Customer-perceived Value in Business Relationships

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Dissertation

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ABSTRACT

The content of customer-perceived value has in this study been explored with the aim of providing an understanding of the concept in business-to-business settings. A case study in the commercial aircraft engine maintenance industry has provided a description of context-specific attributes forming the dimensions of customer-perceived value. An explanatory model, based on the notion of “flow”, is then proposed. Finally, a conceptual model is put forward, summarizing aspects of customer-perceived value.

The evolving service-centered logic for marketing puts an emphasis on value, especially the value perceived and determined by the customer. Concurrently, a development is recognized within the industrial business-to-business sector where goods and services are packaged into total service offerings – with an increasing prominence for services. This is the background of the study; conducted in order to elucidate the concept of customer-perceived value in a context where total service offerings are provided within dyadic business-to-business relationships.

The conceptual framework, guiding the empirical study, has its points of departure in the field of service research. The first analysis of the case study findings forms value maps – built from value attributes, aggregated into value drivers, and then into value features – describing the context-specific benefits and sacrifices of the studied relationship: Availability of engines, Organization efficiency, Financial benefits, Collaborative partnership, Trust, and Sacrifices to use offering. It is suggested that customer-perceived value is created at three levels; at a product level, at a partnership level, and at a psychological level. Furthermore, the value maps clarify the double nature of customer-perceived value, which is found to have both an origin side – how the service provider should act to deliver value – and a side illuminating the more or less monetarily quantifiable effects of value.

The analysis of the empirical findings results in a model that is proposed to explain the origin and effect of customer-perceived value in the actual and similar settings. Central in the explanation is the notion of “flow”. Flows of goods, information, risk, involvement, and money intersect the value features and provide the sources of value on the origin side of customer-perceived value. The effects can be traced to the flows of revenue benefits, cost benefits, interest effects, and costs to use. Concurrently, flows both build, and are filtrated by, Trust – the psychological level of value – during the process in which the customer’s perception and understanding of value comes into being. On the effect-side of value, the concepts stochasticity and substantiability are introduced in order to capture the uncertainties that make translations into monetary terms difficult.

The outcome of the abductive reasoning in the final phase of the study is a conceptual model of customer-perceived value. This model, proposed as the main contribution of the study, summarizes different aspects of customer-perceived value – and of its assessment – in a context of dyadic business-to-business relationships. My definition of customer-perceived value, together with a list clarifying the many facets of the concept, concludes the study.

Keywords: Customer-perceived value, Total service offering, Business-to-business relationship, Commercial aircraft engine maintenance industry, Case study
“A good performance, like a human life, is a temporal affair – a process in time. It is good as a whole through being good in its parts, and through their good order to one another...”  M.J. Adler
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On the other hand... Bringing a work like this to a conclusion gives strong feelings of fulfillment – a researcher-perceived value of a non-monetary nature, perhaps benefits worth the sacrifices made. Many people have, in great as in little, contributed in helping me find the right pieces in this puzzle-solving activity. I would like to express my thanks to all of you.

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Trollhättan, September 2004

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1. **INTRODUCTION**

This first chapter will provide an introduction to the research project. The aim of the investigation will be accounted for, as well as the research problem. A brief introduction to the theoretical platform is also included as a background to the research problem. This platform will, however, be elaborated further in the next chapter.

1.1 **Background**

In a time when quality is taken for granted and the difference between competing offers is diminishing (Anderson & Narus, 1999), focus is turning to customer value, in practice as well as in research (e.g. Parasuraman, 1997; Woodruff, 1997; Parasuraman & Grewal, 2000; Eggert & Ulaga, 2002; Vargo & Lusch, 2004a). The kind of value these scholars have in mind is a customer value approached from the perspective of a buyer (Uлага, 2001); a perspective that embraces the way in which sellers create value for their customers, as well as how customers perceive this value. Value is then understood as a trade-off between benefits received and sacrifices given in order to take advantage of a product¹, (e.g. Zeithaml, 1988; Uлага, 2003). When value is perceived and judged by the customer, we can talk about a “customer-perceived value” (CPV) (e.g. Payne & Holt, 1999; Lapiere, 2000).

The interest in value is accompanied by a concurrent conversion of business where marketing offerings increasingly begin to replace the exchange of single hardware or services (Norman & Ramirez, 1995). “Value innovation” implies a redesign of supply chains; new market space is created by actors “out-competing” their competitors in creating fundamentally new and superior customer value (Matthyssens et al., 2003, p. 1-2). Prime movers are reported to lead the reconfiguration of business arenas, providing offerings that enable entirely new opportunities for value creation by co-production in joint processes between business actors (Normann, 2001).

Also within the engineering industry levels of awareness concerning the important role of services in traditional business offers have been raised (Oliva & Kallenberg, 2003; Fransson, 2004; Windahl, 2004). Furthermore, the

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¹ According to ISO standard SS-EN ISO 9000:2000 (Swedish Institute for Standards, 2000), a “product” is the result of a process, often comprising elements from four generic product categories. These are services, software, hardware, and processed materials. I will use “product” according to this definition. However, other scholars do not always define the word “product” or follow the ISO terminology. When referring to other researchers’ work I will use their denotations.
recent development of “functional offerings” and “total obligation offerings”\textsuperscript{2} implies a start for new forms of cooperation and value creation where immaterial forms of value take the seat of honor (Fransson, 2004). Accordingly, it is the outcome of the offering\textsuperscript{3}, in terms of value for the customer, that is important, rather than the individual hardware or services used to produce the outcome\textsuperscript{4}.

This development has reached different stages in different industries (Oliva & Kallenberg, 2003) and some areas may not even be affected by this new business logic. Nevertheless, irrespective of the actual degree of business reconfiguration that is achieved, attention is now being paid to the increased demand for highly integrated offerings of services and physical products, generated by close links between the parties concerned (Brännström et al., 2001). A strategic service perspective then becomes essential to gain sustainable competitive advantages; a strategy in which every element of the relationship is developed (Grönroos, 2000). Essentially, efforts are made to offer solutions where services are included as an important requisite component in order to support the customer’s value-generating process. And in this process will service\textsuperscript{5} – embracing much of the interactions between seller and customer – become critical (Parasuraman, 1998). The offering, however, is embraced by the relationship between the actors involved. The relationship forms the basis of competitiveness for the company (Holmlund, 1997) and in consequence for the value creation process.

The evolving logic for marketing is thus a service-centered logic; suggested to be applicable to all types of market offers (Vargo & Lusch, 2004a). This logic is based on services in terms of skills, knowledge, and processes, as opposed to the exchange of goods. Value is, accordingly, not embedded in physical products, but co-created with customers as well as also being defined by customers. Suppliers and service providers can only make value propositions. The judgments of actual value are made by customers based on their

\textsuperscript{2} Translation from Swedish, “funktionserbjudande” and “totalt åtagande” respectively.
\textsuperscript{3} Oxford advanced learner’s dictionary of current english (2000, p. 879) defines an “offering” as “something that is produced for other people to use, watch, enjoy etc”, while an “offer” expresses a willingness to do something for someone, the money someone is prepared to pay for something, or a time-limited discount on normal price. I have chosen to use “offering” in this thesis to put emphasis on the provided offering as a bundle of hardware and services from which the outcome should satisfy the customer’s needs (cp. Grönroos’ [2000] “total service offering”, see further section 1.2.1 and chapter 2).
\textsuperscript{4} For example, the mining company LKAB’s interest is in drill holes, not the equipment necessary to produce them (Fransson, 2004).
\textsuperscript{5} Parasuraman (1998, p. 310) distinguishes in this article between “services” (the core of the offering or “add-on” services, charged for) and “service” (supplementary service to the core, offered free of charge, i.e. “how to serve the customer”).

2
perception of usefulness, i.e. a value in use\(^6\) (ibid. p. 7). Accordingly, a service-centered view implies a focus on customer-perceived value and a crucial need for understanding the constituents of customer-perceived value.

Scholarly work concerning customer-perceived value has been conducted within the field of consumer markets and services (e.g. Zeithaml, 1988; Ravald & Grönroos, 1996), but also within business-to-business (B2B) and industrial contexts (e.g. Patterson & Spreng, 1997; Ulaga & Chacour, 2001; Walter et al., 2002). However, as Ulaga (2001) declared in the introductory article in Industrial Marketing Management’s special issue on customer value, research is still in its infancy. This applies not least to business-to-business and industrial markets (Walter et al., 2002), where few empirical investigations (e.g. Lapierre, 2000; Ulaga, 2003) of customer-perceived value with a holistic perspective to the relationship are to be found.

1.2 Theoretical points of departure

This study is realized from a theoretical platform constructed mainly from service marketing and management (service research\(^7\)); a field that traditionally has focused on consumer markets. This is a choice not only motivated by my personal belief of a fruitful cross-fertilization of service research and the busi-

\(^6\) Vargo and Lusch (2004a and 2004b) do not use “customer-perceived value” in their discussions but instead “value in use”. By this concept they want to emphasize that value is not determined by the producer and is not embedded in physical products. Instead, it is a value conveyed by services, coproduced in a process between consumer and service provider where “Value is perceived and determined by the consumer on the basis of ‘value in use’, i.e. based on ‘[...] the actual usefulness as perceived by the consumer [...]’” (2004a, p. 7).

The question is if the concept “value in use” is restricted to perceptions in the precise use situation or if it should cover a wider range of situations such as pre-purchase judgments of value. The following quotation could indicate the latter “[…] value creation is a function of realizing (or at least expecting to realize) benefit [...]” (2004b, p. 331), as expectations are included. In addition, Vargo and Lusch state that “[…] once value has been created in concert with the consumer, it may be relatively enduring, [...] e.g., education [...]” (2004b, p. 331). Thus, value judgments could be made a long time after the use of the service.

My interpretation of Vargo and Lusch’s “value in use” concept implies thus some vagueness concerning the scope of the concept. As I have a wide view of customer-perceived value, e.g. of when judgments of value can be done and of value to be created and perceived both during interaction process and as an outcome of the process (se further discussions in chapter 2), I have chosen not to equate “customer-perceived value” with Vargo and Lusch’s “value in use”. I argue, however, that the service-centered view of marketing – meritoriously argued for by Vargo and Lusch – in general implies an increased need of focusing customers’ perceptions of value, i.e. customer-perceived value. The reader will also note that I will use a very close denotation – “value in-use” – in the conceptual model of customer-perceived value in chapter 7; this is accounted for in section 7.2.1.3.

\(^7\) “Service research” and “service theory” are in this thesis used to comprise issues considered within the theoretical fields of service marketing and service management.
ness-to-business context but is, additionally warranted by three specific motives: (1) The increasing awareness of the role of services and service in marketing offerings – also within the business-to-business sector (Normann & Ramírez, 1995; Parasuraman, 1998; Brännström et al., 2001; Hildenbrand et al., 2004), (2) the considered fruitfulness of a service approach in order to develop superior value, also when the manufacturing of goods are included in the offering (Normann, 2001), and (3) not least the acknowledgement of the growing service-centered logic for marketing (Vargo & Lusch, 2004a) and general management (Day, 2004). In addition, as will become apparent, research concerning customer value crosses the traditional borders of research fields, with service research building on industrial marketing and vice versa.

The following pages will provide an introduction to the main theoretical platform of service research, and to the basics of the customer-perceived value concept. In addition, a brief presentation of the industrial network theory is given.

1.2.1 Bringing service research to business-to-business

Service research has traditionally focused consumer markets. With a strong interest in service quality (e.g. Grönroos, 1984; Parasuraman et al., 1994; Edvardsson, 1998; Brady & Cronin, 2001) and service development and management (e.g. Grönroos, 1990; Normann, 1992; Edvardsson, 1996; Norling, 1993, 2003) research has been conducted in various consumer contexts such as banking, airlines, restaurants, telecommunication services, etc. Over the years, the focus has shifted from one of understanding transactions to interactions within long-term relationships (Holmlund, 1997). The relationship approach to service marketing is now emphasized (Grönroos, 2000).

At the start of service research, efforts were made to depict services as different to hardware, i.e. a service–hardware dichotomy was emphasized (Lindquist & Persson, 1997). Scholars stressed the specifics of services, e.g. intangibility, heterogeneousness, customer participation in production, concurrent production and consumption, in contrast to the reverse features of hardware (e.g. Grönroos, 1990). Now, the pendulum has swung in the opposite direction as the combination of services and hardware into value creating solutions is emphasized (Grönroos, 2000; Fransson, 2004). And by defining services as “the application of specialized competences (knowledge and skills) through deeds, processes, and performances for the benefit of another entity
or the entity itself” (Vargo & Lusch, 2004a, p. 2), hardware can in fact be reduced to “distribution mechanisms for service provision” (ibid. p. 8).

The conclusion arrived at by Grönroos (2000) is that customers do not look for single services or hardware. They want a package, a solution, to help them create a larger value in their own value-creating process. Grönroos describes the total service offering as consisting of facilitating and supporting services built around a core service or hardware and surrounded by a system providing accessibility, interaction and customer participation. Normann and Ramírez (1995) argue that supplier’s have to take a part in the customer’s value-generating process, as it is not a single manufactured article or a service that creates value but, rather, offerings that involve cooperation among the parties.

The service logic is advanced as a beneficial approach to developing value propositions (Normann, 2001). It is a logic that has its focus on the interactions between customer and service provider in a service process (Edvardsson, 1996). A logic where value is defined by customers and cocreated with customers (Vargo & Lusch, 2004a) as well as with other parties involved (Gummesson, 1997). It supports the relationship marketing view, where “parties become partners” and win-win relationships are preserved (Gummesson, 2004, p. 21). The traditional view of marketing, based on transactions has, by now, been replaced by a view aiming for long-term relationships.

The interest in relationships as the context for interactions between buyer and seller are shared between researchers within the “Nordic School” of service management and marketing, and scholars belonging to the IMP (Industrial Marketing and Purchasing) Group (Grönroos, 2000, p. 21). While service research has been focused mainly on consumer markets, the “industrial network theory” has evolved via the study of industrial relationships by the IMP Group.

Investigations focusing on business markets have previously been tackled from a platform constructed, at least in part, from service research (Holmlund, 1997; Järvelin, 2001; Fransson, 2004). On the other hand, service research – especially the Nordic School – has been influenced by the industrial network theory (Gummesson, 2002) such as, for example, when Liljander and Strandvik (1995) conceptualize relationship quality on consumer markets, and in Holmlund’s (1997) extension of relationship quality into business markets.

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8 In fact, some assert that there is no longer a purely industrial sector, since different types of services account for an increasing share of the cost in a manufacturing business unit (Normann, 1992) and an exceeding share of services are offered by manufacturers (Grönroos, 2000).

9 Relationship marketing defined as “establishing, maintaining, enhancing and terminating relations with customers and other partners” (Liljander and Strandvik, 1995, p. 147).

10 Both Holmlund (1997) and Järvelin (2001) have in addition to service research drawn on industrial network theory.
1.2.2 The industrial network theory

The emphasis on relationships is a common denominator of the industrial network theory and the relationship approach to service marketing. However, while the current major focus of the IMP Group is to understand business relationships as networks, service research is still mainly devoted to the interaction between dyadic actors.

