent to the contractor, who usually orders the products, but who does not own them. In some countries, there are contractors and sometimes distributors that only buy and sell pumps, which makes up 30-50% of all sales. In that case, these products are not traceable in the database. The only possibility to trace these products is to make a note of them and find the product number, once the customer needs service and contacts ITT Flygt instead of a competitor.

Many sales companies have taken this situation, i.e. that no one has a general view of all sold products, as an excuse for asserting that the installed base database is not a useful tool. On the contrary, central management has argued, and still argues, for the sales companies to use the knowledge they have about 50-70% of sold products in a constructive way. For some local service managers, this has literally speaking been an awakening and also created an increased awareness to improve the product sales data.

In the sales channel, there is very often some project number used by the consultant and contractor, e.g. pump station no. 4-14, and ITT Flygt then knows who the customer is and what the conditions are. This information is however either in ITT Flygt’s CRM system or in paper form at the sales engineer’s desk. Consequently, the information is somewhere in-house but there
is no ability to link it with an invoice and a serial number. One impediment is the difficult to put a monetary value on the ability to have this information available in the installed base database. Business developers do not only want to see the costs incurred but also what revenues it will generate, which is much more difficult to illustrate. The fact that the product sales process is relatively long, it can take one or two years from initiation to invoicing, means that ITT Flygt already in early stages knows that e.g. a pump will be sold to municipality x on y street. It is therefore possible to already at this point register the sale and make a notice about when to contact the customer next time and bring up service-related matters. The CRM systems in use can handle this kind of information, but they have to be configured and the organisation must work actively with registering the information available.

6.7 Competitors
ITT Flygt has mainly its own service organisation with own service technicians but it has also some authorised service partners. Among other pump manufacturers, the Swedish company ABS mainly works through authorised service partners whereas the German company KSB has their own service organisation but also works through service partners. KSB is a major actor among industry customers and offers many pumps and other products that ITT Flygt does not have, which means that there is some overlapping between markets. In several countries, these competitors are more profitable on services than ITT Flygt.

The fiercest competitors on the pump service market are small, local, and flexible third-party providers that are more all-round than ITT Flygt and that sometimes possess specialist knowledge. Relatively often, these winding workshops are family-owned and ITT Flygt has considerable difficulties competing with them. These providers wind engines, screw pumps, and change bearings and seldom have the same considerations regarding staff welfare, environmental legislation, and ISO certification. They are often able to take very low offers, especially on repairs. If a customer’s pump is out of order, he might call a few local providers or he has personal relationships with a particular one that he prefers to call. No single third-party provider is a serious threat to ITT Flygt’s service margins, but all third parties together have a considerable market share.

An example of a difference between ITT Flygt’s service organisation and a third-party competitor is the motivation of the latter to work until 7 p.m. instead of going home at 4 p.m., return the next day, and charge for two travels. Other factors such as keeping accounts at night and not including that time in the cost estimate are neither possible nor desirable to copy. Although it is not possible to compete on price on all single services, a sufficient number of customers should value ITT Flygt in preference to third parties not able to leave guarantees.

Planned repair and emergency repair during weekends can make a major difference in customer value and by offering such services; it could be possible to eliminate some of the competitive advantages that the third parties have, working nights and weekends. Disconnecting the pump from the pump station is a trivial task for a service technician visiting a customer and is something small providers do not offer as they expect customers to deliver the pump to their
workshop. If ITT Flygt’s technicians do not disconnect the pump, an electrician must do it, which in Sweden costs about SKr3,000.

One critical factor for receiving service orders can be that some products are large and expensive. A SKr500,000 pump means a considerable risk for a one-man firm even if the manager/owner has the knowledge, and if something unexpected would happen, personal consequences for him can be substantial. It is also not always sure that the customer would give such an order to a third-party provider. Competence is also a critical factor and third parties may claim that they have knowledge, which they sometimes do not actually have. In spite of this, they can still receive orders on previously mediocre repairs that they made and it is not until they had e.g. three tries that ITT Flygt is contacted to put it right.

Geography is another critical factor for services. As an example, there are few pumps in the sparsely populated northern Sweden, which means that local service partners that also have other business than pump repair (e.g. 50% of the turnover from pump service and the remaining half from other activities) are responsible. In some countries, there are authorised service partners that have established themselves in connection to a mine and serve that customer only. Some mining customers have agreements with ITT Flygt and load there pumps once a week and send them to a workshop for repair.
7 Saab Aerosystems

Saab Aerosystems is a 2,000 employee strong business unit of the defence, aviation, and space company Saab, delivering airborne systems, related subsystems and services during a product’s complete lifecycle primarily to the Swedish Air Force through FMV (Försvarsmaterielverk) – the Swedish Defence Materiel Administration – but also for exports.

7.1 The Saab Group

Founded in 1937, Saab (Svenska Aeroplan Aktiebolaget) conducts business activities from more than 30 locations in Sweden alone. Headquarters are in Stockholm, Sweden, and the main location for both the Saab Group and Saab Aerosystems is Linköping where approximately 5,000 of the Group’s 12,000 employees work as in 2004. Total annual sales are SKr17.85 billion as in 2004, of which 20% corresponds to research and development. Military business constitutes about 80% of the Group’s sales and during 2005 sales to customers outside Sweden amounted to more than 50% of the total sales. Although a majority of sales nowadays goes abroad, research, development, and manufacturing are carried out principally in Sweden. The operating margin was 9.3% as in 2004.

After a recent restructuring, affecting 11 of the 19 business units, the Group consists of 16 business units from January 2006 and forward (see Figure 7.1).
After previously being divided into five business areas, where Saab Aerosystems belonged to Saab Aerospace, the business units are divided into three business segments, in addition to Corporate, from January 2005 and forward. The business segments are Defence & Security Solutions, Systems & Products, and Aeronautics and its strategic direction and implementation initiation are executed by the Group Management. There is a trend towards increased exports, something also espoused by the management. In 2004, 48% of sales, 62% of order bookings, and 70% of order backlog were for export markets.

Aeronautics includes both military and commercial operations and it is dominated by the Gripen programme, which includes lifecycle commitment to the system. Commercial operations include subsystems and components for aircraft giants Airbus and Boeing as well as maintenance and support for installed Saab fleet. Swedish participation in international programmes and risk sharing in commercial programmes are to a certain extent influencing investments in new programmes. The segment’s business units are Saab Aerosystems, Gripen International, Saab Aerostructures, Saab Aerotech, and Saab Avitronics. Approximately 36% of Saab’s 2004 sales were generated by Aeronautics, i.e. SKr6.80 billion, of which approximately 40% was assigned to exports. Operating margin was 11.5%, order booking was SKr5.97 billion, and order backlog was SKr26.09 billion as on 31 December 2004.

Gripen International is the business unit handling export marketing and sales of the Gripen system. It was jointly owned with BAE Systems, a British £14.8 billion defence group that also is part owner of Saab, but Saab took over responsibility for Gripen’s business development with respect to new business in 2005. Cooperation regarding existing business has nonetheless continued in accordance with outstanding contracts.
7.2 Operations and Services

Saab Aerosystems' most important product is the Gripen system of which the business unit has overall system responsibility for the development. It is an integrated and flexible information, command and control, and weapon system that was the world’s first fourth generation combat aircraft in active service. Safety criticality and low lifecycle cost are main selling points when marketing the system.

In collaboration with French Dassault, Saab is developing an UCAV (Unmanned Combat Aerial Vehicle) in the Neuron programme. Saab Aerosystems’ primary focus is on the design and development of flight-critical systems and the integration of UCAV with other defence systems. The first flight is planned to 2009.

Saab Aerosystems has the overall systems responsibility for Saab’s role in the Swedish standard helicopter programme and the business unit will deliver 270 forward fuselages to NH Industries, the main supplier. In addition, the business unit is the systems coordinator for design, development, integration, sensor management and data fusion, training, and lifecycle support of the Tactical Mission System (TMS). The TMS is a multi-role mission system for the Swedish Air Forces’ NH90 helicopter.

7.2.1 After-Sales Support

Saab Aerosystems’ after-sales business focuses on three main areas:

- Provision of Chain Management solutions for Gripen and other airborne or aircraft-related systems developed by Saab
- Maintenance and operational support for the Gripen system
- Maintenance of mature systems, such as the SK60 trainer, Draken, Saab 105 (Austria), and Viggen.

Considerations have to be taken in terms of the impact a new airborne system possibly can have on the customer’s existing operations, and the division of responsibilities between Saab and the customer is rather flexible. Technical publications covering the system configuration supplied and the support activities to be performed are offered. There is also an amendment service that gives the customer an updated publication if changes are made or errors and misspellings corrected.

Saab Aerosystems can offer replenishment service for spare parts to ensure that required stock levels are kept. Performance-based contracts are also offered, providing an exchange service that aims at further reductions of customers’ spares inventory. Support resources can include services such as field service representative’s support during start-up, query answering, and system evaluation support.

7.2.2 Line Replaceable Units Maintenance

Saab Aerosystems is able to maintain all older Saab air vehicles and subsystems, and maintaining airworthiness of Gripen is currently one of the most important tasks. Besides, maintenance of the ejection seat is one of the core competences.
7.2.3 Aircraft Modification
Operating under military regulations, Saab Aerosystems offers modifications of Gripen as well as all older Saab air vehicles and subsystems. Additionally, it is possible to install test and verification equipment in both manned and unmanned air vehicles.

7.2.4 Gripen Simulator and Mission Support Systems
Various modelling and simulation business services for fighter pilots are offered, from target towing to complete training systems. Flight-testing and verification operations are offered too, including e.g. test engineers, test pilots, analysis software, flight-test instrumentation, and facilities. Saab Aerosystems also support customers in developing network-based security and defence systems, by integrating commercial components into systems solutions.

PETRA, the latest tactical support concept for pilot training and flight planning for Gripen has been jointly developed by Saab, FMV, and the Swedish Armed Forces. The concept coordinates tactical support and training systems for simulated as well as real missions and it is used by both the Swedish Armed Forces and export customers. An important selling point is that it is a cost-effective solution; it has e.g. one engine, which can be compared with the more expensive competitor Eurofighter that is equipped with two engines.

7.2.5 Geographical Data Management
During an aircraft mission, many systems are dependent on accurate and correlated geographical data, both internal aircraft functions such as navigation and support systems such as planning and evaluation tools. A digital map generating system imports geographical source data from standard data formats into one common geographical database from which data are extracted and exported to the format required. On these premises, the Digital Map Generating System (DMGS) provides customers with geographical data to the Gripen system.

7.3 After-Sales Support – A Background
Traditionally, Saab Aerosystems’ focus has been on developing products and systems, with the Gripen system as the latest major example. Although services are more profitable than products, there is a problem with selling services in connection to product sales, which leads to sub-optimisation. Of a total order intake of SKr4 billion, after-sales services account for 10-15%. There have been times where one has developed tailored services but in substance, FMV has been responsible for and developed services towards the Swedish Air Force. A problem for increased knowledge and awareness of services is that business cases are still only made on products/systems and product development.

Currently, a new situation has developed where the business unit is delivering to several customers that insist that Saab provides after-sales support if an order is to be considered. This support may include spare parts handling, repairs, modifications, training, support systems, etc. but also performance and capacity-based engagements. These extensive undertakings are not offered today, but changeableness is considerable and in a few years, such offerings are believed to be an important part of the business.
The Swedish Armed Forces have been, and still are, undergoing major reforms, which include significant cut-offs and monetary savings. The organisation is downsizing from a large and mobilisation-based counter-invasion defence to a smaller defence with emphasis on defence adaptation. This implies an increased responsibility for the defence industry as less Government support is given to new product development projects and the Gripen production is de-escalating. There is also increased focus on international peace-promoting activities including Battle Group 2008, a battalion that will be available for operations under EU command. All these changes accelerate the development towards a multi-customer situation for Saab Aerosystems.

Saab Aerosystems has an ambition to expand and increase its engagement in non-traditional offerings. Some of the competences required to develop these offerings are to be found within the Saab Group whereas one probably has to establish connections with other companies in areas where competence is lacking. The internal attitude towards services and the organisational form are obstructions for an increased service offering, although the employees’ attitude may be a matter of a process of maturity that is changing, although slowly.

A different packaging of services is needed for the export markets but for this Saab needs FMV’s sales volumes. The company has to be able to lower initial product investment costs for customers and spread them, i.e. transfer money between different budgets within the customer account. The Gripen system’s main selling point is low lifecycle costs with lower operating and maintenance costs than competitors’ offerings, with high initial investment in consequence. Even though the net present value is lower, Saab is often disfavoured due to the initial investment needed. In addition, the company must offer a more extensive undertaking and not only offer after-sales support mainly to Gripen and the SK60 trainer. Of total maintenance cost, aircraft engines amount to about 50% and of the total lifecycle cost, engines constitute approximately 20%. The engine lifetime is about three years.

When going from one major customer to several, it will be necessary to distribute indirect costs among the customers. For the Gripen system, the offering is gradually developing from traditional product sales to performance and capacity-based engagements, and delivering availability through complete undertakings that include spare parts replenishment, maintenance, technical support, support system, and training. In contrast, the undertaking in another system, the SK60 trainer used by the Swedish Air Force, is a one-step change from traditional maintenance and spare parts sales to a complete undertaking guaranteeing availability. The feedback loop from the SK60 undertaking to the development of the Gripen offering will therefore be of decisive importance. Saab initially planned to increase the service offering incrementally also for SK60, but the Swedish Air Force has requested this form of complete offering.

There is a risk for mismatch in the content of the offering when going from product level to function. Furthermore, there is a risk for mismatch in timing if bundled service offerings are developed whereas the customer only asks for products and single services. Thus, it is important to have knowledge of customer needs, but a problem for Saab Aerosystems is that there is no clear opposite party at the main customer, i.e. FMV. Instead, there are several interfaces and it is
furthermore problematic due to what the company experiences as FMV’s lack of long-term strategy.

7.3.1 Internal Organisation
The internal organisation was until recently constructed around the former division of responsibility towards FMV. There is a managerial body for after-sales support where many interested parties are included, but the implementation and operational responsibility is divided among several units within the Saab Group. This is also the case in the most recent organisational division in 2006 where Saab Aerosystems has the business responsibility whereas Aircraft Services in Saab Aerotech has the operational responsibility. One implication is that both defence and non-defence aircraft services are managed by Aircraft Services (see Figure 7.2). If this new organisational solution will eliminate previous problems connected to the lack of a clear, uniting organisational unit remains to be seen.

![Figure 7.2 Product responsibilities in the Saab organisation.](image)

Roles and product responsibilities are not clear between the line organisation and programme management (PM) for after-sales, resulting in lack of accountability if a conflict occurs. Besides, there is no Chief of programme management for PM After-sales. In connection to the fact that no new Gripen orders have been placed, PM Gripen does not want to hand over the service undertakings to PM After-sales, as it would mean that the PM would no longer have a useful purpose and thus would not be possible to justify. Since services obviously are in the interest of PM After-sales too, there is consequently a clash of interests. Approximately 50 people work in PM Gripen, which is in the same organisation as the other two PMs since 2004, 17 people in PM After-sales, and 19 people in PM New Products. The PMs are profit centres that buy internal services from the lines, which are cost centres (see Figure 7.3).
PM After-sales work both with existing after-sales support and with future offerings. In lines where employees feel threatened by the Group’s savings, many bottom-up initiatives can be found. Although bottom-up initiatives can be positive, the service managers believe that it is necessary to know the market price before initiating any project and that a bottom-up structure is not the right way to go. Being able to demonstrate customer value in the service offering and being able to charge for it is indispensable to the after-sales organisation and so is the ability to increase the internal status of services.

A major challenge for the organisation is to manage the personnel downsizing and organisational change related to the lack of new Gripen orders. The situation may possibly be compared with the journey Saab Aircraft made when they were not allocated any more resources for civilian development projects. The business unit essentially had to tell customers that it was their last chance to order the 2000 and the 340 aircrafts because after that point in time there would be no more development and production. There would only be a customer support function guaranteeing security and maintenance of the existing fleet. The result for Saab Aircraft was a very different, and a smaller, organisation that was more efficient in after-sales support.