Research conducted within the tradition of the IMP Group has, since the mid 1970s, been directed towards the study of industrial relationships. Over the years the main interest of IMP research has moved from interactions in single dyadic relationships – the interaction approach – to a focus on the business network they are part of – the network approach (Ford, 2002). Today work is published within both lines of research (Ford, 2002), although they are very close to each other and differences are mainly to be found in the level and unit of analysis (Ollkonen et al., 2000).

In the following paragraphs I will give a brief account of some of the main ideas and discuss how value has been considered in the IMP tradition.

The interaction and the network approach

The interaction model (figure 1-1) is central for the early interaction approach (IMP Group, 1982). Marketing and purchasing are considered to consist of processes of interaction between two organizational parties; buyer and seller. The model describes the basic components of interaction that include the interaction process and its participants, the atmosphere affecting and being affected by the interaction and, finally, the environment surrounding the interacting parties. Each component of the model contains several dimensions

11 The interaction processes are performed by two interacting parties, the two organizations and the individuals within them. Their characteristics will accordingly affect the process. There are three variables assignable to the organization: Technology, i.e. each party’s technological systems and the differences between them form the basis for the interaction; structure and strategy in terms of size, power, and organizational experiences also influence the interaction. At an individual level, aims and experiences of the many employees involved in the interaction influence the social exchange and consequently the relationship.

The interaction processes consist of episodes of exchange. Products/services, information and money (financial exchange) as well as a social exchange, are the types of exchange considered. The latter is essential when the long-term relationship is built. Communication, i.e. information exchange, between individuals or groups of individuals shape contact patterns and roles in the relationship over time. Thus, exchanges will eventually be routinized and lead to institutionalization of roles. Adaptations made by buyer and/or seller, in processes or to the elements of exchange, in order to achieve various financial or non-financial benefits, is another important element at the relationship level.
The unit of analysis in the interaction approach is the relationship rather than the individual transactions (Turnbull et al., 1996). However, other companies connected to the dyad are reduced to the environment-component of the interaction model. As it was emphasized that no relationships can be understood in isolation (Turnbull et al., 1996), the further work conducted by the IMP Group seized upon this “imperfection” and the interest was directed to the wider networks in which all business relationships form a part. The outcome of this development was the network approach, or, to use another term, a “markets-as-networks” perspective (Olkkonen et al., 2000).

The network approach aims for an understanding of industrial markets as complex networks of relationships between buyers and sellers, as well as considering other actors, such as consultants and governmental institutions. Two main perspectives are adopted: to understand the network relationships from a focus on the atmosphere of the relationship is affected by episodes that take place within it, but has, in addition, a stability derived from the characteristics of the relationship itself, e.g. duration and routinization. Power/dependence, cooperation, closeness, and expectations are proposed dimensions of this atmosphere. No relationship can be considered in isolation without regard to the environment. Dimensions to be considered are market structure in terms of concentration of actors, stability etc., dynamism in market, degree of internationalization, the parties’ position in the manufacturing channel, and the social system (IMP Group, 1982).
cal company’s perspective, or to adopt a holistic perspective on the network. (Olkkonen et al., 2000). Actors, activities, and resources are the main concepts of the industrial network model. In short:

“Actors are defined as those who perform activities and/or control resources. In activities actors use certain resources to change other resources in various ways. Resources are means used by actors when they perform activities. Through these circular definitions a network of actors, a network of activities and a network of resources are related to each other.” (Håkansson & Johanson, 1992, p. 145)

To understand the various natures of business relationships, Håkansson and Snehota (1995) propose an analysis of substance and functions in relationships. Functions regard the effects that a relationship has on various actors, such as effects for the individual company, for the dyad, and for third parties, i.e. for the network. The substance is divided into three different layers built from the three concepts discussed above. Thus, activity links and resource ties are two types of connections within a network while actor bonds are the third. Bonds arise in a relationship when both parties become mutually committed by giving each other attention, interest, and priority. The three substance layers of activity links, resource ties, and actor bonds are connected to each other in a specific relationship as well as connected to the wider networks of activities, resources, and actors.

Trust is emphasized in the interaction approach as it is also in the network approach. In order to deal with the uncertainty that is always present within a relationship, trust is said to be essential. It is developed in a social process as the relationship progresses; however, not exclusively based on experiences of the other party (Håkansson & Snehota, 1995). In addition, comparisons with interactions in other relationships serve as clues when trust is built.

To conclude, this overview has illuminated the importance of the connectedness of relationships. Industrial markets can be described as networks of actors, activities, and resources bound together by bonds, links, and ties respectively. To understand a relationship within a network, IMP researchers suggest an analysis of these connections. An understanding of value creation from a network perspective could imply a take-off from one or several of these concepts. In addition, the understanding of value could be approached either from a focal firm’s viewpoint or from an aggregated network perspective.

Value in IMP research

The interest in value has comparatively lately aroused in industrial markets (Walter et al., 2002), but is now a part of the IMP research agenda. In 1994 relationship value within industrial relationships was conceptualized by Wilson
and Jantrania in a since then widely quoted article. In recent years, papers concerning value have been presented at IMP conferences (e.g. Möller & Svahn, 2002; Walter et al., 2002; Mikkelsen & Hedaa, 2003) and articles co-written by IMP members on the topic are to be found in journals (e.g. Walter et al., 2001; Walter & Ritter, 2003).

Value in industrial markets is investigated by IMP researchers from several different perspectives, at several different levels of analysis and connected to several different units of analysis. Not only is customer-perceived value considered, but so is value at several levels of network interaction, supplier-perceived value, co-created relationship value, and value creation networks (see appendix B for overview).

This study seeks to contribute to understanding about customer-perceived value derived from a dyadic relationship, i.e. the classic dyad forming the basis of business and value exchange (Gummesson, 2002). The perspective is the customer’s, thus an actor perspective to value is adopted in accordance with the terminology of the network approach. My interest in the single relationship could imply a take-off from the theoretical base of the interaction model. However, due to the motives accounted for earlier (p. 3), I have chosen the service research approach. The main intention, however, is to further advance the understanding about customer-perceived value. This is a subject where scholarly work positioned in industrial network theory and service theory respectively, builds on both traditions to explore the facets of value. Thus, although this study is located in the service research field, research concerning customer and relationship value from both industrial network theory and service theory will influence the theoretical base.

### 1.2.3 The customer-perceived value concept

It is argued that an understanding of what the customer perceives as valuable is essential to define and develop market offerings – just measuring satisfaction does not provide the required insight (Payne & Holt, 1999). Customer-perceived value\(^\text{12, 13}\) has been proposed as a key determinant of loyalty, or per-

\(^{12}\)The spelling of the concept varies between scholars – both “customer perceived value” and “customer-perceived value” are used. I have chosen the latter alternative in order to underline that it is the content of the concept and its assessment that is most important to me in this thesis – not the process of perception.

\(^{13}\)It can be noted that some other authors adopt the label “relationship value” to describe customer-perceived value, e.g. Walter et al. (2002) and Ulaga (2003), in order to emphasize that the value is perceived within a given relationship or, as according to Payne and Holt (1999), from a relationship marketing perspective. A drawback of this re-labelling is, however, a possible con-
haps even “the key determinant” (Parasuraman & Grewal, 2000). Recently Eggert and Ulaga (2002) empirically demonstrated that, in business-to-business settings, customer-perceived value actually is a key determinant for customer satisfaction, which in turn influences loyalty in terms of repurchase intentions. Customer-perceived value is accordingly important, so let me continue by giving a more precise account of the basics of the concept. “Value” in marketing has important roots in four areas of research: consumer value and values, customer satisfaction and service quality, the augmented product concept including services in offerings, and, finally, work concerning the value chain (Payne & Holt, 1999). The consumer value field has, according to these authors, provided the idea of value as a concept implying a “trade-off” between benefits received and sacrifices made. Zeithaml’s (1988, p.14) early definition builds on this tradition when she states that, “[...] perceived value is the consumer’s overall assessment of the utility of a product based on what is received and what is given”. Much of the current research on value in marketing builds upon this “trade-off” concept (Payne & Holt, 1999).

Consensus is found among most researchers concerning the basis of the customer-perceived value concept; an analysis of twelve rather similar definitions is given in appendix A. A summary from the analysis indicates that customer value consists of the net-value – the trade-off between benefits and sacrifices – that the customer is able to utilize as a result of acquiring a physical product, a service, or a total service offering. The judgment of what value that is delivered is the customer’s, hence the label “customer-perceived value”. The sacrifice part of the concept is unambiguous. Monetary and non-monetary costs constitute the “give-component” (e.g. Zeithaml, 1988; Liljander & Strandvik, 1995; Parasuraman & Grewal, 2000). Conversely, several suggestions are proposed for the “get-component”, i.e. the benefits received by the customer. Some scholars propose that the benefits consist of the quality delivered (e.g. Gale, 1994; Liljander, 1995; Ulaga & Chacour, 2001), while others argue that benefits equal the monetary worth of the offering (Anderson & Narus, 1999).

One complicating factor that needs to be taken into consideration, especially when value is approached in a business-to-business setting, is the fact

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14 A brief introduction is given here; see further chapter 2 for a deepened discussion about customer-perceived value.
15 See Payne and Holt (1999) for an overview of the development of value research in marketing.
16 A more exact definition of customer-perceived value will not be given here, as I see that as a task for the further investigation. A tentative definition is introduced in chapter 2 – an outcome of the theoretical findings. After completed analyses, an elaborated definition is presented in the end of chapter 7.
that value in most cases is formed by quite a number of actors (Gummesson, 2002). In addition, it can be recognized that value is created and perceived on many different levels of interaction, e.g. the ones suggested by Holmlund (1997, 2004): partner base, relationship, sequence, episode, and action. Furthermore, judgments of customer-perceived value may change over time when actors shift emphasis concerning the importance of different components in an offering (Parasuraman & Grewal, 2000). Customer-perceived value is, thus, a dynamic concept, implying that its content is the object for variation over time and between actors.

Customer-perceived value can be positioned in relation to some other marketing concepts and here I take the assistance of Storbacka et al. (1994). Their overview (figure 1-2) shows how a service provider’s profit from customer relationships can be traced back to service quality by several links.

As illustrated, customer-perceived value (“perceived value” in figure 1-2, built of service quality and perceived sacrifice) has a central place in the framework, functioning as the antecedent to customer satisfaction. The basic link, in the middle row, then continues when customer satisfaction leads to relationship strength, which in turn leads to relationship longevity, and finally to customer relationship profitability.\(^{17, 18}\)

\[^{17}\] The framework introduces in addition some other influences on the basic link. Customer commitment, here defined as “the parties’ intentions to act and their attitude towards interacting with each other” (Storbacka et al., 1994, p. 25), and bonds, i.e. different types of switching
How can the customer’s perception of value be gathered?

My suggestion is that the customer’s perception of value at any specific point in time can be depicted by means of the interview topics framed for this study (appendix F). By gathering opinions from several of the individuals involved, different aspects of customer-perceived value within a relationship can be captured. Thus, customer-perceived benefits and sacrifices from a relationship can be filled with a substantial content that can be evaluated.

A framework of customer-perceived value, illuminating the dimensions of benefits (get) and sacrifices (give) is illustrated in figure 1-3. This framework is a part of the conceptual framework\textsuperscript{19} – accounted for in chapter 2 – guiding the empirical study.

<table>
<thead>
<tr>
<th>Get</th>
<th>Give</th>
</tr>
</thead>
<tbody>
<tr>
<td>+ Revenue benefits</td>
<td>- Costs connected to the use of the offer</td>
</tr>
<tr>
<td>+ Cost benefits, i.e. savings</td>
<td>- Non-monetary sacrifices, e.g. energy, conflict</td>
</tr>
<tr>
<td>+ Non-monetary benefits,</td>
<td></td>
</tr>
<tr>
<td>e.g. trust, empathy</td>
<td></td>
</tr>
</tbody>
</table>

Figure 1-3. A framework of customer-perceived value.\textsuperscript{20}

barriers, affect the customers’ purchase and communication behavior, i.e. the strength of the relationship. The length of a relationship – relationship longevity – is affected not only by the relationship’s strength, but also by the customer’s perception of access to alternatives and how episodes that in some aspects are critical for the continuation of the relationship are experienced by the customer. Patronage concentration, i.e. the service provider’s share of the customer’s total spending in the actual industry, affects the revenues generated from the relationship, while the cost for serving a customer is affected by the types and numbers of episodes in the relationship. Finally, relationship profitability is achieved when relationship costs are subtracted from relationship revenue.

\textsuperscript{18} Holmlund (1997, p. 242) develops this framework further in her study of a business-to-business relationship. She expands the framework to focus on the combined perception within a dyadic relationship, built by the seller’s and the buyer’s individual perceptions. However, Holmlund’s strong focus on quality, thereby including economic aspects in quality, has implied that the important “trade-off” characteristic of the customer-perceived value concept is not sufficiently emphasized with regard to my aim of clarifying the concept.

\textsuperscript{19} “Conceptual framework” is used in accordance with Miles & Huberman (1994, p. 18), i.e. graphical or narrative explanations of the main things to be studied in terms of key concepts or variables.

\textsuperscript{20} This framework was elaborated from an idea expressed by Prof. Per Norling at a meeting the 10\textsuperscript{th} September 2002.
1.3 Purpose of the study; research problem and limitations

1.3.1 The research problem

The opening paragraphs of this chapter provided a scenario of business markets in transformation where a service-centered logic is evolving and knowledge about customer-perceived value becomes essential. This paradigm shift is discernible also within the industrial sector. Total service offerings, consisting of services, software, and physical products, increasingly replace the exchange of single services and hardware. These offerings are to be placed within a relationship where the aim is to maximize the value generated by close collaboration. However, difficulties connected to this development are the complexity of products, performance measurement, finance and risk associated to necessary capital investments, as well as the lack of financial models for supporting charging and, consequently, for profit sharing (Brännström et al., 2001).

A prerequisite for thriving value propositions, supporting sustainable and mutual value creation between service provider and customer, is an in-depth knowledge about the customer’s value creation logic. Cognizance of customer-perceived value becomes fundamental in this context. Essentially, it is about knowing the dimensions of value – from the customer’s point of view.

Basic components of the customer-perceived value concept were described in the previous section. Value is created through a total service offering embedded in a business relationship. Received benefits are set against sacrifices made. But the offering may involve a multitude of visible goods and services, as well as more disguised services, consisting of service provider activities that must be performed in order to reach the intended outcome. And the characteristics of services – the coproduction between customer and service provider in a process of interaction – together with relationship aspects, will affect the value perception. It is evident that the customer-perceived value concept is multifaceted when considered on a deeper level, i.e. beyond its main dimensions of benefits and sacrifices. I argue that in order to elucidate its multifaceted nature, the concept has to be empirically investigated.

Empirical research focusing on the customer-perceived value concept in business-to-business settings is, for the time being, still relatively scarce, especially when a holistic view of customer-perceived value is considered, i.e. one that involves the elucidation of dimensions of value within a business-to-business

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21 For example, Flint (2002) emphasizes the importance of elucidating dimensions of value, as perceived by customers, when new products are developed.
relationship. However, this increased interest has resulted in some interesting scholarly work.²², ²³

Lapierre (1997) has made a conceptualization of the dimensions of customer-perceived value, related to points in time in the value creation process, in a case study within the technical consulting services sector. Subsequently she has continued her work by quantitatively investigating drivers of value for business customers in three different service sectors (Lapierre, 2000). Ulaga and Chacour (2001) have studied customer-perceived value in the German food industry, operationalizing customer-perceived value by industry specific attributes derived from a function of quality – related to product, service and promotional components – and price.