### 7.3.2 Key Performance Indicators

Different groups of KPIs are used to manage Saab Aerosystems’ objectives and evaluate performance, and every department should have a target picture and a strategy connected to the KPIs. Financial Focuses KPIs are order intake, operating margin, and mark-up result, whereas marketing plans, customer relationships, and market shares are KPIs related to customers. Financial KPIs on a less aggregated level, e.g. profitability per revised technical publication, is not measured at the PM level but possibly at the operational instance. Forms of cooperation, cooperation agreements, and inventory are measured, and together represent Cooperation Focus KPIs. Colleague Focus is measured by follow-up of goals, development plans, employee questionnaires, and common employee activities. Many of these KPIs are evaluated rather
subjectively, as there are few clear guidelines or methods to assist the estimations. The final group of KPIs is Business/Programme Focus, including:

- Approved Follow-on Support (FoS) agreements: the number of overall agreements sold to customers
- Evaluated business concepts
- Milestones within existing programmes: every programme should have set clear milestones that are possible to follow-up. It is usually defined in monetary terms, i.e. a part payment from the customer
- Agreements with the product responsible: means that the organisation wants product ownership for the services, i.e. someone responsible for a product module, updates of technical publications, etc.
- OEM agreements: activities being made in order to improve OEM efficiency.

For every Business/Programme Focus KPI, there is one long-term and one short-term target, e.g. one and five years respectively. Other KPIs for internal use are Mature Product Portfolio, including Attractiveness, Flexibility, Structure, and Secured Upstream, and Mature Organisation, including Clear Roles and Interfaces, and Mature PM and Operational Instance.

### 7.3.3 Cost Drivers

Duplication of work, execution of service business, and organisational constraints are three unnecessary cost drivers that prevent cost effective service processes. Duplication of work occurs because business content is not reused effectively enough. To a certain extent, it can be minimised through a structured and flexible portfolio of offerings that can be combined in various bundles. It is also crucial to have a clear demand specification and to ensure that incoming information from suppliers is secured. A problem related to the execution of services is that PM After-sales cannot place major projects as PM Gripen is able to do and instead has to place smaller line projects. These projects are not given the same internal priority as the more extensive ones.

Within the organisation, interfaces between PMs and business units, roles, and responsibilities are not always clear. This applies to both accountability for services, and when it comes to what activities that should be regarded as after-market business. Although discussions can be held at management level, it is seldom permeated in the organisation as a whole. These problems are not only internal; unclear interfaces and responsibilities between Saab and FMV also affect the organisation’s efficiency and effectiveness negatively. However, being able to change FMV's attitude is difficult for Saab Aerosystems.

### 7.3.4 Competitors

Since Saab has no sole right to spare parts provision, Nordic subcontractors among others are trying to enter the spare parts market. Some of these companies are gaining power through acquisitions of competitors and increased range of offerings. One question is what line to take to
guarantee undertakings if OEM parts are supplied from one of these companies. In order to prevent them from taking market shares, Saab buys spares with very narrow limits of tolerance and then it is possible to measure whether they are within the limit of tolerance or not. Major product competitors are evidently US, Russian, UK, and French manufacturers.

7.4 Customers

The Swedish Air Force through FMV is Saab Aerosystems’ main customer. Major efforts have been made to increase the international sales and the number of customers, so far with little result however. Information and tenders are brought to several countries every year as part of the effort to sell Gripen internationally. Marketing and sales activities often stretch over several years before a possible agreement is signed.

In parallel with the turbulent changes in Sweden, international customers are about to demand after-sales support and the company strives to increase the current number of international customers. The objective is to achieve economies of scale when several customers are buying similar offerings. Different customers can make different adjustments regarding which costs to consider as investment costs and which costs to consider as operation costs, thereby making the pricing vary considerably between two identical services. In the long run, there is also a possibility for Saab Aerosystems to become a third-party provider to other air vehicle manufacturers.

7.4.1 The Swedish Defence Materiel Administration

Historically, FMV has been Saab Aerosystems’ customer, giving the company assignments for which it has taken the responsibility. FMV has also had the main responsibility for servicing the Swedish Air Force’ installed base, e.g. guaranteeing spare parts and maintenance. Due to the major restructuring and downsizing of the Swedish Defence Forces, a new situation is evolving where Saab Aerosystems inevitably will have to take an increased responsibility for these services. The relationship between Saab and FMV has been characterised by longevity but also by FMV being the party setting the rules and Saab has therefore acted reactively in accordance to its customer’s needs. In connection to the major restructuring of the Swedish Armed Forces, FMV needs to become more cost effective which in turn require Saab Aerosystems to have efficient operations for its often-customised products.

The Saab 92 agreement stated that Saab has predefined, fixed margins on product sales and that FMV has a clear insight and can regulate the profit margin. A larger undertaking would give FMV less control of Saab’s pricing but the traditional way of working and thinking still characterise the company to a high extent. In addition, since FMV no longer wants to coordinate its suppliers, there may be an opportunity for Saab to become a systems integrator.

Net sales for 2004 included 16 Gripen aircrafts delivered to the Swedish Air Force, and 170 of the 204 aircrafts ordered by FMV were delivered before the end of 2004. In cooperation with the Swedish government, the Swedish Air Force has the option of leasing Gripen to foreign Air Forces. In 2001, the NATO member Hungary became the first country that decided to lease 14 Gripen from FMV, an order that was extended in 2003. Following the severe flooding in 2002,
the Czech Republic abandoned its combat aircraft procurement process but decided a year later to lease 14 Gripen. Thereby, it became the fourth country and the second NATO member state to select Gripen. Even though Hungary and the Czech Republic are leasing Gripen from FMV and not from Saab, there are still future after-sales possibilities.

7.4.2 South Africa

In September 1999, the South African Air Force became Saab’s first export customer for the Gripen system. The order comprises 28 aircrafts and it will require Saab Aerosystems to take an increased service responsibility when the first Gripen fighters are delivered and operational in 2006. Even if the Air Force has a negative experience of an availability contract it previously had on the Cheetah aircrafts currently in use, generals and directors believe that the best solution is to pay for availability. Although they do not know why, operational personnel and managers have experienced that the contract has not worked out satisfactory and therefore oppose a similar agreement for Gripen. Therefore, it is crucial for Saab Aerosystems to be trustworthy and convince the employees and managers that such a contract is favourable for both parties.

One reason why the contract was not a success, however, was that it stated that a certain average number of aircrafts, e.g. four to six, must be ready to start every morning. If the provider, due to maintenance and repair, was only able to supply two aircrafts per day during one week, he supplied seven or eight aircrafts the week after in order to compensate for the previous week’s lesser number. The South Africans’ perception was that during weeks when aircrafts were needed, few of them were on the runway whereas weeks when pilots had training or a holiday, more than the average number were ready. Hence, there was a phase displacement between demand and supply. The way the contract was written, the provider did however accomplish the undertaking, even if it was not in accordance with the actual need of the Air Force personnel.

Another reason is that the contract was relatively costly, maybe because the South African Air Force was the provider’s only availability contract customer. This means that the provider had no other customer to spread risks and costs. The costs and risks involved with increased undertakings and the need to offer cost efficient services are reasons why Saab Aerosystems has started to pool spare parts between the Swedish and the South African customer.

7.4.3 Relationships and Interfaces

Saab Aerosystems has close relationships with the Swedish customer and well-functioning relationships are seen as strategically important as the number of more extensive undertakings will increase. Customer interfaces are not clear and besides there are several Saab business units that have contact with FMV in what one manager describes as a proper “scramble” where all business units want to take advantage at the expense of the other.

Even if relationships are important, it is political relationship and not personal ones between employees at Saab and its customers that matter when it comes to selling. For services, however, relationships on an operational level are important on a daily basis, with contacts between administrators at FMV and their counterparts at Saab. When new service agreements are signed, relationships tend to become more business-like than before, which also is a reflection of the
changing situation where both provider and customer are exposed to increased cost pressure. Less time must be spent on continuously maintaining working personal relationships with customer representatives when long-term agreements are signed and a certain amount of service sales are guaranteed, enabling more focus on performance. It therefore becomes crucial to have relationships where both parties are able to cooperate. Furthermore, it is considered important to have agreements that create incentives for Saab Aerosystems to work proactively and that distribute profits fairly if it is a profit-sharing agreement.

7.5 The Sales and Service Processes
Saab Aerosystems has three main sales processes, which focus on product selling but also comprise service sales and service production: Develop Business, Acquire Business, and Accomplish Business (see Figure 7.4). Additionally, there are support processes and managerial processes complementing the three sales process phases.

![Process chart for Saab Aerosystems.](image)

Organisationally, there are several parties selling and a developed personal network is thus useful in daily operations. PM After-sales has business responsibility but the Commercial and Procurement department is responsible for the agreements for product sales and after-sales support to the Swedish Air Force. Internationally, the business unit Gripen International has the responsibility. Furthermore, some of PM After-sales’ sales responsibility is delegated to Aircraft Services in the business unit Saab Aerotech, which in turn also has delegated some service selling responsibility. Hence, there are several different main actors selling. Before the turn of the year 2005/2006, PM After-sales, Saab Aerosystems’ Commercial and Procurement department, and Gripen International were all selling and the responsibility between them was unclear. In addition, PM After-sales had difficulties coming with input about service and lifecycle aspects regarding the development of new airborne systems, like UCAV. Since 2006, Saab Aircraft Services’ Sales and Marketing department, Saab Aerosystems’ Commercial and Procurement
department, and Gripen International are selling. It is yet too early to evaluate how well the new organisational sales structure is working.

7.5.1 Develop Business
As the name indicates, the first main process in Figure 7.4 is about putting together a business concept. Business development plays a major role in this process; from summarising initial ideas to analysing the business possibility and examining whether the concept complies with demands and finally compiling the business concept. User/customer analysts identifying and analysing customer and operative demands, and product concept developers preparing product data are also involved throughout the process. The business concept, being the outcome of this process, will in the future contain support solutions concepts and/or unbundled services offered to customers and these services will be continuously added to the service product portfolio.

7.5.2 Acquire Business
The Acquire Business process consists of two main processes, Accomplish Campaign and Win Contracts.

Accomplish Campaign
In the Accomplish Campaign process, a campaign organisation is appointed, a specific budget is allocated, and a Capture plan on which the campaign is based is developed. Campaigns have often been connected to major deals such as Gripen and the budgets have consequently been considerable, possibly SKr20-40 million per year during three to five years time. These campaigns are connected to initial product sales and there are accordingly no campaigns preceding new service offerings.

Business management is the PM After-sales led by its manager and one of the two roles in the process, the campaign leader being the second. Business management is responsible for analysing market reports, initiating campaigns, and appointing the campaign leader. Saab proposes a business concept that the customer evaluates and comments if he wants to proceed. In order to establish the business concept, customer and provider work together. In the case with the SK60 trainer, the final concept was already established when the customer (i.e. the Swedish Defence Forces) ordered FMV to procure it. The output of the Accomplish Campaign process is an internal report and an influence on the customer. There is also feedback that suggests changes in future business-concept development going to the Develop Business process.

Win Contracts
Win Contracts is a more concrete, formalised process, where the final product offering is put together by a so-called bid centre within the Commercial department, commercialised, and technically specified. The programme management, the commercial responsible, the quotation responsible, and the negotiation responsible are all involved in this process. The quotation responsible has an important role in the process, as rendering the offer is one of the crucial sub-processes.
After registering a customer order, the contract is scrutinised to understand its content before the order is accepted. However, this phase is sometimes considered superfluous and therefore not properly made. Although the processes are well documented and specified, implementing and following them up is less obvious as project members choose less formal processes. There are no milestones being ticked off and the methods are not always process-orientated due to low degree of process maturity.

7.5.3 Accomplish Business
Accomplish Business is the most operative of the three main processes and the one where services have an explicit role.

Perform Investigation
One investigation leader and one investigator are mainly involved in this sub-process where the demand is analysed, the task is carried through, verified, validated, delivered, and finally evaluated. At this stage of the process, the customer has requested the investigation and the actual product is still a product of the drawing board. There are cases where the customer does not order an actual product but an investigation only, which eventually will lead to product sales.

The investigation process is very much about the customer’s unique need. Largely, it is about compiling data required to decide whether to make the investment, i.e. to develop the product, or not. It can for example be an operations analysis, a complete investigation, or a matter of discretion; investigating what it would cost to raise stock-in-trade on maintenance resources, i.e. to invest in maintenance material, versus a product modification and compare the two alternatives with regard to remaining lifetime and decide which way to go.

Thus, an investigation can sometimes be seen as a pre-study where the customer is informed about the alternatives possible. However, before the customer makes a final decision and chooses one of the alternatives, e.g. modifying apparatuses, Saab prefers to spend 100-200 hours on an initial investigation in what the technical solution would look like and what the confidence interval would cost. The next step is more extensive and can involve a functional specification regarding effects of the modification and possible needs to further examine. Not until then, decision is made regarding whether to proceed with product development. These investigations can involve both complete aircraft systems and support services and apparatus.

Develop Product
Develop Product is the most complex of the sub-processes. Initially, it is about defining stakeholder and technical requirements, and then to design a functional architecture. Even if the customer requirements are known when the product is sold, defining a contractual specification and translating it to technical requirements are not necessarily done. Requirements are often known at an aggregated level but have to be broken down.

This sub-process arose in connection to aircraft development but it is nowadays used for other products as well. However, using a development process primarily suited for aircrafts can be problematic and costly when it comes to smaller products and therefore has to be applied
cleverly in order to secure profitability. This becomes increasingly important, as a new business for Saab Aerosystems is to take part in projects where only a definite subsystem is delivered. The formalised development process is also too complex for after-sales activities, which makes it difficult to manage efficiently.

For extensive undertakings such as availability contracts, it could be preferable to include a lifecycle and service perspective at the end of this phase. A several years’ long development process is however an aggravation in this context and if the product in question was developed many years ago, it becomes particularly challenging. For instance, in the SK60 case, there is a certain configuration today including functionality and in the coming availability contract; the customer will not have to make a detailed estimation since he has contracted Saab Aerosystems to achieve the functionality stated.

Development projects are often associated with difficulty to estimate and calculate precise costs, which leads to increased financial risk. Sub-processes related to the validation of constituent element definitions are marked by their aircraft origin; develop equipment, software, ILS (Integrated Logistics Support), and specify safety of operation in accordance with performance and cost.

**Produce and Deliver**

The Produce and Deliver processes are sometimes described as one process also internally. When the first article, i.e. the aircraft, is produced, it is used to verify the manufacturing equipment. A specification is obtained and the productive apparatus is growing gradually. The same goes for ILS, where specifications are obtained for equipment and publications to be included in the Produce and Deliver process.

Tools and equipment are seldom made by Saab Aerosystems itself but subcontracted to tool manufacturers. Additionally, Saab Aerotech manufactures some of the tools, mainly non-standardised ones. Since the products generally are complex, so is this process, including several sequential steps and sub-processes. Like the Develop Product process, this process is manufacturing-orientated even if attempts have been made to adjust it to a more generic one.

**Support for Products in Operative Service**

The main objective with the SPIS process is to ensure that the customer has efficient operations. Focus is principally on air safety and secondary on availability and cost. Although there is no difference in the SPIS process depending regardless of contract, this may change in connection to the availability contract for the SK60 trainer, where other KPIs will be of importance compared to traditional contracts. Education takes place on a continuous basis and every time the series status, i.e. functionality, is changed, education is given regarding the changes that have been implemented, often due to software updates.

The initial phases are about preparing product assistance, and planning and starting the operation. Prepare for assistance at the customer site is the next sub-process, which however, is not about remedying a defect at the customer’s aircraft. Instead, this is made by the customer's
technicians who have been certified by Saab. This sub-process is about responsibility interfaces between Saab and the customer and it contains both reactive and proactive activities. The main purpose is to support the customer when deviations occur because often the customer can better manage preventive maintenance activities himself.

However, the customer will not always have this competence in the future, as the Swedish Armed Forces will outsource many service activities. It will nevertheless be essential to agree upon each party’s responsibilities; in time of peace it is possible for Saab employees to do all maintenance, whereas Saab’s personnel is not involved in international missions and the Swedish customer therefore must have the ability to do some of the preventive and corrective maintenance at an operational level himself. So far, what Saab’s responsibilities and undertakings should comprise is not defined. It is therefore easier to define this for the SK60, which is a trainer and will not be used in state of alert.

The South African Air Force will probably not go as far as the Swedish counterpart when it comes to outsourcing service to and become dependent on Saab. This is however very difficult to predict, as it is dependent on e.g. political, cultural, economical, and security policy aspects. One difference between South Africa and the Czech Republic and Hungary is that the latter are NATO members and the relationship with these customers is dependent also on how EU’s common defence policy develops, i.e. if it will increase in importance and/or become more unanimous.

Also in Sweden political aspects matter; if Saab takes over the Armed Forces’ workshops it is not sure that they will remain in the same places as today and employ as many people. The civil servants’ conditions regarding pensions etc. are favourable and the company might not afford to take over these undertakings. Thus, there are political aspects affecting how far the undertakings will extend in practice but theoretically, Saab might offer most services, such as refuelling in the air. Before the actual operational processes are initiated, a final administrative process regarding order distribution takes place. Technical publications as well as spare parts must be available.

The most important sub-process within SPIS is works supervision, which is needed to guarantee airworthiness from an air-safety perspective. A team goes through the operating data daily in order to see if there are any deviations, not necessarily incidents worth reporting, but can be error detection of a trend or pattern of outcome deviating in the wrong direction. Although a discrepancy is not critical for air safety, it may e.g. result in preventive maintenance becoming more frequent. Thus, it may be worth making an analysis on what a design modification would cost or what an increased stock of apparatus needed to maintain availability performance would cost.

Since the works supervision team receives deviations, as mentioned above, from Air Force Wings daily, there are established routines on how to handle the information. Regardless of situation, a technician examines aircrafts after each flight and maintenance data, error reports, etc. are obtained, enabling one to see when the error has occurred. If the discrepancy was not air safety critical, the pilot was able to follow out the mission, although the defect system in question
was not available. On the other hand, if a critical error occurs, the team decides what measures to take and possibly, to disconnect some of the systems while the pilot receives an error code to abort the mission and return to base.

Deviations are reported daily to Saab at 12 o’clock whereas critical errors are reported instantly. When the Swedish Air Force is not able to estimate if a deviation is critical for air safety or not, it reports “Uncertain condition”. Then, Saab has 72 hours to formally report to FlygI, the military airworthiness authorities, which possibly decides to stop further flights. This type of information is sensitive in e.g. a state of alert or intensification and regarding the South African Air Force, this process would most likely be disengaged. No country’s Air Force would like information about its aircrafts being temporarily out of operation to be known during a military conflict, why this function is very much a peacetime service. Unlike Sweden, the US Armed Forces have however used civilian personnel to deliver both non-military supply and war equipment.

Material supply is a sub-process needed to ensure deliveries of resources enabling flight operations according to plans. If a component is not discarded, it is considered an exchange unit. Exchange units can also be complete subsystems that in turn comprise several components. Depending on the component or subsystem’s repair policy, it is sent through a formalised repair process. This can include external parties, such as the Gripen engine manufacturer Volvo that is responsible for the repair of the engine, as well as Saab business units, such as Saab Aerotech.

Another sub-process within SPIS is correction services for technical publications as updates are made. This is something the customer has to pay extra for, similar to hardware repair. When Saab delivers a 20,000-page publication, not all pages are 100% correct and there is little incentive to strive to make it as correct as possible from the beginning as long as the company is paid for all corrections. This applies both to correcting spelling mistakes and for correcting essential information that affect the technical configuration, although the latter of course is prioritised.

The customer is however believed to have little interest in actually owning the publication, and alternative service logic would be to offer the customers subscription to publications instead. This would be an incentive to make it correct from the start and the customer would know that product configurations and other information are more likely to be correct. Another alternative is to bundle the publication subscription with another service. If it is part of an availability contract, the customer has little interest in knowing what costs are associated with an updated publication and Saab would need to make this process more cost efficient.

Implications of availability contracts such as the SK60 contract on existing processes are not yet clear although one possibility is to interpret the Produce, Deliver, and SPIS processes differently for such offerings, especially the SPIS sub-processes works supervision and material supply are essential and likely to change. In addition, changes in inventory management are a prerequisite for these extensive, fixed-price contracts, e.g. that FMV lets Saab take an increased responsibility. When it comes to the operative processes, a one-customer perspective is still
prevailing and it is possible that a situation with several customers will have implications on the processes, such as to pool spare parts between Gripen customers.

7.5.4 Service Selling
FMV has the role of ordering both new air vehicles and investments in support systems. If something comes up during the products’ operative phase (SPIS), it is the user (the Armed Forces/the Air Force) and not the purchaser (FMV) that is involved. The Armed Forces have annual operating budgets to achieve the objectives set. The main objective is usually expressed as obtainment of a certain ability and educational level among pilots and this is often translated to a specific flight time production in order to maintain this ability. With the operating budget, the customer has to achieve the objectives set and it often is a matter of discretion between aspects; e.g. invest in a modification to reduce operating costs or to invest in increased uptime to reach educational and production targets.

Saab is committed to have the capacity and organisation needed if the customer would place a new service order or change current agreements and the company receives an annual payment for keeping this latent capacity. Cost efficient service operation with focus on air safety is central for this type of service undertaking. The other kind of capacity Saab needs to have is the ability to undertake analysis, modifications or other changes of the airborne system and this is something the customer has to pay for additionally.

The challenge when moving to a multi-customer situation is how to convince the other customers to adopt the FMV model with annual payments, which is considered favourable. Saab has an organisation optimised for a situation with one major, local customer (although on several locations) but has the competences required also to serve other customers with support solutions. However, it is likely that other customers will not automatically accept the current price as a well-designed service process should result in synergies between customers, e.g. pooled spare parts.

Such are also the signals given by the South African Air Force; they do not want to pay an annual fee of some ten million of South African rand in connection to the Gripen deal, stretching approximately over 30 years. Regardless of whether something occurs this year or sometime ahead, Saab should be able to correct it and include it in its product cost. This is the situation the South African customer is used to, whereas Saab has been in a situation with a somewhat nationalised character with these annual payments in advance. Consequently, there are going to be changes in the current revenue model.

Another likely change is that FMV will neither agree to pay these fees, arguing that it should not finance the complete service infrastructure because going from one customer to four does not imply that Saab will have to increase the staff with a factor four. However, since the customers have different opinions regarding payment form, the question is how the cost reduction will be shared among the customers and what the payment forms will be. It is possible to distribute the cost either as overhead charge on products or as a subscription fee, and a related
task is to design an organisation that can offer these services efficiently without jeopardising air safety.

**7.6 The Offering**

Saab Aerosystems has eight product families with single services:

- Material support
- Technical publications
- Maintenance, Repair, and Overhaul (MRO)
- Technical support
- Integrated Logistics Support (ILS) services
- Information systems
- Training
- Other services

Each product family includes services that can be offered standalone, i.e. unbundled to one or several customers, or combined into support concepts. Having an effective modular service structure is critical, since the company has a strategy on two-fronts: to keep the remaining product offerings and to bundle these products together with service offerings. In order to achieve this, new pricing models, e.g. fixed pricing, and methods to systematise this development need to be created.

The Product Portfolio for Follow-on Support being discussed internally, and also referred to as the After-Sales Product Portfolio, is defined as the products (goods and services) which are offered to the customer after delivery of a system, e.g. Gripen. However, the products in the portfolio are not limited to use after the actual delivery of a system because some products are used for the initial delivery, e.g. for setting up the support system ordered or for calculating the initial provisioning. Besides Follow-on Support products, which the customer can use within the system’s specified functionality, there are also Add-on sales, which add new functionality to the system if the customer’s needs are changed.

In general, each customer requires unique support solutions and such offerings have to be negotiated. Nevertheless, Saab Aerosystems’ ambition is to have general after-sales support concepts that can always be used and thus be replicable. A Product Portfolio for Follow-on Support, containing support concepts possible to refine, is suggested for the Acquire Business process. Each support concept consists of a bundle of single services/products from one or several product families (see Figure 7.5) specified in detail in terms of structure, processes, and competences required, and these support concepts may be used both for quotations and marketing activities. One unbundled service/product can be used in several support concepts, and one or several support concepts can be supplemented with a business concept where the
stakeholders are internal decision-makers and the content is e.g. the business idea and revenue model.

The Follow-on Support portfolio aims at facilitating product support aspects during the sales and delivery processes and at making the support proposal more attractive to the customer. The Acquire business process should also result in a clear support solution order with specified support concepts and single services, agreed prices, and service requirements. However, the current after-sales support structure does not fully facilitate the structure suggested and if it is to be implemented, existing information has to be better structured when accomplishing orders, support concepts have to be described and supplemented with business concepts, and product structures should be further used so that sub-optimisation is avoided.

At least three levels of future service offerings are discussed; (1) spare parts replenishment, guaranteeing parts availability but also dimensioning stock levels, (2) availability for engine, aircraft, etc. with SLAs, and (3) contracts for an air vehicle fleet based on cost per flight hour or cost per maintenance, repair, or development programme.

**7.6.1 The 3Pro Project**

In order to create an overall structure for methods of working with services, describe and anchor the service portfolio, and develop a business concept, an internal SKr1.6 million project at Saab Aerosystems, 3Pro (Product portfolio, Project portfolio, and a Professional method of working),
was initiated and it was terminated in June 2005, four months delayed due to sickness. Although the goal congruence was not one-hundred-per-cent, it was considered fully satisfactory. A manual for service development processes including the relevant tools was developed although it remains to implement, manage, and develop it further. In addition, the project resulted in a number of product and project portfolios and product and price strategies.

A number of factors were assessed to have contributed to the project, e.g. a committed project owner, incentives for project completion, management support, easy-to-use project tools, clear milestones, preparation for taking urgent measures, and utilising external influences. Obstacles were e.g. long-term illness, organisational changes, project members not performing allocated tasks in time, and problems with support for and implementation of the results.

7.6.2 Standardisation and Customisation Aspects
The Saab Group consists of several different BUs that sometimes overlap one another. It is therefore important for Saab Aerosystems to be able to reuse development solutions and experiences from other BUs, and thus optimise resources from a broader Saab perspective. Even if Saab Aerosystems has a history of being a systems integrator, this experience is rather limited within after-sales support and therefore has to improve, in particular in terms of support from other BUs. Today, too much unplanned and unreflecting customisation takes place, creating customer value but generating higher costs, which more distinct service processes and responsibilities might eliminate. Offering customised after-sales support is nonetheless a prerequisite for selling at all but it has to be made in a planned and systematic way.

The number of single services should be kept at a minimum level and possible synergies existing between services in product families and support concepts have to be utilised. Services currently developed and offered to the Swedish Air Force may be attractive for other customers as well. Therefore, product and service development processes should depart in a multi-customer situation and the problems and possibilities associated with offering and producing the service for several customers. It must however be noted that the best technical and economic solution seldom is enough; political aspects can e.g. quickly destroy the most rational reasoning regarding lifecycle costs at a public authority.

7.6.3 Proactivity and Reactivity Aspects
A reactive service development most often emanates from an identified customer problem, whereas proactive services are generally driven by a focus on profitability. A too large and inflexible base organisation at FMV, the major opposite party, can be one impediment for better service development and production. Besides, not many Saab Aerosystems employees are driving forces towards increased proactivity. An obvious risk with being too reactive is that services offered are adjusted more to customer driving forces and objectives than to internal ones. The company is however proactive when it comes to air safety and much analysing is made to find presumptive safety risks. In the long term, one is also rather proactive regarding costs, and system evaluations are made on an annual basis to examine cost development.
7.6.4 Spare Parts Management

Spare parts and apparatus management account for approximately 20% of the service sales. Saab is dependent on the Swedish Armed Forces for many spare parts, since they are stocked in the Armed Forces’ warehouses. Since the customer has inefficient operations and insufficient survey of the stock, lead-times are significant. In the future, Saab Aerosystems would like to offer fixed price undertakings with guaranteed throughput time, e.g. SKr x for 30 days. At the current situation, the company has no total overview of the situation, does not know how long the spare parts delivery will take, or what it will cost. The result is low spare parts availability and there is no incentive to improve the situation and make the maintenance resources more cost efficient in the existing circumstances.

Even if Saab would focus on improving the current condition, it is depending on whether the Armed Forces can deliver the spare parts required in time or not. When having a fixed price, one can examine crash risk margins and make a maintenance analysis, thereby having incentives for improved profit margins. Much inventory in Sweden is safety stock and has been relatively unchanged despite the changed menacing picture during the last decades, and there is room for a further reduction of the inventory levels and e.g. possibilities to order components online.

7.7 Information and Communication Technology Applications

Mobile solutions, remote monitoring and steering, and administrative support are examples of service processes that Saab Aerosystems is considering to introduce through ICT applications. Besides, technological development can also facilitate e.g. extensive product information, managing authority requirements, and supervising airworthiness.

7.7.1 E-maintenance

The objective of the e-maintenance project is to strengthen the ability and competitiveness regarding international undertakings within product support by increasing knowledge and ability to apply ICT for maintenance of geographically dispersed airborne systems. The project is partly Government financed, and was initiated during the first quarter of 2006 and it will run for two and a half years. It is believed that no research has been made on this specific topic as the project involves technologically very complex systems and the Saab case is of unique character.

The starting point is the problems associated with the geographical distances when going from a local to a global market and with management of the complex system processes that to the highest degree affect the service design. An expected outcome is the ability to efficiently collect and distribute product support data in real time around the clock. Accordingly, it would create possibilities for better provision of the correct product support data and other information to the right people regardless of location, thereby improving the quality of the decision-making basis for support solutions from both a customer and a provider perspective. Since experience shows that important customer requirements such as system safety, air safety, and operating costs are affected negatively when managed in an international context, this aspect is considered particularly vital for the ability to acquire new business.
The project is also expected to increase knowledge about what the possibilities are to offer e-maintenance as part of the service offering in an international context. Hence, the project outcome is believed to be valuable for e.g. services connected to Gripen export sales, international missions performed by the Swedish Air Force, future military and civil unmanned aerial vehicle customers, and export sales of subsystems.
The analysis consists of three parts, except for the brief part discussing driving forces, where the first part is more connected with the empirical data material of Chapter 4-7. It primarily deals with the unbundled and bundled service characteristics and the increase in offerings. The second and the third parts analyse various implications of an enhanced service offering. The second part concerns customer relationships aspects, such as relationship longevity and proactive and reactive behaviour whereas the third part concerns service processes and interfaces. Thus, the three parts correspond to the three research questions stated in the introduction.

8.1 Internal and External Forces Influencing Service Management

Customer demand for services suiting their specific needs, downward pressure on prices resulting in reduced margins, and new technological possibilities are some evident factors driving companies towards more advanced services and solutions. In addition, capacity and cost per unit are important selling points for many major customers. If the companies were to choose not to offer new and augmented services, they believe customers will change to a provider that can better meet their demands and that the companies’ role thus will be reduced to that of a subcontractor instead of a possible increased role. Furthermore, increased competition in the service market from interchangeable parts providers and third-party service providers on gradually more advanced services is a threat to spare parts and other unbundled services, making it important to develop customer relationships and bundled offerings. Although Saab Aerosystems is in a different situation than the other companies with less competition from third parties, it is exposed to more pressure from its main customer.