However, in addition to Lapierre’s investigation from 1997, it is the recent study by Ulaga (2003) that has provided us with the most thorough qualitative description of the drivers of customer-perceived value. Ulaga made his study within manufacturer–supplier relationships and identified eight relationship value drivers, six of them on the benefit side, namely Product quality, Service support, Delivery, Supplier know-how, Time-to-market, and Personal interaction and two constituting the sacrifice part, these being Direct product costs (price), and Process costs. Thus, like Lapierre (1997), Ulaga provides a qualitative description of customer-perceived value.

But Lapierre and Ulaga are exceptions; there is still a need for further empirical investigations of customer-perceived value from specific sectors of the business-to-business area, i.e. to create knowledge about the actual components that build a customer’s value perceptions. What are perceived as specific benefits and sacrifices from a total service offering in a business relationship, i.e. what are the principal attributes creating perceived value for the customer?

Furthermore, the question concerning the proposed differing nature of value must also be asked. Benefits are, according to some scholars, equal to a monetary worth whilst others argue for an evaluation based on perceived quality. Neither Lapierre (1997) or Ulaga (2003) investigated how the qualitative descriptions were connected to effects inside the customer’s organization and to monetary assessments of value; nor was this considered in the studies by Lapierre (2000) and Ulaga and Chacour (2001). Putting this issue into practice

²² An initial literature search for articles focusing on the customer-perceived value concept was conducted in international journal databases (ABI/Inform Global, Emerald, Science Direct) during spring 2002 and then repeated during the study. It was a broad search with use of the key words “customer” and “value”, followed by reading of titles and abstracts in order to identify relevant literature. Alerts on the key words and subscription of table of contents from several journal were also used. Finally, the participation in seminars, doctoral courses (especially a course in service quality), and supervision have provided input to the theoretical platform.
²³ See appendix C for a quick overview of customer-perceived value research.
would reveal how customers actually express value perceptions and how monetary worth is derived.

This research project will focus on customer-perceived value within dyadic relationships in business-to-business markets. More exactly, it is the commercial aircraft engine maintenance industry that will be studied. This forms a distinct industrial service context\textsuperscript{24} that has not, to my knowledge, previously been studied with the customer-perceived value concept in focus. By applying the theoretical base, mainly from the service research field, to the findings grounded in the business-to-business context, a deeper understanding of customer-perceived value will be attained.

The focus of the research project, in light of the outline above, is illustrated in figure 1-4. The figure indicates that, in addition to the investigation of the customer-perceived value concept, a minor digression will be made into the issue of how to financially estimate the worth of delivered value. This is done due to the fact that some scholars argue for the importance of expressing customer-perceived value in monetary terms.

\textbf{1.3.2 Research question}

To reach a solution to the problem of elucidating customer-perceived value, as discussed in the previous paragraph, the following general research question should be answered:

\textsuperscript{24} Using Normann and Ramírez’s (1995) classification of value offerings, the commercial aircraft engine maintenance industry of today can be characterized as providing relieving, rather than enabling offerings. The former implies that the service provider does something for the customer and thereby facilitates the customer’s existing business (comparable with outsourcing). The latter, on the other hand, involves new forms of value creation associated with entirely new opportunities for the customer, for example by an enhanced productivity.
How can customer-perceived value be described and explained in a context where total service offerings are provided within business-to-business relationships?

The question sets out the frame for investigating the concept of customer-perceived value: that is to say, a total service offering embedded in a dyadic business-to-business relationship. Furthermore, the question comprises both a description and an explanation of the concept. In accordance with Miles and Huberman (1994) I regard description as an essential step that must be accomplished before the issue of explanation is focused upon. The description provides an understanding of the studied phenomenon, necessary in order to go deeper and integrate data into an explanatory framework – to build theory (ibid.). Thus, the general research question has to be tackled in several steps, where the analysis of the empirical data first must lead to a description of customer-perceived value in the studied setting. This description can enhance understanding and thereby it can facilitate the work of providing an explanation of how customer-perceived value is formed within the relationship.

To guide the empirical investigation, and consequently the first step of describing value in the actual context, the following specific research question was constructed:

Which are the principal attributes creating customer-perceived value?

I find it essential to make the concept of customer-perceived value evident by bringing empirical substance into the concept. Specific elements of value will accordingly be searched for and examined. Due to the complexity of the relationship and the total service offering, I assume that there are opportunities to uncover a multitude of such value-creating elements. A challenge will then be to structure these components in order to find the core of customer-perceived value and to reveal its dimensions. A dense description can contribute to knowledge about how customer-perceived value is built in the actual setting.

In order to gain a fuller picture, I will choose to gather both the customer’s actual view of value, as well as the service provider’s. However, the service provider can only provide guesses since the perception belongs to the customer. But as the total service offering is complex in its nature, facets of value may be observed by the service provider and not by the customer. By collecting opinions from both actors in the relationship, as well as from several employees from each party, opportunities for attaining comprehensiveness are enhanced.

Scholars have previously advocated differing standpoints when it comes to the nature of value components – monetary or qualitative. The issue of elucidating the nature of the attributes that build customer-perceived value will therefore be included in this step. Are there any opportunities to financially
assess the value, i.e. to assign different kinds of attributes a distinct monetary worth? The investigation will have to identify how translation into monetary terms can be achieved, how obstacles can be revealed and how these could be handled.

When answers to the specific research question are found, customer-perceived value is described in the specific setting at the specific point of time, i.e. a static description. Deeper analyses of the empirical material will then be necessary in order to achieve a solution to the explanatory part of the general research question. Findings from the specific context can then be combined with the theoretical ones, thereby attaining a description applicable to a wider range of business-to-business relationships. In addition, by theoretically framing the static outcome from the empirical investigation, I aspire to bring the inherent dynamism of the customer-perceived value concept to light.

### 1.3.3 Purpose

The overall aim of the research project is to create an understanding of the nature of customer-perceived value in dyadic relationships within business-to-business contexts, based mainly on theory from the service research field. Thus, an aim of comprehensively elucidating both monetary and non-monetary components of customer-perceived value, as well as relating these components to other aspects connected to a customer’s assessment of perceived value.

The specific purposes are two:

A. The first is to find out how customer-perceived value is composed when framed by a total service offering within a long-term relationship in a customer–service provider dyad. This will be carried out in a specific business-to-business setting – the commercial aircraft engine maintenance industry. A context of industrial maintenance processes not, to my knowledge, previously investigated with the concept of customer-perceived value in focus.

B. The other is to make a more generally applicable contribution to knowledge about the facets of customer-perceived value in dyadic relationships within business-to-business settings. By using the theoretical findings together with the ones from practice a conceptual model\textsuperscript{25}, as well as an extended defi-

\textsuperscript{25} A “conceptual model” is a visual display, typically with boxes and arrows containing a set of abstract constructs and the relationship among them (Ryan & Bernard, 2000). In this thesis, “conceptual model” and only “model” are used interchangeably.
inition, of customer-perceived value will be offered. Thus, the purpose is to attain an extended understanding of the concept in the business-to-business practice by making use of service theory.

I will try to generate theory\textsuperscript{26}, although nothing that approaches the level of “grand theory”. To consider customer-perceived value, with the objectives above in focus, is to be specific on a fairly “low” conceptual level. By this I mean that the main concept, customer-perceived value and its dimensions of benefits and sacrifices, is already in position. My research involves, instead, the delineation of the particular factors building and influencing customer-perceived value in specific contexts. Thus, it is theory concerning “modest middle-range concepts” (Miles & Huberman, 1994, p. 91); it is “local theory” where knowledge is about a particular situation in a specific social setting (Gummesson, 2000, p. 96).

Further on I will use the notion “substantive theory” (Strauss & Corbin, 1998, p. 23) to address the outcome of attaining the respective objectives outlined above. Substantive theory is located in a specific situation and setting – in this case dyadic business-to-business relationships. In the study I will try to make a transfer in context within this field; I will start from a relationship in the particular maintenance industry and will move to a more general context of business-to-business relationships.

1.3.4 Limitations

The empirical investigation will be limited to business-to-business relationships. More precisely:

\begin{itemize}
  \item the commercial aircraft engine maintenance industry and
  \item the dyadic relationship between a customer, Skyways Express AB (Skyways), and a service provider, Volvo Aero Corporation (Volvo Aero), i.e. the first tier supplier.
\end{itemize}

The issues of designing new total service offerings or new parts in existing packages will not be considered. Instead, the existing relationship and business agreements between the parties are the subjects for research.

The empirical investigation will not explicitly consider customer-perceived value compared to competitors’ offerings, the use of comparison standards, or the evaluation processes, although these are issues that, to a minor extent, are discussed theoretically. The matter of the detailed calculation of customer-perceived value will not be considered, nor will the supplier’s gains from the

\textsuperscript{26} Theory defined as “a set of concepts used to define and/or explain some phenomenon” (Silverman, 2000, p. 77).
The research will neither deal with the problems of analyzing customer profitability, i.e. the value of customers in a seller perspective, nor with the aspects of risk management, organizational, or legal issues.

Reasoning concerning perceptions and values is, to a large extent, based in the research field of cognitive psychology. This is, however, a field entirely outside the scope of the thesis.

### 1.4 The structure of the thesis

The structure of the thesis is summarized in figure 1-5 below. It can be noted that a summary of the study is provided in chapter 8. Readers who first want a brief outline of the research results are consequently recommended to move ahead to section 8.1.

This *first chapter* has provided the reader with a background to the research problem, an account – and justification – of the theoretical frame of reference, as well as an introduction to the concept of customer-perceived value. Research questions, purpose, and limitations of the study have also been presented.

In *chapter two* the theoretical platform, based in the field of marketing with a focus on service research, is further elaborated. Specifically, literature on service quality, relationship marketing, and customer-perceived value contribute to the platform. Several concepts are examined concerning their meaning, relation to, and influence on each other. The chapter is concluded by the proposal of a tentative definition of customer-perceived value, as well as a tentative conceptual model of customer-perceived value based on the theoretical findings.

The next step is to present the research design, which is the subject of *chapter three*. This chapter includes, additionally, a discussion about conducting research in close connection to industry. Next, *chapter four* provides an understanding of the empirical context framing the study.

The *fifth chapter* provides an account of the empirical study. The chapter starts with a detailed description specifying the course of action to tackle the research problem. After that, the first of my empirical findings are presented in value maps that illustrate how customer-perceived value is formed and the subsequent effects inside the customer’s organization. The chapter also contains an account of a minor study, made after the construction of the value maps, where paths for the translation of customer-perceived value into monetary terms are explored.
Then, the next two chapters provide a deepened analysis. In the sixth chapter my findings from the case study are re-examined. The outcome is a suggestion for an explanatory model, i.e. a substantive theory addressing the specific context and similar ones with the aim of explaining the formation of customer-perceived value.

The seventh chapter brings the theoretical findings together with the empirical findings. The explanatory substantive theory from the sixth chapter is brought back to the theoretical findings in chapter two and to the tentative

Figure 1-5. Thesis structure.
definitions and the tentative conceptual model. The outcome is a refined conceptual model describing a wide range of facets of customer-perceived value. The model is, due to its comprehensive nature, proposed to be applicable for a wider scope of business-to-business relationships, although, still on the level of substantive theories since the borders of business-to-business contexts have not been exceeded.

Finally, chapter eight summarizes the study and discusses research contributions on theoretical, methodological, and managerial levels. A discussion concerning the trustworthiness of the work is included in this chapter. Suggestions for further research conclude the thesis.

Concepts, as well as abbreviations and technical terms, are explained in text or as footnotes when they first appear. Vital concepts are, in addition, compiled and presented with short descriptions in appendix I. A selection of abbreviations and terms used in the aviation industry is in addition presented in appendix J.
2. **THE THEORETICAL PLATFORM**

The theoretical frame is mainly based on service research – especially service quality – and in scholarly work concerning relationship marketing and customer-perceived value. Close connections are traced between the fields with regard to the issue of bringing value to the customer. These will be elucidated as the theoretical findings are outlined. The theoretical platform is summarized by the proposal of a tentative definition of the customer-perceived value concept, as well as a tentative conceptual model of customer-perceived value.

This chapter aims for positioning the concept of customer-perceived value into the wider context of research on services and service quality. From this point of departure, and with a frame of a total service offering and a dyadic business-to-business relationship, the facets of the concept will be explored. To the service research field, input is gathered mainly from relationship marketing and, of course, specific findings concerning the concept in focus: customer-perceived value.

The findings are outlined in the initial sections of the chapter. Important aspects are then summarized and combined to a unity formed by a tentative definition and a tentative conceptual model of customer-perceived value. These form parts of the conceptual framework that guides the empirical study. In a later stage (chapter 7), the empirical findings will be used for refinement and a more fully-developed definition and model of customer-perceived value are proposed.

### 2.1 A theoretical base extracted from service research

Service research will serve as the theoretical background against which the customer-perceived value concept is illuminated. The following sections will deal with the nature of services and relationships and their role in the total service offering.

*Services in terms of nature, relationship, and time*

Although a description of what services really are can be made a problem of its own (Lindquist & Persson, 1997), some commonly adduced characteristics will be mentioned. A service is characterized by its intangible nature and the interactive process, consisting of a series of activities, wherein the customer participates as a co-producer (e.g. Grönroos, 1990; Norling, 1993; Edvardsson, 1998). From the customer’s point of view, the service *is* the experience...
and the outcome of the whole service process. A service that is interpreted and judged by the customer in the light of her needs, demands, and expectations (Norling, 1993). The interaction process between a customer and a service provider will consequently affect the perceptions of value; value is partly a result of the process and partly a result of the outcome of the service (Edvardsson, 1998). Additionally, in a business-to-business setting, the collective perceptions of many individuals form the organization’s interpretations and judgments of the interaction (Holmlund, 1997).

The paradigm-shift in service research, from an interest in single interactions towards a focus on relationships between customers and service providers, emphasizes the process-dimension of services. The relationship is the context, framing the interactions between the parties, whilst, concurrently, being affected by the same activities (Edvardsson, 1996).

The relationship can be analyzed according to its interaction levels. In line with the IMP interaction approach, Liljander and Strandvik (1995) propose that a relationship is formed by several interaction episodes. The episodes have a clear starting and ending point. All episodes consist of acts; a single one or many. Holmlund (1997, 2004) has further developed this conceptualization when working with relationship quality in a business-to-business context. She suggests that the relationship is formed by blocks of sequences, where each sequence is comprised of several episodes. The sequences are exemplified by separate assignments or projects. Furthermore, she illuminates the role of the supply network by acknowledging it as an interaction level. The company’s partner base consists of all the firm’s relationships at a particular point of time, the supply network and other close organizations. Consequently, the companies in the supply network influence the dyad – the service provider and the customer – as do other organizations and the public environment.