TMHG has the ambition of becoming the world’s largest lift truck provider and the two entities BT Industries and Toyota will gradually integrate processes and operations in order to utilise synergies and become more efficient. A worldwide presence is necessary if BT Industries want to compete with the increasing number of central agreements customers are demanding. Local service market presence in the European markets is therefore a prerequisite.

Both product complexity and service requirements are increasing and this is something ELS takes into account when aiming at increasing the customer base, selling more services to existing customers, and having a majority of service contacts and sales through ELS instead of service partners. Thus, both cost efficient service operations and increased need for knowledge-based capabilities are critical for ELS and its partners. There has also been top-down pressure on better profitability and cost efficiency regarding services, as in the case with ITT Flygt.
The company most affected by external changes is Saab Aerosystems, which is very dependent on its major Swedish customer and on Government subsidiaries for new projects. The security policy situation has resulted in a downsizing of the Swedish Armed Forces and support requests from international customers. This has, and will even more, lead to an increased responsibility for Saab in terms of service. Clear responsibilities between parties involved are considered vital. However, competitive service offerings are no guarantee for success, as politics matter the most for Saab’s national monopsony customers.

8.2 The Industrial Service Offering
The industrial service offerings are dependent on the context in which they are developed and produced, and particularly the installed base that they service. Therefore, the capital goods are discussed in the first section. The other sections are concerned with the unbundled and bundled services offered, from traditional repair to solutions offerings.

8.2.1 The Capital Goods Context
Viewing the capital goods offered as a technological system in line with the typology proposed by Hobday, Davies, and Prencipe (2005) and based on the thoughts of mainly Shenhar (e.g. 1998), can illustrate the different prerequisites for services that the companies are facing. A large system scope would imply that the range of possible industrial services related to the installed base is very wide, albeit that not everything is necessarily offered. High technological uncertainty implies a high number of new technologies in the goods and thereby requires that at least some services are able to fulfil the technical needs of the installed base.

The type of system having the smallest scope is the assembly, which is either a single component or a complete assembly. It performs one type of function and does not perform a role in a wider system, such as a personal computer that is not connected to a network. The component or subsystem is always a part of a wider system, such as a professional laundry machine or a drainage pump. The product system is made up of several types of components and can be high-technology capital goods like an aircraft. Finally, large technical systems or systems-of-systems are bundled, interrelated systems that perform independent tasks but are commonly organised to achieve a specific task, airports being an example of such systems (Hobday et al. 2005).

On the technological uncertainty dimension, low-tech products rely solely on familiar, mature technologies. No new technology is employed when developing the goods and that differs from medium-tech products, which rely mainly on existing mature technologies too but contain a limited amount of new technology. However, new technologies are never more than 50% of the technologies employed. High-tech products are defined by Shenhar (1998) as having more than 50% of the technologies being composed of pacing, new technologies. Such development projects are very different from medium-tech ones and have much in common with Saab Aerosystems, e.g. long periods of product development, testing, and redesign. Finally, super high-tech products employ key technologies that, as in the Gripen project, hardly existed when the project was initiated.
Likewise, Hobday et al.’s (2005) typology can be used not only for mapping the companies’ current positions, but also for discussing the changes in the technological systems an increased scope of offering may imply. Saab Aerosystems’ offerings generally are complex systems stretching from integrated airborne system-of-systems in cell D4 (the Gripen system when originally developed) to cell B3 (SK60 availability contracts). Together with other units within the Saab Group, Saab Aerosystems has the capability to integrate their own and other systems produced by other companies. The other three companies are less advanced in terms of both system scope and technological uncertainty. Most of the goods offered by BT Europe, ELS, and ITT Flygt can be placed in cell B2 although there are exceptions. BT Europe’s Fleet management system may be regarded as a product system, ELS does not only offer single machines but also machines linked together in a technological system through ICT, and ITT Flygt need to have the capabilities to integrate various components and subsystems when offering for example draining of mines. Consequently, some offerings have the system scope of a product system, albeit not as complex as Saab Aerosystems’ offerings.

Saab Aerosystems is a low-volume manufacturer by contrast with BT Europe, ELS, and ITT Flygt, which can be regarded as high-volume manufacturers. Thus, Saab Aerosystems’ extensive offerings are significantly more costly and involve more technological complexity, uncertainty, and risk. A movement towards increased system scope and more technologically complex offerings may however be noted at the other three companies (see Figure 8.1). In particular, there is an extension of the scope towards more extensive undertakings such as integrated solutions where the focus shifts from selling products to offering process outcome. To some degree, products are continuously becoming more advanced as new technology is being built in to cheaper products and as products are able to communicate machine-to-machine, such as BT Europe’s Trucom project.
System Scope

1 Assembly

2 Component/Subsystem

3 Product-System

4 Large Technical System/System of Systems

<table>
<thead>
<tr>
<th>A1</th>
<th>B1</th>
<th>C1</th>
<th>D1</th>
</tr>
</thead>
<tbody>
<tr>
<td>A4</td>
<td>B4</td>
<td>C4</td>
<td>D4</td>
</tr>
</tbody>
</table>

Technical Uncertainty

A Low-tech
B Medium-tech
C High-tech
D Super High-tech

Figure 8.1 The companies' goods offerings as technological systems (Hobday et al. 2005, p. 1112).

With the system scope expanding, the range of possible and required services, both unbundled and bundled, is increased. It may involve subcontractors and other third parties, or the provider can take a larger role, such as ITT Flygt when also taking on the role of prime contractor of some projects. Increased use of new technology implies a larger role of ICT in the offering and requires more technical knowledge. Software and ICT applications are generally not developed in-house as it requires non-core capabilities, and collaboration with ICT companies therefore becomes more important. The online certification programme launched by ELS is an example of software supporting an auxiliary process and developed with minor resources by a small company, whereas extensive projects such as BT Europe’s mobile business system had implications on core service processes and involved the business system provider and the software supplier throughout the whole project.

8.2.2 Unbundled Services

Connecting to the initial discussion in this thesis regarding industrial services (see Chapter 1), the various services offered by the four companies can be mapped according to the services comprised by the industrial service definition. Table 8.1 shows that all the industrial services, except operation, are offered by all of the companies. These services are offered either unbundled or bundled in e.g. a Service Level Agreement (SLA) or rental plan, and may differ across markets. The operation service sometimes performed by ITT Flygt is nonetheless offered in connection to a comprehensive undertaking and never as a single service only. Some technical support, technical consulting, and performance audit services offered by the companies are performed only in connection to another service activity or a product sale. The problem with these more knowledge-intensive and/or process-orientated services is that the companies find it hard to get
paid for them due to previous, goods-centred revenue models and the prevailing market situation with competitors also offering many services for free.

Table 8.1 Industrial services offered either unbundled or bundled.

<table>
<thead>
<tr>
<th>Service Type</th>
<th>BT Europe</th>
<th>Electrolux Laundry Systems</th>
<th>ITT Flygt*</th>
<th>Saab Aerosystems**</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spare parts</td>
<td>Spare parts handling connected to PDA solution.</td>
<td>Spare parts distribution, ELS online store, specific web shop.</td>
<td>Can be ordered directly from ITT Flygt or from authorised service partners.</td>
<td>Yes, but dependent on the Swedish Armed Forces for many spare parts.</td>
</tr>
<tr>
<td>Repair</td>
<td>On site (~95%) and in workshops (~5%)</td>
<td>On site and in workshops.</td>
<td>On site and in workshops. Both unbundled and four levels of fixed price repairs.</td>
<td>Formalised repair process. This can include external parties, as well as Saab business units.</td>
</tr>
<tr>
<td>Recondition</td>
<td>Yes, recondition units are sold by BT Europe.</td>
<td>Yes.</td>
<td>Yes.</td>
<td>Yes.</td>
</tr>
<tr>
<td>Performance upgrade</td>
<td>Yes.</td>
<td>Yes.</td>
<td>Yes.</td>
<td>Yes.</td>
</tr>
<tr>
<td>Inspection</td>
<td>Yes.</td>
<td>Yes.</td>
<td>Yes, inspections and extensive attendance.</td>
<td>Yes.</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Preventive (on site) and corrective (in workshops).</td>
<td>Preventive (on site) and corrective (in workshops).</td>
<td>Preventive (on site) and corrective (in workshops).</td>
<td>Yes.</td>
</tr>
<tr>
<td>Technical support</td>
<td>Yes.</td>
<td>Yes.</td>
<td>Yes.</td>
<td>Material support, technical publications etc.</td>
</tr>
<tr>
<td>Technical consulting</td>
<td>Consultation services regarding materials handling, warehouse management implementation, and optimisation.</td>
<td>Yes.</td>
<td>Yes, but no formalised consultation services in e.g. energy management.</td>
<td>Yes.</td>
</tr>
<tr>
<td>Performance audit</td>
<td>Analysis of the customer’s fleet. In connection to product or contract sales.</td>
<td>Mostly in connection to sales; new or upgrades/rebuilds.</td>
<td>Mostly in connection to sales; new or upgrades/rebuilds.</td>
<td>Yes, safety critical. Daily works supervision made by the Swedish customer. Unclear roles for new customers.</td>
</tr>
<tr>
<td>Operation</td>
<td>Indirect only, through provision of truck drivers in some cases.</td>
<td>No.</td>
<td>Sometimes, when acting as contractor. Operations may succeed to customer after some years.</td>
<td>No.</td>
</tr>
<tr>
<td>Customer training</td>
<td>Yes, e.g. driver training through franchising</td>
<td>Yes, both regarding equipment and specific software (e.g. CMIS and online ordering).</td>
<td>Yes.</td>
<td>Yes, extensive customer training. Critical to offer.</td>
</tr>
</tbody>
</table>

*) Fewer single products are repaired or reconditioned and more are replaced. Repair needs are also reduced through better product quality.

**) High extent of customer involvement in some MRO and performance audit services, although possibly changing. Works supervision and material supply are critical and likely to change. In addition, changes in inventory management are a prerequisite for extensive service contracts.
Even if all companies perform all types of service (except operation), Table 8.1 only illustrates various unbundled services. It is however important to not only make a distinction between bundled and unbundled services as unbundled services may differ significantly in terms of complexity and focus. Spare parts can be anything from gaskets to advanced aircraft sub-system apparatus. ITT Flygt offer its customers four levels of fixed-price repairs, which all are unbundled repairs although the service process and support systems differ and spare parts are ordered depending on the level of repair. The other types of services in Table 8.1 also vary in complexity and competence requirements, and especially Saab Aerosystems must offer extensive customer training and technical support. Many types of services are traditional after-sales services in terms of focus on servicing the installed base and here, the goods is in focus in analogy with Levitt’s (1980) augmented product notion. These services are spare parts management, repair, reconditioning, inspection, maintenance, and customer training in particular, and to various degrees technical support.

One can argue that performance upgrade, technical consulting, performance audit, operation, and to some extent technical support have a process focus rather than a product focus. These services, explicitly or implicitly, are offered as a response to a need in the customer’s industrial production processes, such as BT Europe’s consultation services in materials handling and warehouse management or ITT Flygt’s wastewater flow analysis. The goods are no longer in the centre of the value proposition and instead of focusing on whether the installed base works (efficacy), the installed base’s efficiency and effectiveness within the production process is in focus (Oliva and Kallenberg 2003).

Process-orientated unbundled services are not necessarily more advanced than product-orientated services – Saab Aerosystems’ customer training may require a state-of-the-art flight simulator – but they can nevertheless be indicators of how far a company has developed from a product-centric capital goods manufacturer to a more customer-centric and market-orientated company. This development is based both on overall company-related factors, such as realised service strategies, and individual driving forces in the service organisations, such as service managers initiating projects and implementing new processes, and on what role the customers play. If customers keep competence in-house and/or are reluctant to cultivate provider relationships and emphasise the provider’s offering it may constrain the development of more advanced and process-orientated services. On the other hand, if customers for one reason or another requests an increased undertaking in expressed terms or if a latent need arises, the provider has an opportunity to increase its downstream role.

8.2.3 The Bundling of Services

The bundled service offerings differ considerably in terms of number and content between the four case companies (see Table 8.2). The various contract forms are generally not uniform across
markets and ELS do not offer SLAs on some of the major European markets. BT Europe has a more homogeneous offering, even if local variations occur due to legal aspects and/or customer requests. If the basic form of the SLA remains unchanged but some of the options can be added or taken away, it can be viewed as an incremental innovation in accordance to Gallouj and Weinstein (1997). The technical characteristics (the \([X]\) vector) and the final characteristics (the \([Y]\) vector) of the service are affected whereas individual competences and customer inputs are not affected (the \([C]\) and \([C']\) vectors). Nevertheless, the increasing number of international key account contracts implies standardised offerings. Saab Aerosystems, without any extensive service offering, has a strategy of keeping the current product offerings but also to offer them together with services.

Table 8.2 Service level agreements and solutions offered.

<table>
<thead>
<tr>
<th></th>
<th>BT Europe</th>
<th>Electrolux Laundry Systems</th>
<th>ITT Flygt</th>
<th>Saab Aerosystems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Variable- (or variable and fixed) price contracts</td>
<td>Safety inspection</td>
<td>Country and business-specific SLAs (usually three levels)</td>
<td>Bronze contract: Basic preventive maintenance</td>
<td>Spare parts and apparatus</td>
</tr>
<tr>
<td></td>
<td>Preventive maintenance</td>
<td></td>
<td>Silver contract: High-end preventive maintenance</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Full service</td>
<td></td>
<td>Gold contract: Trouble-free operations</td>
<td></td>
</tr>
<tr>
<td>Fixed-price contracts</td>
<td>Short-term rental</td>
<td>Capacity / availability (few customers)</td>
<td>Platinum contract: Total offer (few customers)</td>
<td>Aircraft availability (not yet offered)</td>
</tr>
<tr>
<td></td>
<td>Long-term rental (four different plans)</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 8.2 includes the most noteworthy bundled service offerings in each company even though other bundled services also exist. ELS has only a few process-orientated services as capacity/availability contracts are not yet common. Profit-sharing contracts have been discussed internally but so far not been offered. The companies offer similar selling points for their bundled service offerings; low lifecycle cost, high reliability, and uptime are most often communicated towards customers. The same goes for Saab Aerosystems’ marketing of the Gripen system, where safety criticality is a main selling point. The bundled service offerings can be made up either of unbundled service elements only or also include goods. The variable-price contracts in Table 8.2 generally consist of service elements only, whereas the fixed-price contracts (but also e.g. performance-based contracts not yet offered) also include goods elements.

BT Europe offers some customers uptime agreements, performance-based contracts, or contracts with payments to industrial output. Recently, one of BT Europe’s customers suggested a contract with a price model linked to capacity usage; the more tonnes produced, the more BT Europe receives. These contracts exist for example in the aviation industry, where providers like GE Aircraft Engines, Rolls Royce, and Volvo Aero offer this type of contract to flight operators.
One difference in this case would be that while there is a direct connection between flight hours and flight operator profitability (ticket prices, cabin factor etc. certainly have a direct impact too), the connection between a manufacturer's produced tonnes of material and the usage of warehouse trucks is less clear. This idea could be a possibility for BT Europe but it could also pose a threat to existing contracts if the customer is powerful relative to BT Europe, altering the service development to mainly a reactive adaptation to customer demand. Consequently, the customer would reduce risk and cost at the expense of BT Europe. These contracts also demand more from BT Europe in terms of customer knowledge; an unprofitable customer implies a higher risk if revenues are directly affected by the customer's operations. Besides, different customers operate in different industries and it may take much time and resources to become knowledgeable in different industries and segments.

A challenge for ITT Flygt when going into more extensive undertakings is to have systems integration competence in terms of knowledge about other types of equipment, and the costs and risks associated with it. Besides, cost efficient service operations are necessary as contracts may include many service hours, also relatively unskilled services. The SLAs offered are standardised across the markets where they are so far available and based on a modular structure of unbundled services, even if fixed-price contracts (i.e. Platinum contracts) are customised to specific needs. A modular service structure is also something Saab Aerosystems’ service organisation has suggested (see Figure 7.5), with services that can be offered stand-alone to one or several customers, or bundled, even if the current support structure does not fully facilitate the proposed structure. Developing these services through the bundling of existing service elements is considered a recombinative service innovation albeit the companies’ development of bundled offerings also involves incremental innovations. BT Europe, ELS, and ITT Flygt all have mixed bundling strategies and Saab Aerosystems is most likely to have a similar strategy when offering both unbundled and bundled services.