It is obvious that time is an important aspect of a process-dimensioned perspective. The customer makes assessments and has expectations about the service before the process starts. Sometimes it is the first time of doing business together, implying that a relationship perhaps does not even exist at this stage. Time passes as the assignment – composed of episodes and acts – is completed. New sequences, in the form of additional assignments, can extend the scope of interactions. During this time of repeated interactions, the relationship emerges and changes in a spiral-like way as a result of the actual dealings and the customer’s reactions to these. Reactions that cause positive, neutral, or negative emotions, cognitions, and actions with the customer (Edvardsson & Strandvik, 1999), repeatedly influencing the relationship over time. The outcome of the service can sometimes be recognized during the process, sometimes when the interaction is terminated and, in other cases, not until
some time has elapsed (see for example Gummesson’s [1991, p. 148] model of service consumption during and after the process).

The total service offering

Several researchers emphasize the importance of providing “packages” to create value for the customer. A service is seldom a single isolated interaction, especially not in business markets. Normann and Ramírez (1995) argue that suppliers have to participate in the customer’s value-generating process, as it is not a single manufactured article or service that creates value, but offerings including co-operation among the parties. The conclusion made by Grönroos (2000) is that customers do not look for separate physical products or services. They want a package, a solution, to help them create a larger value in their own value-creating process.

“[...] service competition [...] is a competitive situation where the core solution is the prerequisite for success, but where the management of a number of services, together with the core solution, forms a Total Service Offering and determines whether or not the firm will be successful.” (Grönroos, 2000, p. 6)

Thus, the solution involves different parts, such as components of services, hardware, software, and sometimes processed materials, which are combined to create an offering. It can be described as a system or a value-creating offering to the customer (Gummesson, 1991) or, as above, a total service offering (Grönroos, 2000).

The service provider can use this packaging to create competitive advantages. Even if the core service (or physical product) easily can be copied by competitors, this cannot be said about a uniquely constructed service concept and service system enabling the service process. Christopher (1998) stresses the importance of customer service to differentiate the offering, as does Grönroos (2000) when emphasizing the development of all parts in a relationship to create a sustainable competitive advantage. Caution is however advised. Adding layers of services to the core service, without careful analysis of customer value and provider-costs, can lead to highly unwanted financial outcomes (Anderson & Narus, 1999).

Physical products are important parts of total service offerings. Actually, the core of the offering can be based on physical products (Grönroos, 2000). Even more traditional service businesses – such as restaurants, banks, and aircraft operators – are dependent on physical products (Gummesson, 1991), as tangibles are parts of the service’s prerequisites (Edvardsson, 1998). Of course, as information technology increasingly grows in importance, software

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27 The enumerated generic product categories are the ones specified in ISO standard SS-EN ISO 9000:2000 (Swedish Institute for Standards, 2000) to be comprised in a process where the product is the outcome.
can take equivalent, or even more important, roles as physical products included in the offering.

In addition to services and physical products, time has been recognized as a crucial competitive factor (Christopher, 1998). Issues such as shortened lead-time, reliability of lead-times, and shortened life cycle time are commonly discussed and demanded by business-to-business customers. Though it is debatable as to whether this should be included in some service component or not, I prefer at the present to distinguish time as an important and separate factor for succeeding in competition. The total service offering is consequently framed by different aspects of time.

The relationship is equally important vis-à-vis total service offerings, as it is to single services. It is perhaps even more important in a business-to-business context where the involved parties often have long-term agreements of cooperation. The relationship frames all events. However, it is important to recognize that a relationship does not materialize from nothing. It has to be earned by the service provider and is created through interactions and communications between the members of the two organizations (Grönroos, 2000).

Today certain service providers and suppliers aim to provide complete functions when they develop and refine their total service offerings. The total care package “thrust by the hour” in the aircraft engine maintenance field is one example (Aircraft Technology Engineering & Maintenance, 2000); another one could be to provide a manufacturing function, such as when a supplier is providing an entire manufacturing plant to its customers, e.g. performance contracting28. Hence, these total service offerings will include an abundance of goods, services, information technology, knowledge, and other forms of information, connected to each other in an intricate manner to provide the customer value. In addition, these kinds of offerings are often priced according to operational availability and response time in case of failure (Oliva & Kallenberg, 2003), i.e. a sort of financial service involving a risk transfer from customer to service provider.

From a managerial point of view, it is important to recognize the different ingredients of the total service offering and to compose them in a value-creating and profitable way. Grönroos (2000) has described the basic service package as consisting of a core service, facilitating services, and supporting

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28 Defined by Buse et al. (2001, p. 3): “Performance contracting means that a supplier or a cooperation of suppliers renders a customized bundle of technical infrastructure with several add-on services within a frame-giving and long-lasting contract basing upon the idea that the customer acts a user of the infrastructure, only paying for the performance delivered.”
services. The first category embraces the idea of the company’s existence in the market, while the next is essential to make the offering accessible for the customer. The third category, the supporting services, is the parts of the offering that are not really necessary, but which differentiate it from those of competitor’s and/or increase its value. The complementary services are not always visible for the customer, as services can be both “hidden” and “non-billable”. When the basic service package is combined with elements to provide accessibility, interaction, and customer participation, i.e. process-components necessary for service production and delivery, the augmented service offering has been created.

Shostack (1984) provided an early example of the idea behind the total service offering. She illustrated the combination of goods and services into packages by the use of the now-famous molecule metaphor, where the core entity – material or immaterial – is surrounded by different combinations of likewise material or immaterial elements. As with molecules, the switching of a single element will create a totally new substance, in this case a new total service offering.

Thus, the construction of the total service offering is of utmost importance. The combination of facilitating and supporting services to complement the core service will result in a unique set of features that enhances the value of the offering more than the single components themselves together. These product features are the essence of a total service offering and express how the customer’s needs are satisfied. The product features are, in addition, influenced by the process-components of the offering (the augmented service offering, mentioned above) and the supplier’s prerequisites for the service. Edvardsson (1998) has emphasized that the outcome and process of the service are dependent on the prerequisites, i.e. the resources built up to make the service possible. Consequently, the total service offering is dependent on the service provider’s prerequisites to deliver value.

Summarizing

An important strategy in business-to-business settings is to create value for the customer by providing total service offerings in a co-operative manner that creates win-win situations for both parties of the dyad and further in the

Grönroos (2000) emphasizes that all three types of services can consist of physical products and software, and not only services.

Feature is a word that draws attention to the characteristics of an offering; a word that distills the essence. By including the entire and uniquely composed total service offering together with the service provider’s prerequisites in the concept “product features”, I differentiate this concept from what Grönroos (2000, p. 143) identifies as “offering features”, i.e. features of a total service offering that distinguish it from another offering or from competing alternatives.
supply network. However, one conclusion to be drawn from the account above is that the total service offering is complex, hard to overview and quantify and, consequently, difficult to value and price. This circumstance ought to be valid both from the service provider’s and the customer’s point of view. Hence, collaboration and openness is needed to elucidate and illuminate all facets of value.

Based on the facts accounted for earlier, I argue that any framework designed to analyze customer-perceived value must reflect the following aspects: a service process and a service outcome as judged by the customer, a relationship perspective, time, and the packaging of unique product features into a total service offering.

2.2 Positioning the customer-perceived value concept

Value is a concept that has many meanings and is used in a number of disciplines such as accounting, finance, economics, purchasing, and marketing (Wilson & Jantrania, 1994). The current focus lies just within the realm of marketing, which ought to narrow down the possible interpretations somewhat, but, nevertheless, a number of applications could be found. Additionally, “value” can be found as a part of a compound word, illustrating different aspects of value and the value-creating processes. I will start to define the perspective of customer-perceived value and then discuss definitions of the concept at issue. A selection of previous definitions is presented in appendix A.

Perspectives on value

According to Ulaga (2001) there are three different perspectives from which the customer value concept can be regarded. The buyer’s perspective deals with the issue of how the supplier creates value for his customers, e.g. how customers perceive the value compared to other offerings and how to assess this value. The second perspective, the seller’s, concerns the management of customer equity, e.g. how to preserve and attract customers and also assessments of their value as a key asset. Finally, the buyer-seller perspective focuses on jointly created value in collaboration between parties.

Also Woodruff (1997) has exemplified the notion of value by introducing three value perspectives – the value of an organization as its worth to its owners, high-value customers (corresponding to Ulaga’s seller’s perspective) and customer value. The latter adopts the buyer’s perspective and concerns the customer’s needs and expectations when buying and using an offering. Woodruff, however, does not include the comparison to competitors as Ulaga does. This is a matter that will re-appear below. At present, however, it is sufficient, to emphasize that the perspective of this study is that of the buyer.
Definitions of value

Customer-perceived value is the customer’s interpretation of the perceived “net-worth” acquired through a purchase. In this study, the concept is tied to a total service offering in a dyadic business-to-business relationship. This explanation excludes values on a higher level of abstraction – individual (or organizationally) held core beliefs or higher order goals (Flint et al., 1997). In accordance with the buyer’s perspective, the vitally important interpretation of an offering’s value is the one made by the customer. This is also a shared meaning among authors defining the value concept, e.g. Zeithaml’s (1988) definition from the consumer field:

“[..] perceived value is the consumer’s overall assessment of the utility of a product based on what is received and what is given” (p. 14),

as well as that offered by Ulaga and Chacour (2001) to be applicable in industrial markets

“[..] the trade-off between the multiple benefits and sacrifices of a supplier’s offering, as perceived by key decision makers in the customer’s organization, and taking into consideration the available alternative suppliers’ offerings in a specific-use situation” (p. 530).

The quotations illustrate the typical trade-off between a get-component and give-component found in definitions from several research fields and settings. The give-component is commonly considered to consist of sacrifices in the form of price and other monetary, as well as non-monetary, costs. The get-component is, on the other hand, expressed in a wider range of terms.

A common problem with value definitions is, as Woodruff (1997) has drawn attention to, the fact that they have been constructed from other, not particularly well-defined concepts, such as quality, benefits, and utilities. The sorts of utilities or benefits are often not specified. The value definition suggested by Woodruff himself considers this by proposing a specification of the benefits: product attributes, attribute performances, and consequences arising from use. Anderson et al.’s (1993) definition of value in business markets is also an exception since it emphasizes that the benefits received by a customer, in exchange for the price paid, are of an economic, technical, service, and social nature and are expressed in monetary units.

One area where there are dissenting opinions is whether some sort of comparison should be made with competing offerings. Gale (1994) states that this is the case: “Customer value is market-perceived quality adjusted for the relative price of your product” (p. xiv). Also Ulaga and Chacour (2001) and Anderson et al. (1993) argue that alternative suppliers’ offerings are taken into consideration in the evaluation process. However, I would argue that whether or not a competitor comparison should be incorporated in the value defini-
tion, depends on the reason why customer-perceived value is assessed. The practical purposes for assessing customer-perceived value is an area that I will develop further, later in this chapter.

The service perspective has influenced the customer-perceived value concept by recognizing that value can be created both in episodes and on a relationship level (Liljander & Strandvik, 1995). The relationship in itself can in fact also affect the value perceived in episodes. Ravald and Grönroos (1996) have defined “total episode value” as a function of both episode and relationship value.

The aspect of time

Time was recognized, above, as an important factor in a context of services and so it is when value is discussed (examples in appendix D). When does the customer carry out this evaluation – before, during, or after taking advantage of the offering? It is obvious that the evaluation will differ depending on point of time. Some scholars have specifically addressed this problem. Woodruff (1997), for example, describes expectations of a product as desired customer value in contrast to the actual received value. The latter is an assessment of what value that really was delivered by the supplier. Flint et al. (1997) designate this evaluation of outcome as value judgments, where benefits and sacrifices in a specific use-situation are valued against each other.

Another interesting account of the time aspect is made by Parasuraman and Grewal (2000, p.169). They have identified four time-connected components of perceived value in the literature. The situation before purchase is illustrated by the acquisition value – what the buyer believes he will get in terms of benefits relative to monetary costs when buying a product/service. The transaction value reflects the purchase situation and “the pleasure of getting a good deal”, while in-use value reflects the utilities obtained from using the offering. Finally, redemption value comprises the value remaining at the end of the product's lifetime or at the termination of services.

Lapierre’s (1997) investigation of business-to-business professional services ended in a conceptualization with two levels of value; value exchange during the interaction process and value in use as the remaining outcome of the services.

Another aspect of time is connected to the delivery of the offering. A matter that was discussed in the beginning of this chapter connected to the total service offering, e.g. the importance of the reliability of lead-times. Heinonen (2004) operationalizes customer-perceived value to be influenced by “when” and “where”. Variables that are concluded to be of great importance to the studied consumers of online bank services. Thus, a temporal and a spatial di-
mension connected to the service delivery are added, separate from the specific process and outcome of the service (the “what” and “how”).

Thus, time has been dealt with from three perspectives in research concerning customer-perceived value. First, point of time for the value-creation itself – value created during the interaction process and then the outcome of the process. Secondly, point of time for the assessment of desired and delivered value. And, thirdly, connected to when a service is delivered, i.e. a temporal dimension related to the specific offering.

As I see it, and especially in the context of lengthy service assignments, customers conduct assessments of value repeatedly, throughout the interaction process. Holmlund (1997) has found that evaluations of relationship quality are made continuously, implying changing evaluations over time, i.e. a dynamic phenomenon. In accordance with Parasuraman and Grewal (2000), I would argue that customer-perceived value is also dynamic in that the perception of value is subject to the same changing evaluations as relationship quality. The customer makes constant revisions and confirmations of the value perception, as compared to earlier judgments and expectations. From the service provider’s point of view, it is therefore important to market for reasonable expectations and communicate value before, during, and after the service process. To be able to do so, a deep knowledge of the customer and his value-creation process is necessary.

**Summarizing**

The customer-perceived value concept contains the customer’s assessment of the trade-off between the perceived worth of benefits and the perceived sacrifices. Applying a relationship perspective involves an acknowledgement of different interaction levels in which value is created and evaluated. Depending on practical purposes, it is sometimes appropriate to include a comparison to competing offerings in the assessment.

Sacrifices consist of monetary costs and non-monetary, i.e. psychological, costs. Benefits are usually not further defined in literature, a shortcoming when addressing the issue of practical use. The above-mentioned work of Woodruff (1997) and Anderson et al. (1993) are exceptions, as these scholars attempt to specify types of benefits in their definitions. Of course, the type of market (e.g., consumer, industry, professional services) may, at least to some extent, influence the types of benefits that can be empirically identified.

Time, related to customer-perceived value, is important in three respects. When is the value created? When is it assessed? And, finally, when is the offering delivered, e.g. expressed in lead-times? The creation of value arises both during the interaction process and as an outcome of the offering – in-use
value and redemption value. Assessments of the value are thus made before, during, and after the interaction process in which the service is created.

2.3 The connection between customer-perceived value and satisfaction

It has been questioned if there is really any difference between customer-perceived value and satisfaction (Parasuraman, 1997). The recent investigation by Eggert and Ulaga (2002) seems to have disentangled that issue, at least in business-to-business settings. They conclude that the concepts are two distinct, though complementary, constructs. Satisfaction is the result of an affective evaluation after purchase by existing customers. Customer-perceived value, on the other hand, is the outcome of a cognitive process that can be made at any time, by existing and potential customers.

Whether perceptions of customer value are always strictly cognitive I doubt, but on the other hand, the time aspect contained in the explanations by Eggert and Ulaga is, as I see it, of importance. To perceive value ought to be a precondition to be able to make an affective judgment of satisfaction. On a time line, the perception of value comes first and then the evaluation of degree of satisfaction takes place. This is also in accordance with the findings of Storbacka et al. (1994), figure 1-2. Thus, I agree upon the statements by Eggert and Ulaga (2002), however with a question mark concerning the strictly cognitive nature of value perceptions.