In all four companies’ central service organisation, the existing service offering, including both standard and optional services is being examined and evaluated, aiming at improving service quality, efficiency, and delivery time. Examining existing services and possibly creating additional services is an important step toward a more advanced service offering (Anderson and Narus 1995; Oliva and Kallenberg 2003). Frambach et al. (1997) believe that industrial services can be strategic tools in industrial markets; facilitating achievement of competitive advantage, sustainable relationships with customers, and increased profitability. Better measuring and control enabled one of BT Europe’s subsidiaries to improve its profitability significantly and when ITT Flygt specified the service offerings, it enabled fewer but more efficient service processes.

Consideration has to be given to the services not possible to price but necessary in order to exist and for selling products. Although it creates much value for the customer, services such as gauging and analysing existing water flow through a pump station in order to optimise
effectiveness are difficult for ITT Flygt to charge for. Customers are expecting these services gratis and if the provider is about to charge for them, customers are likely to turn to competitors instead. If these services – often advanced and based on long-term knowledge and experience – are bundled with other services in an offering it can be very difficult to justify a premium price if the offering has free of charge services included. Thus, some advanced service offerings may be problematic to create. What to offer and what role to play will partly depend on the trade-off between increased costs and the revenues gained from the added sales (Stremersch and Tellis 2002). Nevertheless, the situation discussed is the present and it is possible that conditions will change in the long-term due to e.g. new knowledge and skills possible to offer, new technologies available, changing customer awareness and/or competences, and changing competition. One possibility is to offer some technical consulting services only together in a bundle, which offer value larger than the sum of its parts and that this may serve as a carrot for customers to increase their business with the provider.

Albeit the Platinum contract offered by ITT Flygt is their most advanced offering, it does not contain an energy reduction service or profit sharing possibilities. In a market where energy constitutes the largest single cost for the customer, there may be an unutilised potential for offering such services. Much knowledge already exists in-house and additional skills are possible to obtain from external ‘complementors’ (cf. Hax and Wilde 1999). What would make such an offering particularly appealing to Flygt is that the company is not gaining anything from high energy consumption and a reduction of energy costs is thus no threat to existing profits. Offering such services, either bundled or unbundled creates considerable value for customers. The problem, which is shared by comparable situations for BT Europe and ELS, is however that it is difficult to charge for them. Not only more trivial services, but also knowledge-based, process-orientated services are expected free of charge in connection to new product sales. Contact people at the customers’ companies are seldom interested in lifecycle aspects and it can be difficult to make these people more conscious.

The number of bundled offerings differs a lot between the case companies, something that is seen when comparing the companies’ market share of bundled offerings (see Table 8.3) The share of bundled offerings is nevertheless increasing in all companies. One must not interpret these figures literally, as they are rough estimations made by service managers and aim at giving a hint of the companies’ individual situation compared to each other. Even if an offering is bundled, powerful customers are likely to demand the provider to give an account of the cost of each service component. This is on the contrary to the companies, which want to bundle offerings externally while being able to unbundled them internally and map the costs of every component.
Table 8.3 The share of bundled and unbundled offerings (figures as in 2005 at rough estimates).

<table>
<thead>
<tr>
<th></th>
<th>BT Europe</th>
<th>Electrolux Laundry Systems</th>
<th>ITT Flygt</th>
<th>Saab Aerosystems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Unbundled offerings</td>
<td>&lt; 50%</td>
<td>90%</td>
<td>95%</td>
<td>95%</td>
</tr>
<tr>
<td>Bundled offerings</td>
<td>&gt; 50%</td>
<td>10%</td>
<td>5%</td>
<td>5%</td>
</tr>
</tbody>
</table>

The ownership aspect has been suggested as a distinction between goods and service (Lovelock and Gummesson 2004) although it does not necessarily imply a different logic in terms of processes and revenues. If ITT Flygt has signed an availability contract with a customer where the revenues are based on the pump station’s capacity, the same logic applies to service production regardless of whether the pump station is owned by the customer or by ITT Flygt. Similarly, a rental plan by BT Europe has the same revenue logic of minimising service hours and spare parts usage as some fixed- and variable-price contracts. However, risk aspects may differ considerably depending on ownership and risk management thereby becomes critical if the provider owns the installed base.

For ITT Flygt, the customer is often the main competitor when offering industrial services, which is a potential risk when moving downstream (Davies and Hobday 2005). Spare parts provision is always conducted by the provider whereas maintenance and repair may be performed by the customer’s service personnel. Although not directly competing with the customer, Saab Aerosystems is in a similar situation and for both ITT Flygt and Saab Aerosystems the trend is that customers are outsourcing their upstream activities. When going to more extensive offering, a problem may thus be where to draw the line between provider and customer personnel. This is something the customer can be uncertain about as well, and it goes not only for Saab Aerosystems but also for e.g. ELS. BT Europe provides some customers with truck drivers and the company offer resident technicians to customers, making the interface between the two parties somewhat blurred. Operative personnel are changing employer if ITT Flygt takes over the operation of a pump station for some years, only to switch back to the customer when the pump station is returned.

8.2.4 Solutions Offerings

Moving towards solutions offerings changes the pricing from variable to fixed price, although gain-sharing contracts and other offerings may be based on dynamic pricing. Thus, the service organisation becomes a fixed cost and maximising capacity utilisation becomes the most important revenue source (Oliva and Kallenberg 2003). Saab Aerosystems’ customers will soon be demanding offerings with payment coupled to aircraft availability and the company is therefore reactively developing fixed price offerings. The other companies all have fixed price contracts (see Table 8.2) and BT Europe in particular; continuously increasing the number of...
rental contracts. ELS is elaborating with fixed-price and dynamic-price offerings and ITT Flygt offers SLAs with fixed price per product and time period, as well as contracts combining fixed and variable price. The more advanced the contract, the more risk is assumed by the provider and although the customer owns the equipment, e.g. vandalism is covered by ITT Flygt in fixed price contracts.

In its most radical form, solutions providers – being on the customer’s side in the exchange – will use products from other manufacturers instead of their own products if it makes more sense to the customer and the solution is better. However, this form of solutions offering is the most extreme form of customer centricity and it is neither necessary nor desirable for all providers (Galbraith 2002). The companies investigated all have powerful engineering and product development traditions and such a move is considered out of the question for all. ELS is not even servicing competitors’ equipment, something both BT Europe and ITT Flygt are doing as they consider it important at their markets. The aim is however to eventually replace the competitors’ equipment with own equipment.

There is also a question of how far to go in terms of various offerings, from unbundled services supporting the capital good to solutions offerings. For BT Europe, ELS, and ITT Flygt, customer demand generally differs between Northern and Southern European countries. This is not only related to various political and economic factors like deregulated markets but is also reflected in the number of SLAs and rental agreements sold. Particularly BT Europe and ELS find that Southern European customers, including German ones, are more reluctant to not own the installed base, which inevitably is an aggravating circumstance and challenge for increased offerings. The relatively new markets in Central and Eastern Europe normally represent less advanced demand. For Saab Aerosystems, such a generalisation of regional differences in demand is however not valid.

8.3 Customer Relationships

Long-term relationships are valued by the case companies and their opinion is in line with the view of Ojasalo (1999) that relationship continuity contributes positively to service productivity. Advanced SLAs or fixed-price contracts are most often the result of an incremental process in which the relationships develop over time in connection with the development of the service offering. For BT Europe, long-term relationships are almost prerequisites for rental contracts and the same goes for ELS’ and ITT Flygt’s customers that sign extensive SLAs. It is a major reason why it is more difficult for BT to manage to sell rental plans in countries with external dealers where the company has no direct contact with the customers. Other studies of capital goods manufacturers’ expansion of the service offering support that relationships with customers are more important for extensive and/or advanced service offerings than less advanced ones (Oliva and Kallenberg 2003; Pavitt 2003). Normann (2001) considers that focus on longer relationships...
and increased risks are changes linked to the transition from product focus to focus on the customer’s value creating processes.

The importance of a relationship-based view on customer management can be illustrated by Figure 8.2, where the shaded area represents the suggested service offering space and the arrows accentuate a movement associated with relationship longevity towards bundled offerings from different positions. The y-axis represents the service elements that the offering is composed of as a continuum from traditional unbundled services with product focus, via unbundled process-related services to various bundled services with solutions offerings at the very end. The x-axis represents the view of the offering’s interactions between the customer and provider. At one end of the continuum is the transaction-based offering with arm’s length relationships between the parties whereas the other end represents a relationship-based view with focus on the long-term and cooperation that both parties benefit from instead of optimising each parties separate business processes. It is not the long-term relationship per se that should be emphasised but rather the attitudes and perspective towards the long term (Lusch and Brown 1996). Relationship-based, bundled service offerings are often manifested through legal contracts and agreements, especially if there is an extensive partnership between the two parties. Such partnership will most likely be found in the top right position of the figure.

An unbundled service may be an isolated service episode whereas bundled offerings usually involve several episodes over a long term and therefore generally implies a relational intent, which is required from both customer and provider (cf. Grönroos 1997). Extensive bundled offerings must not be transaction-based whereas long-term relationships are possible also when the offering is unbundled; something Figure 8.2 illustrates. As shown in the BT Europe, ELS and ITT Flygt cases, long-term relationships can exist on an operational level between the responsible employees in a situation where only traditional, unbundled services are required.
ITT Flygt previously outsourced its local service operations, which resulted in reduced profitability as e.g. spare parts sales were significantly reduced. Furthermore, not having a local service market presence deteriorates the customer contacts and creates one more actor (or rather several independent third-party service providers) with whom to manage the relationship. For companies operating in industries where a majority of revenues comes from the service market, an insufficient service market presence also obstructs continuous relationship building and the ability to receive feedback and information about expressed and latent customer needs. Such information is needed for a profitable customer centricity, both proactive and reactive. Even if it is important for any company to understand its customer, it is especially important for Saab and other systems sellers working with the Armed Forces. According to Gholz (2003), long-term relationships alone is insufficient as one “must monitor lessons learned from recent exercises and operational deployments and changes in military doctrine and national grand strategy” (p. 297) in order to be up-to-date. The ideal is to participate in war games and exercises where prototypes for new platforms and subsystems are introduced.

Accordingly, having a unique offering is not enough for carrying a business exchange with a customer through; credibility is also needed (cf. Gummesson 2004). In this case, not only credibility as a skilled goods manufacturer but also as a service provider and systems seller is fundamental. A record of accomplishment of successful service business exchanges with other customers and previous exchanges with the customer in question gives the provider corporate credibility, thereby developing the customer relationship. In line with the reorientation from product-centric company to customer centricity, more emphasis is put on not only making cleverer offerings but also on making the customer more intelligent and aware of lifecycle costs and new service opportunities.

A problem when approaching and discussing with customers is that the buying process often involves several people from the customer company. As Webster and Wind (1972) noted, the customer contact being the traditional buyer has the formal authority for selecting the provider but his or her choices may be limited by the formal and informal influence of others, e.g. technical personnel. The people “interact based on their particular roles in the buying process…as well as on the basis of the history of the group’s previous interactions and social experiences” (p. 35). Especially when tendering more extensive offerings than previously with increased financial value, the upper limit that the buyer has authorisation for may be reached, leaving the decision in the hands of another member of the customer organisation, which has more formal authority and responsibility. This is particularly valid for offerings that imply customer outsourcing of personnel, in which the traditional buyer usually has no mandate to make a decision. Decision makers in other formal positions may have other aspects to take into consideration when deciding on which services and provider to choose. Saab Aerosystems’ customers not only have influencers internally but also in the Government position.
8.3.1 The Role of Other Company Entities

The situation becomes more complex when more than one legal entity is involved, such as in the Saab Aerosystems case. This is also valid for ITT Flygt and sometimes ELS when services are sold in connection to traditional product sales. Knowledge about different parties’ involvement and importance in different phases of the installed base lifecycle is therefore vital. Other company entities, albeit not the company being the user, may have the customer role, something illustrated by Table 8.4. Depending on lifecycle phase, relationships other than with the customers can be of paramount importance. The three parties involved in the ITT Flygt case all have different interests and priorities, which mean that none of the actors involved in the product sales process is interested in lifecycle aspects and contractors mainly focus on low price on equipment. In the case of Saab Aerosystems, the interfaces between the company, FMV, and the Swedish Air Force can be blurred and there are several interfaces between Saab and FMV, and different individuals or business units can have their own agendas that they prioritise. Although ELS generally negotiates with the end-user during the various lifecycle phases, the situation can be more complex than indicated in Table 8.4. For some hotel customers, ELS negotiates with a consultant during the pre-contract phase and it may not be until the operational phase that the owner/end-user is specified. If the hotel company leases the hotel from another actor, customer interfaces become even less clear.

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<thead>
<tr>
<th></th>
<th>BT Europe</th>
<th>Electrolux Laundry Systems</th>
<th>ITT Flygt</th>
<th>Saab Aerosystems</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre-contract phase</td>
<td>Customer (end-user)</td>
<td>Customer (end-user)</td>
<td>Consultant</td>
<td>FMV</td>
</tr>
<tr>
<td>Contract and delivery phase</td>
<td>Customer (end-user)</td>
<td>Customer (end-user)</td>
<td>Contractor</td>
<td>FMV</td>
</tr>
<tr>
<td>Operational phase</td>
<td>Customer (end-user)</td>
<td>Customer (end-user)</td>
<td>Customer (end-user)</td>
<td>FMV, Swedish Air Force (end-user)</td>
</tr>
</tbody>
</table>

Different parties during different phases imply that it is more difficult to include service and lifecycle aspects in the initial product sales process because parties other than the end-user are usually less concerned about these issues. During the operational phase, it is essential for BT Europe, ITT Flygt, and ELS to act proactively on an operation level and preferably be at the customer’s site when a new business opportunity arises. Saab Aerosystems has very different premises, where service undertakings during the operational phase are associated with very comprehensive development and accomplishment processes.
8.3.2 Proactive and Reactive Customer Orientation

Saab Aerosystems has traditionally had very close connections with FMV but the business has been regulated and there have not been any incentives for Saab Aerosystems to develop a proactive relationship. Even today, there is little advantage in being proactive towards the customer as the service market development is dependent on decisions made by the Swedish Armed Forces and on FMV’s outsourcing of service activities. Although the situation might change with new products and new customers, Saab Aerosystems is very dependent on political decisions and other factors that are difficult for a provider to influence. While Saab Aerosystems act reactively towards new services and contracts and adapt to changing circumstances, ITT Flygt often runs the development of new service contracts. There is an ambition among many customers to focus more on lifecycle costs, but in reality many of them hesitate about signing more advanced contracts and especially publicly owned customers can be constrained by political aspects. Compared with these two companies, BT Europe’s and ELS’ customers have been more interested in new contract forms; thus proactive behaviour and the correct timing and rhythm have been more important for these companies. BT Europe has previously acted the most proactive of the companies but the number of rental and SLA sales cannot be explained solely by internal factors, as it is very industry dependent.

Synchronised timing and rhythm are important aspects to take into consideration when making the service manoeuvre. Correct timing can prevent a possible mismatch between the provider and customer with regard to the offering; and the provider’s ability to deliver the offering, the solution’s technological maturity, and the customer’s interest should have the same rhythm (Brehmer 2003). Increasing the service content in the offering can mean competition from other service companies about the customer relationships and there is a risk that a mismatch in timing will lead to competition with parts of the customer’s business (Mattsson 1973; Söderström 2003).