It has been concluded from empirical studies that the link between customer-perceived value and satisfaction exists. Furthermore, the link continues as satisfaction is found to be the mediator of behavioral intentions (Patterson & Spreng, 1997; McDougall & Levesque, 2000; Eggert & Ulaga, 2002). From a managerial point of view, it is thus well-justified to emphasize increased customer-perceived value.

2.4 The connection between customer-perceived value and service quality

Value-based definitions of quality were recognized in the field of product quality over forty years ago.

“Quality means best for certain customer conditions. These conditions are (a) the actual use and (b) the selling price of the product.” (Feigenbaum, 1961, p. 1, in Garvin, 1988, p. 41)

Even though a recent study by Bolton et al. (2003) state the opposite, that customer-perceived value mediates the effects of satisfaction on behavioral intentions.
Quality should in this meaning be interpreted as product performance at an acceptable price or cost. This approach has, however, been questioned. Garvin (1988) argues that the blending of excellence and worth results in a subjective hybrid-concept without distinct limits, “affordable excellence”, which, consequently, has been considered hard to use in practice. During the nineties that view has altered. Customer value management, with the market-perceived quality related to price as an important ingredient, has been recognized as a path to success (Gale, 1994).

Service quality is usually defined as the correspondence between the service and the customer's needs and requirements, as judged by the customer (Edvardsson, 1998) and as a function of expected and experienced service (Norling & Olsen, 1994). Today there seems to be a consensus among service researchers that service quality is a means to reach the goal of services – delivering value to the customers (e.g. Berry & Parasuraman, 1993; Grönroos, 2000).

**Service quality – a part of the value concept**

There is a close relationship between service quality and customer-perceived value. This was, however, not visible in the early years of service research. The focus was then concentrated on the conceptualization of service quality, which was seen as a concept illustrating the customers’ overall judgment of the service process and outcome. Accordingly, there were no price- or value-elements included in early service quality models (e.g. Grönroos, 1984; Berry et al., 1988; Gummesson, 1991). Since then, that view has gradually been revised. Price and other value-carrying elements are included to reflect a more complete view of the customers' impressions of an offering, a supplier, or a relationship.

Service quality is, according to the prevailing view in service quality research, seen as a “get-component” of value (Liljander, 1995). Brady and Cronin (2001) support that view, as they acknowledge that service quality is the benefit that, together with sacrifices, constitutes a customer's value assessment.

I want to emphasize some conceptual models of service and relationship quality below. The aim is to gather input for the continued study, both as regards guidance for the empirical part and as a platform to fall back on for abductive reasoning. I have made the selection according to my view of the models’ importance for the development of service quality research. The connections to customer-perceived value will be made clear.
Quality models within service research

Grönroos (1984) was the first scholar to conceptualize perceived service quality and has had a great influence on subsequent service research during recent decades. Figure 2-1\textsuperscript{32} illustrates Grönroos’ model with its six main components influencing a customer’s perception of service quality.

The quality of a service is not just determined by what the customer is left with when the service interaction is completed. This technical quality is complemented by the functional quality, i.e. how the customer experiences the service process. Whilst the technical quality is said to be rather objectively evaluated, the functional quality is, to a great extent, subjectively perceived. However, the company’s image – corporate and/or local – influences the quality experience as all the perceptions are filtered through it. In addition, image as well as market communication, word-of-mouth, and customer needs will influence the level of expected quality. Thus, the total perceived quality is not just the outcome of the technical and the functional quality, but is rather understood as the gap between expected and experienced quality.

![Figure 2-1. Grönroos’ model of perceived service quality (Grönroos, 1990, p. 41).](image)

No elements of value are included in the total perceived quality model in figure 2-1. It is rather the benefit side of a customer-perceived value that is illustrated. In 2001 Grönroos made an interesting comment concerning the

\textsuperscript{32} The model in figure 2-1 is retrieved from a publication by Grönroos 1990. The content is however in essence the same as in the one from 1984. The layout has been refined and the concepts “Expected Quality” and “Experienced Quality” were, in the 1984 model, labeled “Expected Service” and “Perceived Service” respectively.
early service quality research. He admits that it perhaps was a mistake to use the label “perceived service quality”. It was never his intention that the concept should be used for measurement, thus perceived service features would have been a better terminology. The remark is well in line with the acknowledgement that customers use a broader ground of components, e.g. price, for evaluations that lead to overall impressions and guide their behavior.

Conceptual models, within service quality research, incorporating some sort of value, are to be found since the beginning of the nineties. Bolton and Drew introduced the service value concept in an extended service quality model in 1991. They proposed that customer satisfaction precedes service quality, which in turn – together with sacrifices and customer characteristics – builds service value. However, other scholars conclude that service quality and value are antecedents of satisfaction, as was discussed in paragraph 2.3.

Parasuraman, Zeithaml, and Berry presented, in 1994, their first model including price, thus acknowledging the importance of value perceptions. They argue that a function of service quality, product quality, and price leads to customer satisfaction on a transaction level. Several transactions constitute the customer’s global impressions of a firm in terms of satisfaction, service quality, product quality, and price. This aspect of time, i.e. transaction level and global impression, is further developed through service researchers’ growing interest in relationships and dynamic models of quality.

Liljander and Strandvik (1995) have conceptualized relationship quality recognizing the importance of customer-perceived value (figure 2-2, p. 35). They define value as a function of quality and sacrifices. Value is considered on both an episode and a relationship level and leads to episode and relationship satisfaction respectively.

The evaluation process in figure 2-2 is in line with Grönroos (1984) early work, where actual performance is compared to an expectation – here illustrated by the different types of comparison standards that influence expecta-

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33 Models seizing aspects of variation, e.g. changes over time or among individuals.
34 Due to a study on the role of emotions related to service satisfaction (Liljander & Strandvik, 1996), Liljander (1995) suggests that emotions tentatively could be inserted between value and satisfaction in the relationship quality model. “Emotions could be either a mediator or an independent variable contributing to the explanation of satisfaction together with the cognitive evaluation of service quality. [...] emotions are likely to be found during all phases of the service consumption [...].” (p. 219). She emphasizes, however, the need of further investigations on the role of emotions.
35 Liljander (1995, p. 45) identifies eleven types of comparison standards when reviewing satisfaction and service quality research: (1) predictive expectations, (2) brand norm, (3) product type norm, (4) best brand norm, (5) desired or ideal service, (6) a minimum tolerable level or adequate service, (7) deserved service, (8) equity, (9) promises, (10) needs and values, and (11) normative deficit. No. 2, 3, and 4 can also be called experience-based norms.
The disconfirmation process results in a gap that goes through a zone of tolerance\(^\text{36}\) to form an episode value or a relationship value. Behavior is, in Liljander and Strandvik’s model, a consequence of satisfaction. As accounted for above, the link between value, satisfaction, and behavioral intention has been warranted by contemporary empirical studies (Patterson & Spreng, 1997; McDougall & Levesque, 2000; Eggert & Ulaga, 2002).

\(^{36}\) The zone of tolerance is a concept I will return to later in this section.
The perceived relationship quality-model (the PRQ-model, figure 2-3) proposed by Holmlund (1997) is an example of a recent model that does not include value. Quality is perceived on several interaction levels – actions, episodes, sequences, and relationship – in two domains: outcome and interaction process. The levels of interaction are linked to each other as lower level processes and their outcomes form the process on the next level. The suggestion of a process and an outcome domain are in accordance with Grönroos’ (1984) suggestion of technical quality (what the customer has received when the interaction is completed) and functional quality (how the customer experiences the service process). The quality factors in each domain are divided into technical, social, and economic dimensions. Accordingly, Holmlund argues that economic factors, including the relationship between benefits and costs, are quality, a line of reasoning that leads to confusion with the value concept. Apart from this ambiguity, it is a thorough model.

In contrast to Liljander and Strandvik (1995), Holmlund (1997) investigates a business-to-business context. This fact implies that Holmlund considers relationship quality in business markets to be built upon the perceptions of many individuals, with differing scopes of perception, and influenced by contacts with other organizations within the supply network (figure 2-3). The statement is important and I will bring it with me to the coming tentative conceptual model. Additionally, the four interaction levels will be incorporated in the model.

Figure 2-3. The PRQ-model (Holmlund, 1997, p. 162).

Just as Liljander and Strandvik (1995), Holmlund (1997) includes an evaluation process in her conceptualization. Perceived relationship quality is an out-
come of a comparison between experiences and comparison standards at each level of interaction. Järvelin (2001) has used the relationship perspective to further study the evaluation processes of relationship quality in a business-to-business setting. She identifies several types of evaluation processes that take place on the episode and relationship levels: standardized, systematic, unofficial, project evaluations, and economic evaluations. In each process different comparison standards are used based on technical standards, prior experiences, cultural norms and values, goals, and promises. Adjusting processes moderate the total outcome of comparisons leading to relationship quality perceptions. Thus, evaluation processes and comparison standards ought to be involved when a customer makes a judgment about customer-perceived value.

The discussion about evaluation processes leads further to a concept, briefly touched upon before (see the work of Liljander & Strandvik, 1995, figure 2-2), namely tolerance zones. The zone of tolerance (figure 2-4) illustrates the range of performance of a service that a customer considers satisfactory (Berry & Parasuraman, 1993).

![Figure 2-4. The zone of tolerance (Berry & Parasuraman, 1993, p. 159).](image)

The tolerance zone is demarcated by the lower level of an adequate service, i.e. expectations of acceptable performance, and the upper level of desired service, i.e. what the customer rather hopes to get. As long as the performance is kept within these limits, the customer will be satisfied. However, the width of the tolerance zone varies between different services and, in addition, for individual customers (Strandvik, 1994). The zone of tolerance is a concept retrieved from consumer research, but ought to be possible to apply to business markets and, in addition, to be applicable for perceptions of customer value.
Summarizing

Service researchers have recognized value as an important element in connection to service and relationship quality models. Service quality is seen as the benefit-part of value, or – in terms of total service offerings – as a part of the benefits. Adopting a relationship perspective implies that value is created on several levels of interaction. Judgments by customers of received quality are a result of evaluation processes with the use of comparisons standards. The zone of tolerance illustrates the space between levels in which the outcome of a service process has to be found in order to achieve an acceptable perceived quality.

2.5 Research focusing customer-perceived value

Scholars have previously proposed a few conceptualizations of the customer-perceived value concept. Some empirical investigations have also been made in order to identify the elements creating a customer’s perception of value. This research, outlined below, contributes to the platform for my further work. Thus, it provides an important basis in order to extend the field of knowledge of customer-perceived value.

Conceptualizations and empirical investigations of customers’ value perceptions

Parasuraman and Grewal (2000), with roots in the service research field, present an expanded model of customer loyalty where perceived value is seen as a function of service quality, product quality, and price. The model includes time aspects since value is connected to time of evaluation in terms of acquisition and transaction value, and connected to time for value creation in terms of in-use and redemption value. This is a piece of work that does not, however, go into any deeper empirical investigation of the constituents of customer-perceived value, as is done in the following four studies.

Lapière’s focus is the value creating process when conceptualizing service value for the customer in a model from 1997 (figure 2-5, below). The model is developed from a case study within the technical consulting services; an industry characterized by the production of information that, in turn, is used by its customers to produce something else. Lapière (1997) approaches value from the perspective of time – first, value created during the interaction process (first level – value exchange) and then, the remaining result of the service at the end of the interaction (second level – value in use). Her division of the

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37 See also appendix C for a brief review of research focusing customer-perceived value.
38 In Lapière’s (1997) study, elements building value on the first level of value exchange are categorized under technical quality, functional quality, relational variables, and image. On the
origin of value in a process and an outcome part is in line with the service quality model of Grönroos (1984) and the relationship quality model by Holmlund (1997).

In a subsequent quantitative study – focusing information technology services bought by industrial customers within three service sectors – Lapierre (2000) investigates customer-perceived value by using a matrix of scope and domain. The familiar benefits and sacrifices constitute the domain, while scope is built up of product, service, and relationship. Thirteen factors\textsuperscript{39} were identified as drivers of value and located in the matrix. The result of the study supports the division of value drivers in terms of benefits and sacrifices, as well as the idea that value drivers are product, service, and relationship related.

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Figure 2-5. The value creation process – professional services to organizational customers (Lapierre, 1997, p. 390).

\textsuperscript{39} The identified value drivers in the benefit domain are Alternative solutions, Product quality, Product customization, Responsiveness, Flexibility, Reliability, Technical competence, Image, Trust, and Solidarity, and in the sacrifice domain Price, Time/effort/energy, and Conflict.
Ulaga and Chacour (2001) investigate customer-perceived value by a “customer value audit” (CVA) – a study of perceived value by the international customers of a chemical industry. Value, here, is a function of quality and price, where the former is composed by product, service, and promotion related components. Each of these components is operationalized by industry specific attributes that are measured compared to competitors.

The quite recently published investigation by Ulaga (2003) adds valuable empirically grounded knowledge about specific elements building customer-perceived value in industrial settings, more exactly in manufacturer - supplier relationships. Using a grounded theory based approach, Ulaga identifies eight relationship value drivers, each consisting of three or four subdimensions. Six of the value drivers are found on the benefit side and two constitute the sacrifice part. Service related drivers, such as Service support and Supplier know-how, are found among the value drivers on the benefit side, as well as a more relationship based driver – Personal interaction.

Time is present in Ulaga’s description of value, but is here connected to the relationship and the offering – illustrated by the value drivers Delivery and Time-to-Market. However, perhaps due to the fact that ongoing relationships are investigated, time is neither present when it comes to deal with point of time for value creation nor is point of time for value assessment emphasized (c.p. Lapierre, 1997; Parasuraman & Grewal, 2000).

The connections between the conceptualizations of customer-perceived value and the ones concerning service quality are several. The idea of service quality as an element that constitutes customer-perceived value is commonly recognized both from a customer-perceived value and a service quality perspective. This is evident also when examining individual factors proposed to constitute the customer’s perceptions. For example reliability is a service-related component found in customer value research (Lapierre, 2000; Ulaga & Chacour, 2001) as well as in service quality research (Berry & Parasuraman, 1993) and relationship research (Holmlund, 1997).

The works by Parasuraman and Grewal (2000), Lapierre (2000), Ulaga and Chacour (2001), and Ulaga (2003) share a common ground. Namely the fact that the offerings in focus are composed of both goods and service ingredi-

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40 With reference to Payne and Holt (1999), Ulaga chooses to use the concept “relationship value” when referring to customer-perceived value from a relationship marketing perspective, i.e. value derived from a relationship (as opposed to single transactions) with a supplier. However, I argue that this re-labeling is confusing, as the perspective of value becomes unclear.

41 The relationship value drivers identified by Ulaga (2003, p. 682) are Product quality, Service support, Delivery, Supplier know-how, Time-to-market, Personal interaction, Direct product costs (price), and Process costs.
ents, i.e. an advance towards total service offerings. Furthermore, Lapierre’s model from 1997 and Parasuraman and Grewal’s from 2000 are conceptualizations of customer-perceived value considering the time aspect, i.e. these are dynamic models. The three other studies (Lapierre, 2000; Ulaga & Chacour, 2001; Ulaga, 2003) consist of static evaluations illustrating factors building perceived value at a certain point of time.