Being proactive towards customers is considered important by all companies, although most of them do not consider themselves proactive enough. Saab Aerosystems has, due to its close connection to the Swedish Defence Forces been very reactive, although they have the ambition of expanding their service offerings and become more proactive. The problem with Saab Aerosystems’ situation is that they are not gaining anything from being proactive; the customer is expecting them to be reactive in their response towards changing need. ELS and ITT Flygt are increasingly proactive and offering bundled services through a modularised service portfolio. However, clear obstacles for ITT Flygt are the customers’ poor awareness of lifecycle costs and the fact that different actors with different priorities are involved in the product sales process. The result is customers’ not receiving the best solution possible.

Acting proactive without having knowledge about customer needs, technological maturity, decision-making processes, order winners, and the people involved in the buying and service
production processes is not sufficient. Thus, there is a imminent risk that acting proactive without having customer relationships leads to very much internally focused innovation that is linked to what is technically possible to offer, and not what customers’ actually need. Besides, one must be aware of the possible customer constraints, such as political reluctance and the customer contact not having the mandate to sign SLAs, in order not to develop offerings not required. However, it may possibly serve a purpose in terms of marketing, future sales, and brand building to position oneself by offering new services despite the customer not being currently interested. Having developed relationships with customers should nevertheless be the normative goal also in such situations.

8.3.3 Customer Segmentation

By analogy with many product portfolios, discussions at some companies are about segmenting customers according to industry. Applying this on ITT Flygt would mean that today’s rather similar bundled offerings would be developed with reference to the company’s three customer segments; public utility, mining, and industry. However, this type of segmentation is not in line with the customer focus, as it is argued that customers should be segmented according to their similar service needs instead (Bundschuh and Dezvane 2003; Frambach et al. 1997). Although many companies in one industry segment will have comparable requirements, there will be customers for whom the offering will be either too extensive or too narrow. In the ITT Flygt case, a minor municipality can have a need more similar to the need of a mid-size industry customer than to the need of a metropolitan area.

Even if customers are segmented according to their similar service needs, Anderson and Narus (1995) mean that it is not enough because customers will always have some requirements not shared by the others in the segment because the providers’ offerings tend to aim at fulfilling the need of an average segment customer. Furthermore, there are customers not demanding an extensive offering and therefore preferring lower prices to an augmentation of services (Levitt 1980). The number of standard services offered to each segment should for that reason be the lowest necessary (Anderson and Narus 1995). The flexibility aspect and customer focus must therefore be one aspect kept in mind when further developing the offerings. Although not being as flexible as the service offering suggested by Anderson and Narus (1995), BT Europe offers several different long-term rental plans enabling further customisation. ELS also wants to offer its customers specific SLAs and at the same time have a more centralised and standardised service process than today. In order not to offer a wide array of service without knowing beforehand what is needed and possible to charge for, customer relationships serve a purpose in facilitating what to offer each customer.

8.3.4 Strategic Reorientation

The markets the four case companies operate in have similarities but do also differ in many ways, in particular Saab Aerosystems, e.g. in terms of regulations. Saab Aerosystems definitely operates
in a highly regulated market and so does ITT Flygt some extent, depending on country. BT Europe and ELS are not more constrained than any other actors operating in open markets even if legal aspects of spare parts sales in the EU and legal aspects in different markets regarding e.g. service personnel (cross-border competition in the service sector, collective agreements etc.) exist. The tendency for manufacturing companies to move downstream is however valid for all four companies. As seen in Figure 8.3, there is a trend towards increased proactivity and, as argued by Sundbo (1994, 2002), towards an increased number and share of bundled offerings. Despite some similarities, this figure must not be compared with Figure 8.2 as it do not explain anything about whether the customer relationship is arm’s length or long-term. Instead, it illustrates the companies’ customer orientation, which can be reactive and/or proactive regardless of whether the intent is relational or transactional, even if a long-term perspective is the normative goal and particularly important for a proactive behaviour. The approximate share of bundled offerings was presented in Table 8.3 and Figure 8.3 illustrates the strategic intent of service management to increase this share.

![Figure 8.3 Development of service offering strategies; expanding the Service Strategy Scope.](image_url)
If companies’ services are in the reactive-unbundled cell, many services are seen as add-ons and something given away in order to land product sales. If the company has a relatively powerful position towards its customers, a more proactive approach is possible regarding unbundled services. All companies except Saab Aerosystems are in this position to some extent (i.e. the proactive-unbundled cell) and BT Europe – who has developed offering in this direction over a long period of time – uses this position as a platform when developing bundled offerings. ELS and ITT Flygt do not have the same proactivity as BT Europe, but they too are increasing their focus on proactively developing bundled offerings. If not having a customer-centric approach however, a proactive behaviour may not necessarily be in accordance with actual customer needs. Besides, it is not enough to have the service organisation involved and acting proactively as one must have the support from a committed company management and overall strategic reorientation towards customer orientation. In this respect, BT Europe is in a more favourable position.

Offerings in the proactive-bundled quadrant are extensive offerings suggesting a win-win situation with high margins for the provider, although it can be associated with unpredictable revenues and costs. Possible benefits for the customer are reduced costs due to better service performance, reduced balance sheet total, and increased predictability of cash outflow. Being in this is the result of long-term relationships with customers that often have made use of the provider’s increasingly advanced industrial services. Operating in the proactive-bundled quadrant implies that both the provider and its customer have powerful positions and this combination can be used to design win-win offerings. It also means that several customers have similar needs so that the existing service portfolio can be used without too much customisation. An example is when several of BT Europe’s customers have the same long-term rental contracts, with the exception that truck wheels are excluded from some customer’s contracts.

For Saab Aerosystems the situation is rather different; the company is reactively moving towards bundled offerings and it has no powerful position relative to its customers. Saab Aerosystems will have to take into consideration very different customer needs and must therefore develop a capability to offer bundled offerings and to customise these in a way that enable knowledge and routines to be effectively recycled for future businesses. Whereas the possibility to pool spare parts between the Swedish and the South African customer is discussed, operational conditions and terms of payment will have to be adapted to each customer’s prerequisites and strategic needs. Since a provider offering unique solutions, which are not possible to replicate, to all its customers is less likely to be profitable (Galbraith 2002), a clear service development process will be especially important for Saab Aerosystems. Bundled offerings in the reactive-unbundled quadrant very often mean high profits for the customer at the expense of the provider taking a major risk. Therefore, the provider has an ambition of developing the relationships and becoming more proactive; something extremely difficult on
markets with powerful customers, particularly if the provider has one or few dominant customers only.

There is a focus on modularised service offerings that will be standardised centrally but flexible in response to local needs and these offerings are developed both proactively and reactively depending on offering and company. Possibilities include a customer lock-in and a high switching cost through strong relationships and brand (cf. Hax and Wilde 1999), and an expansion of the current business to more extensive offerings with the potential of being more profitable. Creating customer lock-in through unique solutions is particularly important for the case companies and many other manufacturers whose traditional customer lock-in through e.g. spare parts provision is being threatened by interchangeable parts providers. Among the threats associated with this service manoeuvre are increased operating and financial risk as well as unpredictable costs and revenues. Risks are particularly high in association with customised offerings not possible to replicate.

In order to increase the share of solutions offerings – which potentially could lead to both reduced customer costs and increased profits – a possibility for ITT Flygt is to risk channel conflict with the consultancies and contractors involved. Although risky, this manoeuvre would have similarities to the reconfiguration of the value creating system suggested by Normann (2001), with new offerings evolving from new constellations and rebundling of existing offerings and activities. If taking a consistent decision to compete with contractors on all markets, one of the risks involved is the low margins associated with operating as a contractor and the other risk is the fact that ITT Flygt would compete with companies that also are goods customers. The consultancy business is more profitable but also, in this case, it is a question of competing with customers that will most likely become less favourable towards recommending the end users products from ITT Flygt. Besides, some end-users may become reluctant to procure services from a consultant that is biased in terms of choosing pump equipment.

8.4 Operational Service Processes and Interfaces

Many services are regarded as add-ons that can be given away in order to land a product deal even though it can reduce the profitability significantly (Anderson and Narus 1995; Kalliokoski et al. 2004; Oliva and Kallenber 2003). This mentality is still prevailing among personnel in many sales organisations of the companies studied; often linked to various incentives and reward systems (cf. Söderström 2003). There is a danger that customers take free services for granted, thus reducing profitability. The companies’ are therefore facing an educational task to change this view among their personnel, which is in line with the internal transformation away from product centricity. During this transition towards increased customer and service focus there is internal resistance in all companies based on the engineering tradition and pride in the products manufactured, especially at Saab Aerosystems whereas BT Europe has the least resistance. This can be explained by looking at Table 8.3, which indicates an overwhelming difference between
BT Europe’s and the others’ bundled offerings, implying that BT Europe has actively and successfully worked with service management for many years. Senior management support is needed due to the internal resistance (Davies and Hobday 2005; Galbraith 2002; Grönroos 2000; Mathieu 2001; Söderström 2003) and the need for this strategic reorientation has also been expressed by managers within the organisations. In connection with this, performance indicators should be developed to assess the effectiveness and efficiency of the services (Oliva and Kallenberg 2003).

Using performance indicators that the internal reward systems are based on are important control measures for altering behaviour particularly negative when services are becoming increasingly important. ELS deliberately uses different performance indicators for different units as a control measure to guide them from different starting points towards the same direction. When examining the service organisations’ costs in detail, BT Europe was able to identify unprofitable activities previously hidden and improve them, thereby increasing the overall profitability. Being able to assess the service costs is of strategic importance when developing the service offering (Anderson and Narus 1995) and when measuring service productivity (Grönroos and Ojasalo 2004); if unbundled services are unprofitable, it will be problematic to develop profitable bundled offerings. One of the companies makes losses on service hours in several countries, making it a constraint for further expanding offerings where service hours is a major component. Hence, not only increased customer orientation is needed, but also better and more cost efficient internal processes (cf. Pine et al. 1993). In order to sell modularised services and manage them strategically, the companies ought to measure both the value delivered by each service and the cost of providing it.

Developing and manufacturing the products that are being serviced – and thereby having knowledge about the installed base – is a major advantage over many competitors in the service market that the case companies increasingly are trying to utilise to enable competitor lock-out (cf. Hax and Wilde 1999). This can be seen as particularly challenging at ITT Flygt and Saab Aerosystems where the customers very often own their products and the products in use can have been developed several years before any fixed price contract is signed. On the other hand, when BT Europe and ELS are offering solutions, they take ownership of the equipment as well which enables them to develop rental contracts. In spite of this, there is only minor input from the companies’ service organisations into the product development processes and this can be an obstacle if planning to take a more comprehensive approach. One can therefore assume that the internal innovation processes have a major potential of improvement if different company units and functions would cooperate better.

### 8.4.1 Centralisation of Service Processes

Saab Aerosystems has independent organisational units working with the service market, and separate service market organisations have been built up centrally at BT Europe, ELS, and ITT
Flygt, which has resulted in increased service market focus in the sales companies. Oliva and Kallenberg (2003) consider a separate unit to manage the service offerings a critical success factor for manufacturing companies selling systems or solutions. It can be a way to overcome internal resistance in a product-centric company and create a dedicated service unit. However, isolating the service operations and personnel from manufacturing activities and product placement operations may obstruct the ability to access a full complement of intra-firm capabilities and resources needed to offer complex services, as it is vital to be able to integrate competences from different organisational units and cultivate intra-firm collaboration and esprit de corps (Neu and Brown 2005). Hence, building up a separate service market organisation can be an important first step, even if a separate service unit in the long run probably will have to become integrated with other intrafirm activities and processes (Windahl and Lakemond 2006 forthcoming).

Although service market organisations are established, roles and responsibilities are not clear at all companies and this was expressed by one manager as “it is like we are creating an organisation without knowing what we are creating it for”. Fostering relationships with not only the local companies but also with product development and product sales is therefore important for gaining internal awareness and support for services. This becomes even more important when expanding the service scope and having an extensive, bundled undertaking. A rental contract for warehouse trucks, a fixed-price SLA for a complete pump station, or aircraft availability makes lifecycle aspects essential characteristics of the offering and implies more integration with other internal functions, activities, and processes.

A hypothetical example may serve as an illustration of the importance of well-functioning internal interfaces. A warehouse truck being developed and manufactured with a traditional revenue model in mind, i.e. where profitability is generated mainly by spare parts sales, will result in less profitable rental contracts where the revenue logic is fundamentally different and every spare part used is a loss. It is therefore important that communication and collaboration exists between product-related functions and the service organisation. Albeit the service organisation was in focus in the empirical studies, these interfaces must nevertheless be highlighted, especially as service market aspects play a more important role than previously.

While Saab Aerosystems differs from the other companies by having a centralised structure and going from having one Gripen customer to several, the other three companies are multinational. A challenge for these companies is the requirement to form a global service infrastructure that can act in response to local needs. An effective service offering design through bundling requires standardised service components that are similar across geographical borders in order to gain economies of scale. Customer Relationship Management (CRM) systems can be managed centrally and ICT enable for example remote monitoring and optimisation of equipment, further centralising the traditionally relatively independent sales companies. Local needs and differences between different markets will however remain irrespective of this and it is
therefore important not to centralise at the expense of service quality. Especially for ITT Flygt, third-party service providers have powerful local connections making a local presence necessary. However, the main obstacle to increased centralisation has been disagreements and different interfaces between the companies’ central service organisations and their sales companies.

Customers have most contact with the local part of the provider (the subsidiary) because most service-related front-office personnel work there. The local knowledge generated is therefore critical for the company and the tacit part of it is difficult to transfer centrally and to other sales companies. A certain degree of decentralisation is needed due to this knowledge aspect (Hayek 1945) but the local function is also about developing the relationship through the local personnel’s contact with the customer on a daily basis during the installed base’s complete lifecycle. There are cases where technological development has resulted in increased decentralisation (e.g. Nightingale et al. 2003) although the endeavour to gain increased central control is clear in the three decentralised case companies and also in the Saab Aerosystems case, where the company tries to control geographically dispersed airborne systems in a more cost efficient manner.

As more activities are coordinated centrally, a displacement takes place because the subsidiaries become a more refined front-office organisation, while there will also be on a central level a certain number of front-office activities. However, there is a danger with too much focus on centralisation, because centralised decision-making may result in reduced market information gathering and responsiveness (Jaworski and Kohli 1993). Thus, even if formalisation innovations may increase through more homogenous service characteristics, there is an impending risk of loosing ad hoc innovations that otherwise would have been developed in close cooperation with customers.

Since the companies aim for increased standardisation and centralisation (which may lead to reduced customer knowledge) and there is an increasing demand for extensive service undertakings (which implies more customisation and thereby customer knowledge), the two movements may seem contradictory at first sight. Nonetheless, formalisation of service processes can facilitate both two trends and include better performance measures, formalisation innovations, uniformity, ICT, and better resource allocation. Hence, the process may overcome the apparent incongruity. When ITT Flygt broke down its offering into well-defined service elements and made a more precise specification of it, it lead to a spin-off in terms of four fixed-price repair levels with rationalised, standardised service processes. ITT Flygt hopes that this change will result in drastically reduced repair lead times. Although too early to evaluate, this in an example of the potential improvement potentials many service offerings have, that it is not necessarily a contradiction between standardisation and customisation of service processes, and that not just bundled offerings may need more formalisation.

While ELS offers services and integrated solutions to its customers, Electrolux Food Service has decided to only offer products to their customers and not any additional services, which means that potential synergies are lost. Although not observed in the other companies, an
analogy can be drawn to inconsistent country-specific offerings, when selling service contracts to international customers. Regarding service standardisation aspects, not only internal obstacles exist and the ELS case illustrates that the biggest obstacle for standardising service offerings may be external. The customers’ laundry facilities differ considerably and this affects many service operations albeit installation services in particular.