Some studies on perceived value based in industrial network theory

The following studies do not, unlike the ones accounted for above, involve the disentanglement of the specific elements building customer-perceived value from an offering and a relationship. Instead, other angles to investigate value within business-to-business relationships are chosen. A common denominator of these studies is their base in the industrial network theory advocated by the IMP Group.

Walter et al. (2002) empirically investigate relationship value by means of a quantitative study in the German industrial sector. They find that a selection of relationship functions are variables that, together with trust, can explain a large part of a customer’s value perception. Functions are then defined as a “supplier’s contribution to the value increase in the customer’s organization and the whole network” (p. 4). The purchasing functions, i.e. cost reduction, quality, and volume, should have an immediate influence on the customer’s economic goals, while the network functions, i.e. market (providing new contacts), scout (passing on relevant information), and innovation development, contribute indirectly within a longer frame of time. When availability of alternative suppliers is high, the relevance of the functions becomes higher – and the better the fulfillment of the functions, the higher levels of trust and relationship value are achieved.

Although the specific elements of the total service offering are not discernible within this piece of work, the relationship framing the offering is emphasized – not least through the prominence of trust. According to Håkansson and Snehota (1995), trust is developed in a social process along with the relationship, although it is not only based on direct experiences with the other focal party as comparisons are made with interactions taking place in other relationships. Consequently, evaluations of perceptions of value are done against expectations where interactions with other relationships become com-

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42 Customer-perceived value is labeled relationship value in their study; according to the authors in order to underline the focus of value as created in a specific supplier relationship.

43 Although emphasized as an important concept, a common definition of trust is not available whereas several types – ranging from individual to organizational trust – are considered within literature (Cousins & Stanwix, 2001), see appendix E.
parison standards. This is in line with Holmlund’s (1997) work on perceived relationship quality within business relationships.

When referring to relationship value, the widely quoted article by Wilson and Jantrania (1994) has to be considered, although their perspective on value is somewhat vague. The authors were pioneers when bringing the conceptualization of value into a context of business relationships. Their literature findings are concluded by a conceptual framework of relationship value. The framework contains three dimensions: economic, strategic, and psychological/behavioral. The latter of these contains, amongst other variables, the previously discussed trust. Sacrifices are not explicitly included in the framework, but discussed in terms of price. The authors argue that the opportunities to measure value created in a relationship range from a rather easily assessed economic value, to the more difficult assessment of strategic value, and finally to the, presumably only in qualitative terms, attainable value from psychological/behavioral elements.

What I above called vagueness refers to whether a buyer’s perspective of customer-perceived value or a buyer-seller perspective of value co-creation is adopted. Wilson and Jantrania (1994) themselves emphasize the joint creation of value, e.g. by arguing that “any relationship or strategic alliance creates some value to both partners” (p. 63) and that the crux of the matter is how this value could be shared between the parties, although in some examples a buyer’s perspective is illustrated. My understanding of the text is that their focus is value created for both parties within a relationship, i.e. a joint buyer-seller perspective to value.

I continue this overview by referring to Ford and McDowell’s (1999) case study of value in relationships. They cover both a relationship level and a network level of analysis when investigating value perceptions of customers and suppliers respectively. The focus of their empirical investigation is the value of specific effects of action performed by a focal company in a relationship. From the customer’s perspective, value is considered from effects in the relationship, e.g. how transactions between the parties develop – more, fewer, alteration of their nature etc. – as a result of the action in focus. Additionally, effects on the relationship are analyzed, e.g. changes in mutual dependence and trust between the parties, elements that, at least initially, are less easily identifiable in the short run. To conclude, even if this study takes a holistic grasp concerning levels and units of analysis to consider influences of value – the perspective to value perceptions within a relationship is not holistic since only separate actions are considered.

The level of relationship in terms of the episode, relationship and network level, is related to economic and social elements of value in Mandják et al.’s
(2003) study of relationship value. These relationship levels are comparable with three of the five interaction levels suggested by Holmlund (1997, 2004) i.e. episode, relationship, and partner base. The authors interviewed Hungarian business managers to find out what was perceived to be important in order to gain value from a relationship. In my view, the focus of the study is rather on the value of having a relationship in general terms than on the constituents building a value perception of a specific offering and relationship.

Another angle to value has been considered by Mikkelsen and Hedaa (2003). They consider perceived value to be influenced by the customer’s overall strategic approach and the nature of the supplier’s offering, i.e. product category. Their paper delineates the differing impact of dimensions of customer-perceived value – price, product fit, service fit, and relationship fit – dependent on the strategic approach adopted by the customer. Thus, here we find the basic components of value – sacrifices and benefits – where benefits have been related to the parts of an offering – product and service – framed by the relationship. On the other hand, the specific constituents of each dimension of value creation are not elucidated.

I also want to mention the study conducted by Möller and Törrönen (2003). They address what they describe as a “mirror problem” to customer-perceived value (p. 110). Their focus is on how the supplier creates value for the customer, i.e. not the customer’s actual perception. The value creation potential of a supplier is determined from different functions that provide value either directly or indirectly (cp. Walter et al., 2002, above). These are combined into a conceptual framework illuminating the main dimensions of supplier value: supplier-efficiency, supplier-effectiveness, and supplier-network functions. Thus, this alternative approach provides customers with a framework that is useful when evaluating suppliers and, accordingly, it supports supplier portfolio management. But of course, how a supplier acts to create value is also the basis for the customer’s value perception.

To summarize some impressions from this overview, I can conclude that it is the relationship that is emphasized and not the specifics from a total service offering. I have, in these studies, found no holistic delineations of specific attributes building customer-perceived value from an offering provided within a dyadic relationship. On the other hand, just as within service research, psychological aspects of value are considered as well as interaction levels of the relationship. Finally, I note the use of comparison standards when evaluations of

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44 Mandjak et al. (2003) covered however not only the buyer’s perspective to customer value but also the seller’s, as they posed questions concerning both buyer and seller relationships in the same interview.
value are made compared to expectations – expectations influenced by interactions with alternative suppliers.

Comparisons with alternatives and calculations of value

When value definitions were discussed earlier, it was recognized that some researchers advocated a comparison to competing offerings to be included in the customer-perceived value concept. Ulaga and Chacour (2001) and Walter et al.’s (2002) studies take comparisons to different alternatives into consideration. Ulaga and Chacour propose, in addition, a managerial tool to capture business-to-business customers’ value perceptions as a weighted index, where the focal company is compared to its competitors.

However, the competitor comparison is not included by Hogan (2001). Hogan adopts the idea that value in a relationship should be measured in monetary terms (in accordance with Anderson et al., 1993, and Anderson & Narus, 1999). Hogan’s monetary approach is proposed as a technique for practical measurement where the relationship value is formed by benefits, costs, and investments. These are distributed to the different parts of the relationship, comparable to an approach proceeding from the components of a total service offering. The value is calculated as the net present value of a probability distribution.

Grönroos (2000) has proposed a similar calculation method as Hogan to quantify the value of a total service offering from a customer’s perspective. The difference is constituted by the probability distribution calculation, which is not included by Grönroos. The components of Grönroos’ monetary value quantification are revenue benefits (i.e. sales increases), cost benefits (i.e. cost savings due to the choice of a certain offering), and customer investments. The latter implies additional costs in order to take advantage of the offering, i.e. a kind of cost connected to use of the offering. However, the psychological costs Grönroos (2000) discusses – arising when a customer has concerns and feels that he cannot trust a service provider – would not be possible to include in a monetary calculation. Nor would the presumed opposite, i.e. psychological benefits.

Purpose of investigating customer-perceived value

What is the purpose of investigating customer-perceived value? In light of the conceptual models and calculation techniques accounted for above, this is a well-grounded question.

Two main research approaches have been identified; (1) Research for specific components that constitute customer-perceived value. These are illustrated in conceptual models, complemented with specifications of identified
sub-factors. While these entanglements take a holistic approach when trying to elucidate the actual value constituents, the outlined work within the industrial network approach has its focus rather on certain specific factors, e.g. different relationship functions or value as effects of a specific action. The common aim of both approaches is, primarily, an academic disentanglement of concepts involved, but still this is a necessary base for further investigation and application-development. (2) Research that aims either to provide practical methods to assess customer-perceived value by making comparisons with competitors or to propose techniques to calculate monetary customer-perceived value.

Posing the same question in practice reveals three primary purposes for supplier firms to assess value (Anderson et al., 1993); (A) Product development. (B) Value audits, i.e. the value-estimation of offerings or parts of offerings. (C) Competitive strategy. In this field, knowledge is needed about the value delivered by the company versus the value propositions made by competitors. The outcome can be used, for instance, to enable a strategic marketing positioning or to allocate resources.

These practical objectives can be connected to the second, more practically oriented research approach, above. Monetary assessment techniques would be needed foremost for value audits, although they would also be useful for product development. Techniques including comparison to competitors would be needed for strategy development and product development. However, research aiming for conceptualization is necessary as a fundamental basis.

Summarizing

This theoretical overview points to further needs for empirical research concerning the customer-perceived value concept, e.g. for conceptualizations in specific settings, to focus on how to capture perceptions across several members in a buyer organization, and the development of managerial tools for the assessment of value. In addition, I would argue that the existing conceptual work does not yet fully capture the implications of the total service offering, the impact of time, and the framing relationship – important characteristics of business-to-business service offerings. Furthermore, the differing nature of customer-perceived value – qualitative and monetary – has not been comprehensively captured in the existing body of knowledge. Still, the lower level of complexity, primarily the static approach, in the practically oriented research, indicates difficulties in translating the richness of existing work to managerial tools. In the next section I will try to deal with some of these matters, as a tentative refined definition of customer-perceived value is proposed together with a tentative conceptual model.
2.6 Customer-perceived value of total service offerings – a conceptual framework

2.6.1 A tentative definition of customer-perceived value

It was stated previously that value is an interpretation of the perceived net-worth of an offering. However, a further synthesis of the customer-perceived value concept cannot be accomplished without recognizing that there are different purposes of use. The aim of use will determine whether the concept should be described in qualitative or monetary terms. The usage situation will also clarify whether a comparison to alternative offerings is appropriate or not. Consequently, I argue that a usage situation has to be reflected in the concept’s definition.

The following definition\textsuperscript{45} of customer-perceived value in business-to-business settings is tentatively proposed. It is built from the factors identified by the theoretical investigation (table 2-1) and is framed by the total service offering together with the relationship (the dyad of customer and service provider).

Customer-perceived value in business markets is the perceived net-worth of a total service offering, arising from the value in-use and redemption value.

However, it is recognized that value may be assessed from two different, but complementary approaches:

I. For the purpose of monetary value audits and product development, the net-value can be described as the monetary worth of the total service offering – built by product features and aspects of time and relationship – in terms of benefits and sacrifices (see figure 2-6-I, page 50).

II. To enable strategic marketing positioning and product development, an assessment of net-value in terms of service, physical product, and relationship quality relative price, and compared to available alternative offerings, is proposed (see figure 2-6-II, page 50).

\textsuperscript{45} The tentative definition is developed through the empirical findings and further discussed in chapter 7.
Table 2-1. Identified factors influencing the tentative definition and model of customer-perceived value.

<table>
<thead>
<tr>
<th>Customer-perceived value – previous definitions and connections to other concepts</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Buyer’s perspective</td>
</tr>
<tr>
<td>2. Net-worth of Benefits: service quality, physical product quality, and relationship quality, or product attributes, attribute performances, consequences arising from use, or economic, technical, service, social benefits expressed in monetary terms. Sacrifices: monetary and non-monetary, i.e. psychological, costs Or benefits and sacrifices expressed as revenue benefits, cost benefits, costs to use, and non-monetary, psychological, benefits and sacrifices.</td>
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<tr>
<td>3. Alternative offerings compared to competitors’ offerings, or not compared to competitors offerings</td>
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<table>
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<tr>
<th>Evaluation of perceptions</th>
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<tbody>
<tr>
<td>1. Experiences evaluated against expectations</td>
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<td>2. Expectations influenced by comparison standards</td>
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<tr>
<td>3. A zone of tolerance</td>
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<tr>
<th>Time – point of for</th>
<th>Relationship perspective</th>
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<tbody>
<tr>
<td>1. Assessment of value</td>
<td></td>
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<tr>
<td>- Before: expectations of desired value</td>
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<tr>
<td>- During: repeated revaluations</td>
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<td>- After: judgment of received value</td>
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<tr>
<td>2. Value creation</td>
<td></td>
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<tr>
<td>- Process = value in-use</td>
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<td>- Outcome = redemption value</td>
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</tr>
<tr>
<td>1. Interaction levels: Actions, Episodes, Sequences, and Relationship</td>
<td></td>
</tr>
<tr>
<td>2. Actors: Dyad, Supply network, Other organizations, and Public environment</td>
<td></td>
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<tr>
<td>3. The organizational perception consists of the many individuals’ – with differing individual scopes of perception</td>
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<tr>
<th>Total service offerings</th>
<th>Services – as components of the Total service offering</th>
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</thead>
<tbody>
<tr>
<td>1. Value creating offerings building product features and consisting of:</td>
<td></td>
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<tr>
<td>- Core + facilitating + supporting services (or physical products)</td>
<td></td>
</tr>
<tr>
<td>- Services, software, hardware, processed materials</td>
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<tr>
<td>2. Process-components to provide accessibility, interaction, and customer participation</td>
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<td>3. Time, e.g. lead-time</td>
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<td>4. Framed by relationship adding value</td>
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<tr>
<td>1. Interactive process</td>
<td></td>
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<tr>
<td>2. Prerequisites for the process</td>
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<td>3. Co-production supplier – customer</td>
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<td>4. Outcome as interaction result</td>
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<tr>
<th>Purpose of investigation – positioning of</th>
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<tr>
<td>1. Research</td>
<td></td>
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<tr>
<td>- conceptualization</td>
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<tr>
<td>- practical tools: compared to competitors or in monetary terms</td>
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<tr>
<td>2. Practice</td>
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<td>- development of offerings</td>
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<td>- value audits of offerings or parts of offerings</td>
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<td>- competitive strategy</td>
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The definition is based on a relationship marketing perspective. It reflects customer-perceived value as an assessment made by the customer, although crucial for the service provider to understand. This assessment is of course influenced by external factors, such as other partners in the supply network, other companies and organizations, and the public environment. Such external factors influence the different comparison standard used when the perception of experienced value is evaluated against that which is expected. It is also important to recognize that, in a business-to-business setting, assessments of the organization are built by several individual perceptions.

Service research has taught us that value is created both during the interaction process and as a result of the outcome at the time when the service is
terminated. The denotations *value in-use* and *redemption value* are chosen to illustrate these two types of value. Still, it has to be emphasized that the importance of each, concerning what and how much value is created, must depend on the context, e.g. type of setting and type of business agreement.

“Net-value” should be understood in terms of a trade-off between benefits and sacrifices. Depending on the practical purpose, these benefits and sacrifices can be operationalized differently – monetary or qualitative\(^{46}\) relative to competitors – and hence appear in different guises.