### 8.4.2 Service Development

As illustrated by the BT Europe case (see Chapter 4.4.1), much time was spent on mapping existing processes and designing new ones when developing EASY, the mobile business system. It is necessary to make a thorough effort as service development can be a very complex process and much attention should therefore be given to it (Grönroos 2000; Karmarkar 2004; Normann 2001). Because of the possibilities with ICT, the goal should not be to automatically replace existing internal processes with more technically advanced ones, but to consider an extensive reconfiguration of processes and strategies to find revenues from existing as well as unfamiliar sources. However, service development does not necessarily always assume this far-reaching standpoint. In parallel, service development can be carried through in small steps through organisational learning and incremental innovation, with minor advances leading to only moderate cost reductions or revenue increases.

The companies need to identify which product services to offer, and developed relationships with customers serve as valuable input to the service development process. For example, after a thorough internal investigation has been made, BT Europe engages customers suitable for the services intended. Discussions are held both about how the service is experienced and possible future ability and will to pay. Working proactively with customers is therefore considered important for the development of new services, where customer input to the development process is important for how the new offering is received. A challenge facing ELS is that the customers’ operative personnel generally is less motivated than the others, and there is an incentive also for ELS to increase the customers’ personnel’s motivation and competence to reduce downtime and wear. Not least, this is important if one wants to receive feedback from the people operating the equipment and it is particularly critical for Saab Aerosystems to obtain this feedback. Thus, improvements in not only the [C] vector but also the [C'] vector of Gallouj and Weinstein’s (1997) service system may be a prerequisite for service innovation.

While some customers demand more comprehensive services due to outsourcing, others have an unchanged need that they want continuously improved services for. It is important to take advantage of this fact by managing the customer relationships and also act proactive towards latent customer needs. As new offerings often are developed jointly with lead customers, the ability to handle the ad hoc innovation process is critical. These innovations are tailored to specific customer needs and most probably can provide the company with competitive advantages if they are possible to formalise and make profitable, thereby made reproducible and possible to offer to other customers.
The ad hoc, recombinatory, and formalisation innovations discussed are not necessarily three different innovation processes, and they should not be handled as such. Instead, the relationships between them should be highlighted. Ad hoc innovations can often be successfully bundled with existing services and formalisation makes the offering more concrete. Formalisation innovation can be viewed as industrialising the service offering; something that could not only improve the actual service process, but also help to increase the internal awareness and acceptance at manufacturing companies of how important their services actually are. As Gallouj and Weinstein (1997) argue, it is often apposite to precede bundled offerings, i.e. recombinatory innovations, with increased formalisation.

8.4.3 Impact of Information and Communication Technology Applications

Beside cost reduction through increased efficiency and effectiveness, ICT has enabled the companies to utilise their information capacity by enhancing existing services and create new ones that increase customer value and sometimes are unique to the company. This implies that some services can be produced (and consumed) anywhere at any time, which means that capacity no longer has to be a constraint in services (Gadrey 2000; Normann 2001). BT Europe’s Swedish service technicians receive information through a PDA solution, which has enabled the customers to receive work reports electronically; something which has proved to be valued and something no competitor can offer today. Furthermore, the fact that customers perceive BT Europe as a technologically advanced company when it comes to services has been positive when selling service contracts. ELS’ online system for laundry equipment is another example of successful ICT, where new technology played a central role when services were bundled into new offerings.

Even if ICT enable the companies to standardise and bundle their services, and in that way making it possible to have a mixed bundling strategy, variety is not an end in itself. Pine et al. (1993) argue that variety is not necessarily customisation, that it can become very costly, and that it might confuse customers. While the variety of offerings will probably go down as the companies (except Saab Aerosystems) are centralising more service activities than before, all companies strive to increase their number of different SLAs and other bundled offerings. One must therefore have in mind to avoid increasing the number of offerings only because it is technically possible to do so.

Remote monitoring and other ICT-based services can simultaneously reduce the companies’ cost and increase the value for the customer. The usage of ICT can be a means when centralising e.g. back office activities in companies like BT Europe, ELS, and ITT Flygt where the European sales companies traditionally have held a strong position. Performance data from ELS’ CMIS solution can be utilised to create barriers to entry for service providers and is hence an essential feature for many offerings. Another related example is BT Europe’s mobile PDA solution, which
is not only a single ICT application but also part of a large technical system (connected through an ERP system) and therefore has resulted in several spin-off effects after first being implemented.

Increasing control systems and applications make reliability an indispensable feature of the service (Nightingale et al. 2003) and it affects the development of industrial service offerings. New offerings have implications on the technical platform, e.g. a need for all equipment to have the same signal point in the case of ELS, and ICT systems are becoming increasingly bundled-in and critical for the service provision. This has been the case at Saab since the 1950s and is ever more so for the other companies as well, although of a very second magnitude. It is important for BT Europe, ELS, and ITT Flygt not only to be in the forefront with processes and solutions, but also for enabling the same component standards for all products. Coordination between the service organisation and product development is therefore vital. However, coordination is not a salient feature of the companies, with BT Europe possibly being the exception, implying that several business opportunities as well as improvement potential in current service offerings may be lost.

The increasing industrialisation of services (Karmarkar 2004) requires companies to standardise their input to the service process to a much higher extent than before, and ICT applications can be a means to standardise operant resources and processes (Sundbo 1994). Not only do the case companies have more SLAs than before, the numbers of international contracts are also increasing and thereby emphasising further standardisation in quality. An illustration drawn from ICT applications utilised in BT Europe, ELS, and ITT Flygt is that new technologies need to be supported by central management commitment and not be left to individual subsidiaries to develop and implement. First, the central service organisation is often able to better allocate time and resources for new projects, especially large-scale ones. Second, central coordination can eliminate duplication of work at subsidiaries working with similar solutions independent of one another and thus enable technical standardisation and more cost efficient solutions. Prominent sales companies can be pilot regions for implementation and evaluation of new ICT-based solutions before being launched on a wide front.

8.4.4 Changing Customer Interfaces in Service Production

It is vital that the providers can be paid for creating customer value, given that an offering’s uniqueness and specific customer value is eroded by time as more and more actors are offering the same service and prices plummet. As time goes and the service becomes more formalised, customer involvement will be reduced, and the rationale for producing the service will change from revenue effectiveness to cost efficiency. A rather trivial e-business solution might have been a unique order winner that the provider was able to charge for a decade ago, whereas an identical service today is a condition (i.e. order qualifier) for giving a quotation and not something the customer will pay for additionally.
Although not as clear in the service offerings studied, this business logic is regarded as valid for the case companies too and the development of services with regard to customer involvement and business focus can be discussed in connection to the different customer interfaces in service production suggested by Larsson and Bowen (1989). In this model, technical consulting, customer training, and plant analysis are examples of services produced with reciprocal design whereas customer self-service and e-learning have sequential standardised service design. Further, repair and maintenance are associated with sequential customised service design and remote monitoring and software upgrades can be managed through pooled service design. As Normann (2001) argues and the cases illustrate, technological development enable new service processes. BT Europe’s mobile business solution EASY and ELS’ remote monitoring and optimisation system CMIS are two very good examples of this. CMIS is an example of ICT connected to the customer’s system through the installed base whereas other systems may connect the provider and customer independent of the goods. Thus, back-office employees receive customer information either through front-office personnel or through information systems. Although front and back-office employees generally refer to the providers’ personnel, front-office employees implicitly refer to possible service partners too.

New service processes has direct implications on the customer interfaces and thus on the service design. In line with a development from customised to standardised service processes, a development from service designs facilitating high diversity of demand to designs facilitating low diversity take place (see Figure 8.4). However, this development takes place not because customers become more homogeneous but because ICT applications and systems enable new processes. As customers outsource service operations and knowledge, there are also fewer dispositions to participate in the service production process. Therefore and also because of new ICT, there is also a development from reciprocal to sequential customised service design where the provider takes the main role. Besides, reducing the output uncertainty (i.e. performance risk) is thereby improving reliability and accuracy in the production is a driving force downward and left in the model.
Technological advances affect both the goods traditionally manufactured and the related services. It is also increasingly possible to replace both goods and service personnel’s tasks through automation and dematerialised integration of processes. Technology, and not changes in external market conditions facing the providers in terms of decreased demand diversity as Larsson and Bowen (1989) suggest, is the explanation for the development directed downwards in Figure 8.4. Thus, utilisation of ICT would alter the idea that increased diversity of demand automatically lead to an upward development. It is true ceteris paribus but since technological advances concurrently take place, the opposite also apply in the case companies studied.

ICT applications have not only enabled more activities without direct customer contact; it has also enabled front-office personnel to substitute some previous back-office activities. Mobile business systems such as BT Europe’s EASY require service technicians to increase their role in administrative activities, which have previously been performed by back office (whereas other administrative activities are possible to eliminate). With back-office employees playing a less significant role in the service production process, the main locus of interdependence in e.g. a sequential customised service design may change in some cases to a role where front office may be regarded as the sole main locus (see Figure 8.4). The customer’s supporting participation is still needed in order to initiate the service, and back-office support is still required but not necessarily more than for a reciprocal service design.
In a bundled offering, more than one of the service production process interfaces becomes important and in a fixed-price contract, rental contract, or solutions offering, all interfaces become important to some extent. Since many customers outsource service activities to providers, the disposition to participate in the production decreases and sequential standardised service design is therefore probably the least common interface. Even if the changes in customer interfaces observed are illustrated in Figure 8.4, new services may be placed in the top right quadrant of the figure as well as in any of the other. Despite reduced disposition to participate in some service processes, personal interactions are critical for long-term relationships, and with increasingly advanced and complex offerings, there will be a continuous need for services where front-office personnel from both sides co-create the value produced. As many existing services change from being customised differentiators to standardised commodities, new services are created to meet customer demands and generate profit. Competitive service offerings may simultaneously enable more cost efficient operations and generate higher customer value.
9 Conclusions

This final chapter consists of three parts. The first part deals with three service factors connected to the research questions and in the second part, the main findings are synthesised and presented in a service-offering model. Finally, the third part is concerned with possible areas for future research.

9.1 Service Development and Production

In Chapter 1, the need to study the development and production of industrial service offerings was highlighted. Given the improvement potential in service productivity hypothesised when defining the research questions and confirmed in the analysis, the research in this thesis has contributed by calling attention to some critical aspects of service management in capital goods manufacturers. In line with Normann's (2000; 2001) view on the value proposition, an offering is not something that can be looked upon from an internal perspective only. The customer is a prerequisite for the offering and it can thus be viewed as a bridge between the company and its customer (see Figure 9.1).

Besides, external relationships other than with the customer can also play an important role for the offering and influence it (Windahl and Lakemond 2006 forthcoming). Perhaps the most evident example is the engagement of authorised service partners, something particularly common for ELS but also for ITT Flygt and for BT Europe to some extent. With an extended service offering, there may also be a need to engage new suppliers and partners in back-office and front-office activities.

Grönroos and Ojasalo (2004) view service production as a function of internal (cost) efficiency, external (revenue) effectiveness, and capacity utilisation. The capacity notion is
interesting in an industrial market context, although capacity as a constraint is being gradually eliminated in many services due to new technologies handling dematerialised information. This has been seen in the cases where new ICT applications have reduced previous capacity constraints. Cost efficiency and revenue effectiveness is dependent on the various elements in the service production process and Gallouj and Weinstein (1997) represent a service offering being produced as a system of characteristics and competences. The offering \([Y]\) is a function of front-office and back-office characteristics as well as competences related to the provider \([C]\) and the customer \([C']\), thereby recognising co-creation of value. When discussing and analysing the changing service offering, these aspects too are taken into account.

However, service productivity is mainly a matter of efficient and effective operational processes, both intrafirm (between front and back office) and interfirm (between front office and customer) ones. The content, i.e. the elements of the service offering, such as different unbundled services, exert an influence on the service processes as new service elements may set new requirements on the processes. The service processes can likewise affect the content as they may serve as constraints or enablers for what services are possible to offer. Relationships with customers are not only important on an everyday, operational level only, as the strategic dimension of customer relationship management too must be taken into consideration. Both parties having relational intent and emphasising relationship longevity is a prerequisite for many service offerings, particularly extensive, process-orientated ones. Nevertheless, despite the normative goal of viewing the customer relationally (Vargo and Lusch 2004a), there are situations where there is little or no incentive to invest in the relationship. Irrespective of relationship-management strategy, relationship management affects both the content of the offering and the service processes, and the relationship is likewise influenced by the offering and processes.

Operational processes are always critical and the case companies strive to improve cost efficiency as well as revenue effectiveness. There can also be focus on developing the actual content of the service offering and/or focus on developing relationships with customers. Depending on service management’s strategy, different factors may be given attention and resources. Accordingly, focus is on either one of the factors or on the intersection of two or three of them (see Figure 9.2).
All three factors in Figure 9.2 are necessary for the service production – the operational service processes directly and the offering and customer relationship management indirectly have an effect on productivity – and the interrelationship between them have implications on the service output. Therefore, service managers must consider all three factors and be able to understand how to manage them.

9.1.1 The Service Characteristics

The offering is constituted of either a single, unbundled service or several services, making it a bundled offering. Bundled services not being single exchanges only are generally associated with some form of legal arrangements and rather basic SLAs. In the case of BT Europe, rental plans are also very common forms of bundled services. Both bundled and unbundled services offered by the companies differ in terms of extent and complexity. In line with Oliva and Kallenberg’s (2003) typology, the services either have a traditional, product-orientated focus or a customer-centric, process-orientated focus. Process-orientated services require competences other than traditional after-sales support as knowledge about not only the installed base and how to service it is needed but also how it affects the customer’s industrial production process and how this process can be improved. Instead of being the centre of the offering, the product is part of the offering and revenue models for such bundled offerings are often fundamentally different from traditional ones. Thus, the service offering can be characterised as either unbundled or bundled and either product or process orientated. Extensive offerings may require knowledge about complementary goods and software, and about how these interact with the company’s products and software. Depending on the service characteristics, a different set of requirements observed from the cases and supported by literature is needed in order to succeed.

A modular service structure along the lines of the Anderson and Narus (1995) notion of flexible service offering has the advantage of being both consistent and cost efficient if correctly designed and implemented. BT Europe is the case company having the longest experience of working proactively with the service market and has been successful when it comes to offering
rental plans based on standardised components, albeit differences between markets exist. Saab Aerosystems is elaborating with a modularised concept structure and ITT Flygt is offering bundled offerings based on a modular design, which bears similarities to Mattsson's (1973) view on systems selling, with the most extensive undertakings being tailored to a specific customer site. ELS lacks consistent standards today but similar to the other companies works with standardising its bundled offerings as well as developing customised ones. Regarding consistent offerings, it is not only a matter of uniformity between local companies but also between service and product sales. Furthermore, there may be a risk that inconsistent offerings within a Group may confuse the customer, like in the Electrolux case where one business unit is able to offer product services and another one goods only to the same customer.

New technologies, and thereby potential service opportunities, are increasingly bundled in the goods. For Saab Aerosystems this is definitely nothing new but to the three high-volume manufacturers, this is coming on a wide front as the falling price of ICT makes it affordable to include more technology in the capital goods. BT Europe can extract detailed performance and service data from the warehouse trucks, ELS’ machines with CMIS ports enable remote services, and a black box in the pump station can provide ITT Flygt with data and communicate with other equipment. New services as well as enhanced existing ones are thereby possible and this may require new internal competences. Besides, the ability to ensure ICT reliability will become even more critical as it takes on a larger role in the offering.

9.1.2 The Customer Relationship

The customer relationship has a central role for influencing and enabling offerings and it is likewise affected by new service processes and technologies. The type of customer relationship has a decisive role in the service production, with a long-term orientation improving the productivity (Grönroos and Ojasalo 2004; Hammarkvist et al. 1982). The case companies value long-term relationships, as they are beneficial for future sales and for extensive service offerings. Extensive, bundled offerings with fixed or dynamic pricing require that both parties have relational intent and that the offering is mutually beneficial.