In a monetary assessment (part I of the definition) all elements possible to denote in monetary units are included, and I propose that these are reflected in the benefits and costs derived from the product features of the total service offering with adjustments from time and relationship related issues. Thus, it would be possible to assess a monetary value in terms of revenue benefits (i.e. increased sales), cost benefits (i.e. cost savings), and costs to use. The latter not only incorporate customer investments (as described by Grönroos, 2000), but also direct sacrifices, such as price. This form of evaluation may be carried out by a service provider working on a new or adjusted type of offering or when negotiating with a customer for a business deal. However, psychological benefits and sacrifices cannot be captured by a monetary assessment.

A net-value compared with that of competitors is proposed to be better reflected in qualitative terms (part II of the definition) or measured by an index. This form of evaluation facilitates a strategic positioning on the actual market and consequent decisions for future competitive strategy. Further, product development processes can gain from this form of qualitative evaluation. Benefits in this context should reflect service quality, physical product quality, and relationship quality, as perceived by the customer, relative to sacrifices, both monetary and non-monetary. Of course, evaluations of value building factors can be made on their own without competitor comparison. At any rate, the latter type of investigation is a necessary pre-stage for continued comparative studies.

Objections can be made concerning the quality based definition (II) related to time. Time was proposed as an important factor influencing monetary measurements. However, I think that there is a difference in the type of evaluation. Time, e.g. in terms of deviations in lead-time or delivery promises, can rather easily be translated into monetary units, something which is also done in practice. However, in an evaluation of quality, time-related issues ought to be found among those sub-factors building the total quality impression. Accordingly, time is, in this tentative stage, omitted in the quality-based

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\(^{46}\) “Qualitative assessment” is used as an opposite to a monetary calculation of value, i.e. to denote an evaluation based in words, also possible to develop into an assessment by the use of measurement scales.
definition as a separate factor. The empirical research will explore the role of time further.

### 2.6.2 A tentative conceptual model of customer-perceived value

It is now time to summarize the theoretical platform by building a tentative conceptual model that can be used to guide me in my further investigations. I find it necessary to put together important concepts to get a clear picture of previous research connected to customer-perceived value. A summary of the theoretical findings will be useful not only for the following empirical investigation, but also for the abductive reasoning necessary to reach the intended outcome of the project.

The tentative conceptual model of customer-perceived value\(^{47}\) (figure 2-6) illustrates the complexity of the customer-perceived value concept. The two-pieced framework regards the creation and assessment of value within a relationship in a business-to-business context. It is a synthesis of the theoretical findings as outlined in previous paragraphs.

Both displays illustrate the same customer-perceived value. The division should instead reflect the different purposes for investigating customer-perceived value as outlined in previous paragraphs. Thus, the displays are complementary and can be employed independently of one another. However, it is the aim of the further empirical study to investigate this content of the model in depth, thereby building a base for refinement of the tentative conceptual model.

The acknowledgement of two different approaches to assess customer-perceived value in practice, i.e. a monetary (figure 2-6-I) and a qualitative (figure 2-6-II) approach, is a reflection of the complexity of the concept. It is the content in the ellipses under the headings “Value assessment of” that differ between the displays. The monetary assessment consists of the net-value of benefits and sacrifices arising from the product features framed by aspects of time and the relationship in itself. The product features express the essence of what the total service offering – the combination of core, facilitating and supporting services\(^{48}\) – implies for the customer, i.e. how his needs are satisfied. The qualitative assessment, on the other hand, is thought to be made of physical product quality, service quality, and relationship quality, set against sacrifices made.

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\(^{47}\) The tentative conceptual model is later developed through the findings from the empirical case. A refined conceptual model of customer-perceived value, together with a thorough account of included concepts, is presented in chapter 7.

\(^{48}\) The core, facilitating, and supporting services can consist of services, goods, and/or software.
I. Monetary approach and II. Qualitative approach

Figure 2-6. A tentative conceptual model of customer-perceived value
The relationship interaction levels are illustrated as relationships, sequences, episodes, and actions (Holmlund, 1997; 2004). Judgments of value have accordingly been recognized to be made at these different levels. Assessments of value are thus possibly done before, during, or after the termination of the dealings within a specific interaction level. It should also be noted that sequences, episodes, and actions could overlap in practice and also run parallel to each other in time.

It can be discussed whether or not some sort of comparison standard should be explicitly included in the tentative model. From the theoretical findings it became clear that evaluations with the use of comparison standards were present in business-to-business settings (e.g. Holmlund, 1997; Järvelin, 2001). However, my intention in the current empirical investigation is mainly to clarify the specific attributes from which customer-perceived value within a relationship is built, and not to investigate the actual comparison standards used. I now confine myself to conclude that comparison standards are important parts of the evaluation process, but will return later to the subject related to the discussions around the findings from the deeper analyses of the empirical study.

Satisfaction and behavioral intentions, such as loyalty, are not included in the figure for the same reasons as outlined above. The concepts were, however, previously recognized as important and by other scholars identified as to succeed value in a chain, i.e. customer-perceived value → satisfaction → behavioral intentions.

2.7 Summarizing the theoretical platform

Customer-perceived value has been recognized to be a crucial concept to master in practice as it leads to customer satisfaction and behavioral intentions such as loyalty. Previous research about the concept is distinct with regard to the core of the concept – the trade-off between benefits and sacrifices – but beyond that, several proposals with different nuances have been identified.

The main contribution from the theoretical investigation is the formation of a conceptual framework aiming at a better understanding of the multifaceted concept of customer-perceived value in a business-to-business context. The framework consists of a tentative definition of customer-perceived value and a tentative conceptual model of customer-perceived value. These contributions will guide the empirical study.

A combination of literature mainly from the fields of service research, relationship marketing, and specific findings concerning customer value has been

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49 In addition, the framework in figure 1-3 (page 12) is to be included in the conceptual framework.
used to identify the significant factors influencing the customer-perceived value concept in business markets. Total service offerings as well as long-term relationships between customer and service provider are two of these significant factors. Time is another one, and one that is growing in importance since focus is increasingly directed to lead-times, punctuality, life cycles, etc.

It has been recognized that there are different purposes for measuring customer-perceived value in practice. The different purposes have in previous research confused the value-concept. Thus, the concept customer-perceived value has been elaborated in different directions, either in monetary terms or expressed as quality perceptions, without any explicit acknowledgment of each other. The two perspectives have been found to be of equal importance and complementary to each other. My definition of customer-perceived value and my model consider this by including both and positioning them according to purpose.

The perspective of the customer-perceived value concept is that of the customer, although it is used by the service supplier to assess and enhance delivered value. On the customer's side value assessments of offerings are a natural part of businesses; evaluating suppliers and relations, comparing quotations, negotiating to achieve the best available terms, and so on. Yet, I argue that total service offerings in business markets are complex. It is rather difficult for a customer to interpret all aspects of it in terms of value. Accordingly, it is important for a service provider to assess customer value and then to visualize and communicate it to the customer.

It is now time to bring this chapter to an end, as the aim of building a theoretical platform for further studied has been attained. Next, the account of the research design follows.
3. THE RESEARCH DESIGN

The research design, i.e. the approach taken to investigate customer-perceived value, is described in this chapter. Issues such as preunderstanding and special considerations conducting research as an industrial Ph.D. student are also discussed.

3.1 Issues connected to research design

3.1.1 Design vs. strategy

The researcher is linked to the empirical world by the research design. The theoretical paradigms form the starting point and guide the researcher further on the path, through the research strategy to the specific methods for collecting and analyzing the empirical material.

Punch (1998) refers to design as the basic plan for the research. He includes four parts in the research design: the research strategy, the conceptual framework, the problem of who and what will be studied, and finally, the methods, procedures and tools, to be chosen to collect and analyze information. The choice of strategy will lead to the choice of methods.

The research strategy involves the ideas about how to conduct the study in order to answer the research questions (Punch, 1998). This strategy is built on the researcher’s skills and assumptions and involves the implementation of a specific methodology, such as ethno-methodological techniques, grounded theory, or action methods (Denzin & Lincoln, 2000). Included in the researcher’s skills and assumptions is her preunderstanding, which will not only affect the choice of strategy, but also influence the ability to gain insights and understanding of the studied practice (Gummesson, 2000).

Research design is, to me, of a wider scope than the research strategy. In addition to Punch’s fourth divided description it is also a matter of basic beliefs. The design includes the fundamental paradigmatic standpoints and guides selection of strategy and consequently action in terms of methods.

The following sections discuss research design, from a perspective of involvement and change, and account for my view of reality as well as my preunderstanding influencing the research design. Actual choices made concerning design, strategy, and methods used for information gathering and analysis are accounted for in section 3.2.
3.1.2 The questions of involvement and change

The selection of research design is based on the researcher's basic beliefs and implies repercussions in terms of desired degree of participation and intervention in the actual setting. Braa and Vidgen (1999) have developed a tool to clarify different approaches in these dimensions, figure 3-1. They describe it as a research framework for information system research within organizations. Still, I consider the framework a useful tool when thinking about choice of research strategy for different types of research within business environments.

Being an industrial Ph.D. student (a matter discussed further in section 3.1.4) entailed for me closeness to the investigated setting with several possibilities to approach the research problem. Therefore, the questions of degree of participation and change in the setting turned out to be important. Using the framework designed by Braa and Vidgen to guide my decision about research strategy, I feel that it is important to provide a brief account of it.

The framework is illustrated in the form of a triangle where the points represent the intended outcome of the research, which are also connected with the different paradigms. Positivism is represented by the result of prediction, interpretative paradigms by understanding, and a participatory approach by change. In terms of alternative inquiry paradigms, as described by Lincoln and Guba (2000), positivism and postpositivism are to be connected to prediction, critical theory and constructivism with understanding and the participatory paradigm with change.

The arrows in figure 3-1 (left-hand side) illustrate the opportunities of choosing a more or less ideal strategy, according to what the paradigms prescribe, by altering the degree of reduction, interpretation, and intervention. Here the question about commensurability among the alternative inquiry paradigms could be commented on. Lincoln and Guba (2000) have discussed the issue and concluded that a “pick and choose” (p. 174) attitude is not possible if the underlying values of the paradigms are contradictory, as with the positivist and interpretative paradigms, whereas commensurability is possible within the interpretative and participatory paradigms. This is, however, not a methodological question in terms of qualitative or quantitative methods or data, as the issue of research has to guide that question (ibid.).

Braa & Vidgen (1999) have located methods – although I prefer and from this point onwards use the label research strategies – within the framework in figure 3-1 (right-hand figure). Each strategy will lead to a range of possible methods. However, sometimes a choice simultaneously will include both strategy and method, as is the case with experiments. Case studies, on the other hand, can involve a variety of methods, both qualitative and quantitative. A short description of the different strategies follows.
Experiment is a common strategy within the natural sciences. Punch (1998) has described the characteristics of an experiment within the social sciences. There should be “the manipulation of one or more independent variables for the purposes of the research and the random assignment of participants to comparison groups” in a “true experiment” (p. 72). Close to the experiment is the quasi-experiment, with the main difference of dealing with naturally occurring treatment groups instead of randomly assigned participants. Both strategies are typical quantitative approaches.

The label hard case originates from Braa and Vidgen (1999) who divide the case study strategy in hard and soft cases. The hard case is closer to a positivist approach as the aim of reduction to get explanatory and predictive power is emphasized. Yin (1994) has problematized the case study strategy from an objective perspective, focusing mainly on the difficulties of generalization – especially in single-case studies – and criteria of trustworthiness. Standpoints that have been criticized by some qualitative researchers.

This single case study is located closer to the ideals of the next type of case study. The soft case (Braa & Vidgen, 1999) is positioned at the bottom of the triangle, near the right-hand angle in figure 3-1, implying strategies associated with the interpretive paradigms and the ability to gain rich insights into problems. Generalization is not a statistical problem according to this approach, but a matter of gaining understanding of the particular and the use of logical reasoning to draw conclusions and make generalizations beyond the actual

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**Figure 3-1. A research framework for information system research within organizations and connected location of research strategies (Braa & Vidgen, 1999, p. 28 and p. 32).**
case. This approach could be exemplified by the use of ethnographic methods and analysis techniques such as grounded theory, the latter being used in the initial phase of this study.

*Action case* is a strategy proposed by Braa and Vidgen (1999) as a “hybrid of understanding and change” (p. 32), positioned between the soft case study and action research and, consequently, containing elements from both of them. They describe it in terms of a medium level of change and understanding and with a low level of prediction. The intervention is intended and is of small to medium scale – e.g. meetings, workshops, and reports. The strategy is thought to be a complement to larger-scale action research when the available time frame is short and the extent of the problem is limited, as is the need of commitment from the organization studied.

The label *action research* includes a variety of approaches focusing on change and, accordingly, has a high degree of researcher involvement. One branch of the action research tree applicable in business research is *management action science*, described by Gummesson (2000). As in other action research approaches, change processes are at the core of management action science. It is therefore an appropriate strategy in business settings, when dealing with understanding, planning, and implementing change. The aim is to generate holistic knowledge by engaging in the totality of a complex of problems. The result should contribute both to science and to the client organization. Within the action strategy, a variety of methods for collecting and analyzing data can be applied.

The outline above accounts for five main strategies with different levels of involvement. The action research strategy involves high researcher participation and intervention, irrespective of approach within the genre. At the other end of the range, there is the experiment, ideally without any involvement at all. Also the hard and soft case should imply a low degree of involvement, while the action case denotes a range from small to medium scale intended involvement in order to achieve change.

In this study an active but limited intention of change was considered, but when the final strategy was settled upon, intentional change was omitted in preference for a deep understanding of the customer-perceived value concept. Thus, a case study strategy was chosen, closer to the soft case approach than the hard case; thereby a comprehensive investigation of the phenomenon within a single case was feasible.

The researcher as an objective observer is the standpoint of the positivist paradigm, originating from the assumption that we can map and understand

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50 Already in 1991 Fals-Borda and Rahman (in Heron and Reason, 1997) reported the identification of about 35 different participatory action research varieties.
“a real world out there”, independent of “those who know”. To gain knowledge about the outside world, it is important to use rigorous methods of inquiry, preventing the researcher from influencing the objects to be studied, and in that manner achieve “true” findings.

I believe the view of the pure positivist paradigm can be useful in the natural sciences, with regard to gaining an understanding of physical phenomena. But the sciences concerned with knowledge of the social world have to consider how this world is constructed. It consists of human beings, people who together form, develop, and change the world. The knowledge needed to do so comes from interpretation of facts and actions and relies on the use of concepts in communication. Thus, the objects within the social world are both socially constructed and defined. This is the subjective standpoint as new-paradigm researchers, such as constructionists, argue for it (Sohlberg & Sohlberg, 2002). An alternative stance to this matter could be to apply a critical realist standpoint. It assumes that there exists a reality independent of our knowledge of it, but that knowledge about reality is socially constructed and therefore changing; presenting findings that are only probably true (Danemark et al., 2003). However, in this study I proceed from a standpoint that the idea of customer-perceived value is a socially constructed phenomenon as well as the knowledge about it.

The way I see it, these constructions ought to be able to capture a specific part of the community, such as, for example, the world of business relationships. A concerted construction ought to be the prerequisite to investigate and conceptualize a phenomenon like customer-perceived value. Nevertheless, the researcher can only provide interpretations. When making these interpretations, she brings her own values and preunderstanding, thus influencing them. Even when she is not taking active part in change, as in action research, but just interprets information, her preunderstanding will influence the result. Consequently, it is impossible to take an objective stance related to the subject being studied and any conceptualization is only a plausible reproduction of reality.