In addition, long-term relationships enable the companies to act proactive with a customer-centric approach, i.e. not only acting proactive with an internal, product focus in mind. This is important in order for new offerings to reflect expressed and latent customer needs and reduce the risk of developing offerings only because it is possible and one believes there may be a market for them but of which the customer is reluctant. Having increased proactivity as an espoused strategy in the service organisation is however not enough, as a product-centric organisation takes time to change and top management commitment is required if the change process is to be successful (e.g. Galbraith 2002; Grönroos 2000). Besides, the ability to adapt reactively to a changing environment and changing customer needs is as important as proactivity. However, one must not adapt at all costs, as new offerings must be replicable and possible to make a profit from. This situation is particularly precarious for Saab Aerosystems having one major customer, with changing requirements. Continuous input from customers through the local service organisation is vital, indicating that business development cannot take place centrally.
only. Customer involvement in service development is regarded as important by the companies as it is a critical factor for success, and long-term relationships are prerequisites for the involvement.

ICT enable more services to be produced outside the service encounter, by the provider in isolation from the customer or by the customer without the previous provider participation. The latter is however less likely as the trend in all four industries is to outsource service operations and to let providers take on an increased undertaking. Although a reduced customer role may imply reduced input uncertainty for the provider, it also reduced the number of interactions between the two parties. This could possibly result in a weaker basis for relationship building in the future, although a service-centred marketing logic contradicts such a scenario (Vargo and Lusch 2004a) and new knowledge-based services will require more, not less, customer participation in the value co-creation. However, there is a risk that increased dematerialisation will undermine personal interactions important for relationship longevity and reduce customer perceived quality if relationships are managed with a shortsighted cost-efficiency focus only.

9.1.3 The Process Interfaces
The companies should, to an increased extent than today, map, formalise, standardise, and automate their service processes. This implies increased integration between local and central organisation and more consistent local service processes. At the same time, the companies must have the ability to respond to local customer needs, making it necessary to manage both ad hoc and formalisation innovations. Emphasis should therefore be put on standardising and formalising internal processes while customising the offerings through knowledge of the customer’s installed base and production process. Standardisation must however be made with the service quality aspect in mind, ensuring that customers perceive there to be value in the process improvements.

Service development and production must both be central and local as well as interplay between the two. Major investments in ERP systems as well as in many ICT applications need central management involvement. The interplay between central and local is however important, as prominent sales companies can be pilot markets for the implementation and evaluation of new solutions. Except reducing capacity constraints, ICT applications can improve cost efficiency and revenue effectiveness. Automation of processes is possible for all services to some extent and the more extensive the offering, the higher the synergy potential seems to be. In spite of resistance from local managers with a high degree of autonomy, efficiency gains can be obtained by centralising some processes now performed locally. Many support activities are particularly suitable for being centralised instead of being performed at each local company independent of one another.

The lack of resources traditionally allocated to the service organisations compared to manufacturing units suggest that there is major improvement potential and financial gains possible to achieve if more attention is given to the service units. Even if not always substantiated by quantitative measurements, this view is supported by service managers from all four case
companies. The ability to actually measure service performance is however another issue, as today’s key performance indicators (KPIs) often are not comparable between all sales companies and between service and product units. Ensuring reliable KPIs that have the support of the personnel and that encourage a customer-centric behaviour should therefore be a prioritised management task. This can be linked to the incentive systems in place at many companies, e.g. at ITT Flygt where sales personnel are rewarded based only on sales of new goods. A process of educating the personnel and changing their mindset to that of a service culture should thus be made in parallel to changed KPIs and incentive systems.

9.2 The Service Offering Scope

Critical factors to consider when developing the service offering are presented in the service-offering continuum of Figure 9.3, being a synthesis of the findings of this thesis. These factors have tentatively emanated from the research questions and crystallised during the data collection and case study analysis. The two-dimensional continuum is composed of service characteristics representing the focus of the offering, either the installed base or the customer’s production process, and the scope of the offering, ranging from unbundled services to bundled offerings spanning across geographical borders. Evidently, the more extensive the service-offering scope and the more focus on the customer’s production process instead of solely on the installed base, the more important it becomes with relationship longevity and the ability to manage several intrafirm and interfirm interfaces.

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<thead>
<tr>
<th>Service Focus</th>
<th>Process</th>
<th>Product</th>
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<tbody>
<tr>
<td>Offering: performance upgrade, technical consulting, performance audit, operation, technical support, customer training</td>
<td>Offering: SLA, aircraft availability, short-term rental, long-term rental, capacity-related contract, plant operations, gain-sharing</td>
<td>Offering: No offering today Fixed or dynamic price Relationship: long-term, partnership</td>
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<td>Unit price Relationship: long-term (or short-term)</td>
<td>Fixed or dynamic price Relationship: long-term, partnership</td>
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<tr>
<td>Offering: spare parts, repair, reconditioning, inspection, maintenance, technical support, customer training</td>
<td>Offering: safety inspection SLA, preventive maintenance SLA, full maintenance SLA, spare parts management, condition monitoring</td>
<td>Offering: international maintenance agreement, etc. Variable price Relationship: long-term, contractual</td>
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<tr>
<td>Unit price Relationship: short-term (or long-term)</td>
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Figure 9.3 A typology of the service-offering continuum.
Unbundled, product-orientated services sold on unit price such as spare part or service hour are found in the first cell. The majority of services are of such character that customer disposition to participate is low and the customer does not have to take an active role in these services, technical support and particularly customer training being the exceptions. The non-recurrent nature of the offering suggests arm’s length relationships as one can believe there is little incentive to invest in the relationship. If there is a potential to increase the offering and for recurrent exchanges, relational intent may be preferable.

The second cell represents unbundled, process-orientated services. Despite being unbundled, these services generally require previous exchanges, i.e. that the customer has purchased product-orientated services previously, and if the relationship is profitable relationship longevity is to be preferred. This is because recurrent exchanges will increase the knowledge of the installed base and the customer’s processes, which should result in increased value for both customer and provider.

Services in cell three differ from the ones in cell one as they are constituted of several subsets of the latter. This generally implies a modular internal service structure with standardised processes and interfaces. As the exchange generally is recurrent over a set period of time, long-term relationships should be the normative goal, although variable pricing is not necessarily promoting increased interdependence between the two parties from the provider’s point of view. The longevity of the relationship and agreement (in opposition to services in cell one and two) enables investments in new technology not expected to be remunerative until some time ahead.

Bundled service offerings with a process focus as illustrated by cell four, are more extensive than the variable-price agreements of cell three. These offerings have fixed or dynamic price and are generally a result of a successful relationship involving less advanced agreements, i.e. cell three. Since the offering is bundled, it probably contains both product- and process-orientated services, and it can vary considerably in scope. The agreement may comprise one customer entity only, e.g. a pump station, or cover all national entities. Besides, it can be a standardised rental plan, a customised partnership agreement, and ultimately a joint venture. Some form of partnership agreement is often required for extensive, process-orientated offerings (Corporate Strategy Board 2001; Kalliokoski et al. 2004).

The offerings in cell five differ from the ones in cell three because they are not limited to national borders. The situation with a local company in every country is simplified because local companies may include several countries and because some markets are served through service partners, thereby involving additional challenges. Although simplified, this distinction is relevant not only due to differences in national legislation and country-specific factors for pricing but particularly as it implies that the local service organisations operating in each country must coordinate their activities not only with the central service organisation but also with the other local organisational entities at the markets covered by the agreement. The problem is that many capital goods manufacturers expanded internationally in times when the coordination limits to
the growth and size of companies discussed by Penrose (1955) were valid. Therefore, many local organisational entities have gained a considerable degree of autonomy, often making it challenging to coordinate activities and increase central control.

The sixth cell represents international, process-orientated offerings and there are no such offerings in the case companies today. If there will be an offering in this cell, the hypothesis is that it will be an evolution from a cell-five agreement including activities in an organisational unit on more than one market to a rather standardised process-orientated agreement, e.g. a rental plan. However, the customer must have a rationale for signing an agreement for a major international undertaking instead of having several customised, country or site specific agreements.

Different operational processes and interfaces become critical depending on where in Figure 9.3 the service offering is positioned, i.e. depending on the content of the service offering and the customer relationship. The process interfaces are analysed using the Larsson and Bowen (1989) typology discussed in Chapter 2.3.4 and 8.4.4 as point of reference. Services in cell one and two generally require the ability to manage one particular process interface, as the services are unbundled. Because the bundled offerings in cell three to six contain several services, they involve the ability to manage several different service processes and interfaces.

Traditionally, close contact between front- and back-office personnel is required for services in cell one as well as many services in the other cells. Thus, having the front and back office as main locus of interdependence is essential not only for product-orientated services but also for some services with a direct process focus, for example operations, which imply that the customer does not participate in the service production. However, utilisation of ICT such as PDA solutions enables many services to be solely produced by front-office personnel, taking over some activities previously handled by back-office personnel and eliminating others. These front-office centred processes are particularly suitable for rather trivial services like the ones in cell one, as is the case with bundled services containing such unbundled services. Integrated ICT systems and utilisation of bundled-in technologies also enable many service processes to be conducted mainly by back office. As it may require investments in new technology and in the customer relationship, for example integration with the customer’s system, these processes are likely to require recurrent exchange and bundled, product- or process-orientated services.

Albeit ICT applications and systems enable automated processes and many customers have fewer dispositions to participate than before (see Chapter 8.4.4), many process-orientated services as well as customer training require customer participation. Services such as technical consulting and support in cell two, and bundled, process-orientated services in cell four, call for the provider to manage the interface between customer and front office to ensure that the customer acquires the skills and knowledge needed. An interface mode not proposed by Larsson and Bowen (1989) is the interdependence between the local and central organisation, i.e. between front and back office, as well as between local organisations, i.e. between front offices, through technological systems. Increased coordination between these organisational entities gives new possibilities for international offerings in cell five and six, and is necessary in order to respond to major
customers’ demand for international agreements. Hence, it requires standardised and consistent service processes across markets, something that can be enabled through ICT and better central control.

Much research remains when it comes to the phenomenon of capital goods manufacturers moving downstream, thereby increasing the service offering. Nevertheless, this thesis highlights some critical factors related both to internal and external requirements on the service organisation, which the companies must be able to manage and utilise to enhance their industrial service offering.

9.3 Areas for Further Research

There are a number of plausible ideas for further research. The service organisation does not operate in isolation from the other company units, which becomes particularly evident when studying extensive service offerings. Here, product development and manufacturing have a direct impact on how the installed base will operate during its lifecycle, thereby imposing constraints on as well as enabling opportunities for service offerings. Examining the role of and interplay with other company units is thus a possible area for further research. This should also imply the study of the local sales and service companies, which are the entities facing the customer, in order to not only obtain a central management perspective. In consequence, research should be made on a strategic company level too due to the key role top management plays regarding e.g. whether to focus on the service market or not, something which is palpable in the case companies.

Since the customer is a condition for the offering and the target of the value proposition, a customer study is needed to understand how the offering can be enhanced. In connection to this, the offering’s impact on the customer’s core process is another aspect important to consider when developing service offerings (cf. Windahl and Lakemond 2006 forthcoming) and it is relevant to study what possible difference it makes if the impact is high or low. Receiving customers’ views on providers moving downstream and examining what new relationships within the customer organisation, higher up in the hierarchy, are required for increased offerings are related issues to study.

As observed in the cases, trust between parties is considered vital and particularly so for new and/or increased offerings. Likewise, risk is an essential factor to consider as risk and trust are “different sides of the same coin” (Deutsch 1958, p. 266). Subsequently, trust is required to overcome risks associated with the service offering. If conducting a study of local organisational entities and customers, the concept of goodwill and competence trust, relational and performance risk, and behaviour, output, and social control, as proposed by Das and Teng (2001) may be applied on intrafirm (e.g. between central and local service organisation) and interfim (e.g. between provider and customer) relationships. On an intrafirm level, control matters as e.g. local companies can have a high or low degree of autonomy, which affects the ability to implement new service strategies and processes. Similarly, on an interfim level, a customer in control is able
to drive the service development whereas a provider may gain control through customer lock-in – either traditional lock-in, such as spare parts sales, or expertise knowledge of the customer's production process – and prefer to defend the current position instead of developing the service offering. This would therefore be a highly interesting area for further research.
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Secondary Empirical Data

**BT Europe**

BT Industries Webpage

BT Industries Annual report 2004

BT Industries marketing material: Don’t buy trucks

Internal presentations


Presentation, Jan Munde, Vice President BT Europe, VINNOVA Workshop, Linköping 2005-04-08

Presentation, Erik Darén and Lars Gunnar Wiss, BT Industries, “Efterfrågestyrda reservdelsförsörjning med POS (Point-Of-Sales) data från serviceteknikerns handdator”, IIR Conference, Stockholm 2005-10-26

Toyota Industries Corporation Annual report 2005

Logistics Magazine, No.1 2005, “Autos for pilots”, pp. 12, 13 (about Saab Automobile’s payback rental plan)


Linde Fact Book March 2005
Electrolux Laundry Systems
Electrolux Webpage
CMIS information brochure
Internal documents, e.g. Customer Care Strategy 2004 by Claes Ekegren

ITT Flygt
ITT Flygt Webpage (International, Sweden, UK)
Internal material: ”Water is our element”
Internal and external company presentations

Saab Aerosystems
Saab Webpage
Saab Annual report 2004
Information brochure: “Saab Aerosystems: Airborne Capabilities – the Saab way”
Information brochure: “Saab Aerotech Business Unit Presentation, January 23, 2006”
Internal documentation, e.g. process charts
Appendix 1: Interviewees

**BT Europe**
- Christer Lövgren, Product Manager Service Market
- Conny Edlund, European Sales Manager

**Electrolux Laundry Systems**
- Claes Ekegren, Vice President Genuine Parts & Services
- Stefan Linnér, Senior Manager Customer Care
  the Nordic countries, Germany, Poland
- Håkan Lindow, Manager Future Care Support Processes

**ITT Flygt**
- Peter Ståhl, European Product Manager
- Nils Renman, Product Manager Spare Parts

**Saab Aerosystems**
- Joakim Rylander, Head of Support Solutions
- Jörgen Pilemalm, Program Manager Business Development
- Leif Johansson, Service Manager
- Olov Candell, R&D Customer and Product Support
Appendix 2: Interview Guide

- Hur ser säljprocesserna ut?
  - Vem/vilka det är som säljer tjänsterna
  - Tidsaspekt
  - Intressenter
  - Kontaktpunkter hos kund och i egen organisation
  - Tydliga processer?
  - Utveckling mot mer centrala avtal?

- Erbjudandet
  -Varianten:
    - Bundling/unbundling
    - Kundanpassning/standardisering
  - Interna kompetenser och erfarenheter av olika erbjudanden
  - Organisatoriska hinder & möjligheter (kompetens, länderbolag, produktfokus...)
  - Åtgärder för effektivisering
  - ICT: operativt & strategiskt
  - Kritiska faktorer som möjliggör eller hindrar affären
  - Nya tjänster eller ta efter konkurrenter?

- Kontraktsformer
  - Byggs relationer upp successivt, t.ex. först strikt reglerade SLA och sedan friare?
  - Är relationerna en tillgång? Var i ligger i så fall värdet?
  - Öppna böcker?
  - Går utvecklingen mot mer avancerade kontrakt? Vem styr detta (ELS/kund, på vilken nivå?)

- Riskhantering
  - Hur värderas risk? Operativ & finansiell

- Operativa processer
  - Kalkylmodeller

- Feedback-loopar. Tex ta lärdom av analys inför kontrakt även om den ej fås
  - Integrationsaspekter, t.ex. servicetekniker & övrig personal/org?
• Unicitet hos respektive kund.
  o Proaktiv/reaktiv
  o Transaktion/relation
  o Används vissa kunder för att prova nya tjänster/erbjudanden?

• Hur mäts tjänsteproduktiviteten?
  o KPIs/mätetal

• Hur är tillväxten på eftermarknadstjänster?

• Konkurrenter & deras erbjudanden

• Hur skapa nya inläsningseffekter? Kan man fortfarande ha lock-in på ”enkla” eftermarknadstjänster?

• Vad skapar kundvärde?
### Appendix 3: Data Gathering

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