Moving to the question of change, attention ought to be drawn to the fact that just to be situated in the company studied – as is the case being an industrial Ph.D. student – implies an influence on it. That is unavoidable. Still, the question of influence is complex and depends on the research subject and the researcher’s actual position in the company. Who are you related to and upon what can you exert influence?

When it comes to the selection of strategy, and not least the specific methods, my standpoint is that this choice has to be made in accordance with what is to be studied. I find it important to make these choices in order to comprehensively illuminate the research subject – to create opportunities to reach the aim of understanding the phenomenon. In this study I deal with a concept
from the business world. Doing business is double-sided; it is about social interactions and it is about financial issues. This has to be reflected in the study.

The focus is thus on elucidating the content of customer-perceived value in a context where “value” usually is connected to quantitative figures, although social interactions also frame the business practice. I find it therefore appropriate to start from a holistic view and move further to an investigation in detail. This includes both qualitative as well as quantitative – in this case monetary – descriptions of the investigated concept.

3.1.3 Preunderstanding

The importance of preunderstanding has been touched upon above. Preunderstanding concerns the researcher’s experience before engaging in the research project but will also evolve during the stages of the project when new understanding is added to the previous preunderstanding. Preunderstanding consists not only of knowledge, but also of personal experiences and theoretical sensitivity implying a certain attitude and commitment. Preunderstanding could, however, also be a disadvantage when the researcher becomes too tied to certain theories or procedures, thus preventing new understanding to come out of the project. Thus, balance is advised – using preunderstanding without being its slave. (Gummesson, 2000)

Unlike many other researchers I have had a rather long period of practical experience before starting my doctoral studies. Twenty years of working experience in small and medium size companies, all with a service focus. Administrative tasks have formed a majority of my work. My latest appointment, before starting the Ph.D. studies, was as a financial consultant at a public consultancy organization and as a CFO in the same organization. My university degree, Bachelor of Science in business administration (accounting), was obtained via a program of evening studies during the 1990s.

Working experience develops common sense and hardened insights about the complexity of the world. Of course, skills to deal with practical matters within the domain of the assignment are also required. My academic studies have contributed with theoretical knowledge and the ability to apply a critical view.

Although my working experience is comprehensive, there were few connections to the work as a Ph.D. student in the aerospace industry. Most things were new to me when entering the company in December 2001. The service perspective I brought with me was, on the other hand, new to the company. When discussing preunderstanding, this implies that I came with a different perspective on practice than was common inside the company. I had also to
learn – and I am still learning – about working in industrial settings and in large companies, and I consider the meeting between my experience and the research context to be fruitful.

Another aspect of preunderstanding is, according to Gummesson (2000), attitude and commitment. My basic standpoint is that the research I conduct should not only contribute to science, but also directly to practice. I want it to be useful and applicable both in the actual organization and in other companies. This attitude is most likely a product of my twenty years in working life. Personally, I see this working experience also as a qualification to adapt to the situation of close collaboration with industry. However, adapting does not mean submission. It is important to balance the elements of relations, loyalty, and ethics against the advantageous access.

3.1.4 Conducting research as an industrial Ph.D. student

My situation during the project has been special in the meaning of the close linkage to the initiator and main financier of the project, Volvo Aero. The designation *industrial Ph.D. student* includes these facts, but also is reflective of the fact that my daily place of work has been situated inside the company and the empirical investigation was conducted partly within the organization and partly within a customer organization. Some aspects of this situation could be problematized and I will discuss the issues of access, myopia, dependence, and also some ethical questions.

Gummesson (2000) argues for the importance of access when conducting business research. The outcome of the research is dependent on the possibilities to obtain empirical information. He describes two important parts of the process. First, and foremost, is the physical access to the organization. It is not only a matter of getting the initial access, but also to secure it for a longer time frame. Second, and not less important, is the mental access. By this he means the problem of how to really understand what is going on in the company, and also how to collect information and data.

After having completed the empirical study I fully support Gummesson in his statement. Access is very important in order to get a deep understanding of the issues studied, especially in a non-familiar industry. In this case, the physical access to Volvo Aero’s organization was, of course, no problem and also secured in time, due to the project conditions. Still, the research problem also required access to a customer organization. Owing to long-term personnel connections between Volvo Aero and the selected customer, Skyways, this access was established without problems.
The mental access, to really understand what was going on, I claim to have achieved to a sufficient degree. Efforts for understanding the industry have been made from inside the service provider’s organization. These have included participation in regular departmental meetings (the marketing department to which I have been connected), involvement in work with the customer satisfaction survey of the business area, participation in a project group elaborating a company brand platform, and other occasional meetings and seminars. I have considered these activities important, as my preunderstanding did not encompass industry-specific experience.

Access is also about the willingness of the persons inside the organizations to speak openheartedly about the relationship. I am uncertain as to whether Gummesson includes this in either of his access perspectives, but in any event I want to emphasize the importance of confidence to obtain the needed cooperation, i.e. the involved persons’ confidence in the researcher. That is to say, confidence about the researcher’s seriousness, ability to listen, to analyze, and to produce results applicable also in practice. My subjective opinion based on my impressions from interviews, from feedback meetings, and from the results achieved, is that open-heartedness indicating confidence has been present in this case.

Although being inside the organization offers the researcher extensive access, there can also be problems. The risk of myopia, as being part of the system studied, can affect the research (Gummesson, 2000). A phenomenon related to that termed “going native” by ethnographers, implying a too close relation and identification with the setting studied (Tedlock, 2000). When an external researcher forms a close relation to the company studied, by consultancy work and/or having the workroom inside the company, the risk of myopia would be the same as with an employee doing research.

My strategy to deal with the myopia problem has been to distance myself from the case being studied. Trying to hold a neutral stance has not only been a strategy to avoid being unduly influenced by either of the parties, it has also been tried as a preventive remedy against myopia. Practically, distance to the service provider personnel involved in daily work with the actual customer was kept at a physical distance by not meeting with the people involved at the coffee or lunch table every day.

Ethics involve questions of harm to participants, anonymity, and informed consent. These are issues that become especially important when the research will serve as basis for decisions concerning those involved. (Chambers, 2000) Researchers working within the area of businesses have in addition to deal with problems of confidentiality and business secrets. Pettigrew (1990, 1997) argues that the free choice of participation should be the moral basis for the
research. Anonymity of the company and the respondents is to be agreed upon, as well as the company's privilege to read and to provide consent before the publication of results. All these requirements have been attended to. Consequently, a draft of this text has been read and approved for publication by the involved parties.

Pettigrew (1990, 1997) regards reciprocity as another important issue to guide the work. As there is never a granted right of access and the involved companies give the researcher considerable time, the researcher should not be the only one to gain from the co-operation. Offering to give knowledge back to the company, e.g. by action workshops, is one way of achieving reciprocity.

In my case reciprocity has been aimed at by reporting back research results to both the service provider and the customer. Additionally, at the service provider's site, the participation in specific work tasks (accounted for above in the discussion concerning access) has been a way to offer the organization new knowledge.

Loyalty is another ethical problem to consider. An independent attitude towards the company is needed to avoid undesired influence and control of the scientific work. An attitude that in certain situations can be hard to create and maintain. The development of personal relations between the researcher and the employees or the management of the organization, is one area that can cause loyalty problems. Cheek (2000) points to another loyalty problem, that of doing company-financed research. She emphasizes the need of the researcher to not only maintain integrity during the research process but also after its termination. Hence, it is necessary to make careful considerations before entering a research project and also to negotiate the terms with the financier. The researcher has to develop a strategy for integrity and be prepared to account for it.

In this case, Volvo Aero is the main financier of the research and the company has a long tradition of collaboration with the academic world. Consequently, I have experienced a large degree of freedom in the discussions about the detailed aim of the research project, choice of case/cases, research strategy, etc.

The issue of secrecy and Volvo Aero's subsequent demand for examining material before publishing has been settled in a special contract. A corresponding agreement has been settled with the customer for their participation in the study. This agreement was made verbally and then confirmed by e-mail. So far, I have encountered openness from all involved persons and I have not experienced any censoring of my work or writing.

Personal relations have, of course, been developed with several persons during the project period. As mentioned previously, I have aimed not to de-
velop deep relations with the persons directly involved in the case study, and thus have maintained a neutral stance to the parties involved. Overall, I regard myself to be able to maintain my integrity in situations like this. However, I admit that I experience a feeling of loyalty on a more general level, based on my own personality and earlier working experience, always trying to do my best in any situation.

To sum up, balance seems to be the proper word to describe the considerations that have to be made. Balance should be the prerequisite to be able to stay in the “perspective business”, that, according to Pettigrew (1990), is the researchers’ branch. Consequently, the issues discussed above should be considered, but also taken advantage of.

I have put a finger on the close connections between academia and industry, regarded by some as a problem when conducting research. Personally, I do not regard the link as a problem but an invaluable advantage, although attentiveness to the situation is required. To facilitate for the reader to make her own judgment of the circumstances framing the project, I have compiled these more general aspects and made an account of my views and approaches to them.

### 3.2 Design considerations in the actual project

The elaborated design for the study implied an exploratory single-case study strategy where qualitative methods were used to gather and analyze information. A deep understanding of the elements of customer-perceived value was sought through interpretation of the findings. An abductive approach involved the iteration between theory and empirical findings with the aim of developing theory. The following sections deal with the selected research design.

#### 3.2.1 What is to be studied

The introductory chapter provided the background to the study and stated the research questions. Here, only an additional comment about the choice of research question and context will be made.

As accounted for above, the study is a Ph.D. student project conducted in close cooperation with industry, namely Volvo Aero, who is also the main funder. In these circumstances the choice of empirical context is partly settled beforehand and partly still a matter left open. The former concerns the wider context. It was presumed that the main study should be made in the business area hosting the Ph.D. student, in this case the Engine Services business area.
at Volvo Aero in Trollhättan. The field of interest, increased knowledge concerning how to value complex businesses within the service field, was also stated in a project plan. What was left open was the precise subject to be investigated and, consequently, the choice of context within the business area. For that reason, the first months of the project were reserved for exploring the practical and theoretical questions in the project proposal and with that as a base, to elaborate a preliminary research question. The next period of time involved methodological considerations and, also, the choice of specific context.

To sum up, the aircraft engine maintenance industry was a context settled beforehand while the choice of research strategy — a case study and qualitative methods — and the specific context — the case — was elaborated during the project.

The choice to study the concept of customer-perceived value in this context was a decision that grew partly out of practical interest, but was mainly theoretical grounded since the initial literature studies indicated this concept was under-investigated (Ulaga, 2001).

### 3.2.2 Case study research strategy

At the time of the start of the study I had learnt that the customer-perceived value concept was judged to be in need of further research and conceptualization within business-to-business markets. No theoretical findings concerning the concept in this particular context were found when I did my first survey of the research literature. These facts called for an exploratory study, the aim of which was to encapsulate the facets of the concept in depth. As theoretical contributions from other contexts pointed to the importance of the relationship between the parties involved, a case study combined with qualitative methods soon evolved as a suitable research strategy. However, the matter of translat-
ing customer-perceived value into monetary terms was recognized as a methodological problem perhaps needing quantitative methods. More about this issue later. First, some words about case studies.

Case studies, according to Yin (1994), “are the preferred strategy when ‘how’ and ‘why’ questions are being posed, when the investigator has little control over the events, and when the focus is on a contemporary phenomenon within some real-life context” (p. 1). The general research question of this study concerns how customer-perceived value can be described and explained in a context where total service offerings are provided within business-to-business relationships. Thus, this is a research question appropriate for a case study strategy, since this strategy covers explanatory, as well as exploratory and descriptive purposes (Yin, 1994).

Stake’s (2000) discussion about case studies involves a categorization of types according to number of cases and knowledge interest. The intrinsic case study is the study of a single case, to gain a better understanding of the particular. An instrumental case study on the other hand, is applicable when the interest is in the general. The particular case is then of secondary interest since the aim is to use it to gain insight into a more common question, to develop theory, or attempt to generalize. When several cases are studied with the same interest it is a collective case study. It is not the cases themselves that are of main interest, but the knowledge that can be gained from them.

The original idea for the study was a collective case study approach, but when the final boundaries (Miles & Huberman, 1994) were set, it was abandoned in favor of an instrumental case study due to time restrictions. My alternatives at the actual point of time were between holding on to the idea of studying several cases, albeit superficially, or to investigate one single case in greater depth. As my preunderstanding told me that the content of customer-perceived value concept was multifaceted and in addition the context and relationships within it were complex, the choice fell on the single case, i.e. the instrumental case study approach.

The single case: the relationship Volvo Aero – Skyways

To study one single case for the purpose of reflecting a complex concept puts focus on the selection process, to choose the case carefully, i.e. to select a case that provides the most for learning (Stake, 2000). However, accessibility – as Stake (2000) also points to – can be the key to learning opportunities. With these guiding principles the starting point for the selection process was to find closed down after only two meetings. As things were then, I considered it not fruitful to work for a continued action research approach.

54 The two actors in the studied relationship, Volvo Aero and Skyways, are presented in chapter 4.
an interesting case where the service provider’s, i.e. Volvo Aero’s, personnel were located at the same premises as the researcher. Among those the Skyways case was preferred as it included an engine flight hour agreement as well as a multitude of services, thereby providing very good opportunities for learning. When the case was found, the last step was to acquire the cooperation needed from the actual customer, an essential part as commitment and time were required from the customer’s personnel. Initial contact was taken by the service provider’s personnel and consent for cooperation was secured.

Due to the complexity of the relationship, it was judged that the interviewees should not be able to discuss only a specific single agreement out of the totality. Consequently the unit of analysis (Yin, 1994) was lifted from a sequence level (Holmlund, 1997, 2004), i.e. a specific maintenance deal depicted in a written business agreement, to a relationship level where all agreements, communications, and interactions between the parties were included. Consequently, the decision was taken to expand the original general research question to involve not only customer-perceived value in monetary terms, but also non-monetary value.

The many nuances of the complete relationship and the multitude of agreements – with in part differing terms – could be seen both as an advantage and a disadvantage of the selected case. The advantage was an expanded focus and an opportunity to get a more complete picture of a business-to-business relationship. On the other hand, it might be a disadvantage to go for such complexity in the very first case study made by a researcher during education.

3.2.3 An abductive approach

As stated earlier, the research problem was based in theory, although it was also of great practical interest. I started in practice in order to identify a problem area, turned to theory, and then presented the elaborated research problem back to practice. When the research problem was identified, deeper literature studies followed in order to build a theoretical foundation for the empirical studies. The outcome was an outline of the theoretical framework and a conceptual framework to guide the subsequent work. The next stage was the empirical study and the following analyses, and then, the return to theory with the aim of generating new ideas about the studied concept in a wider perspective.

From this opening I wanted to illustrate the abductive approach of the research process. Deductive studies involve the practical testing of hypotheses based in theory. Induction, on the other hand, starts in empirical observations and moves to theory. Alvesson and Sköldberg (1994) pronounce the weak-
nesses of the respective approaches; deduction as just being able to deduce from guesses and induction as not being able to generate theory but only empirical summaries.

Abduction aims for theory. Its distinctive feature is the iteration between theory and practice. Usually it is grounded in empirical data, as is induction, but preceding literature studies and preunderstanding are not rejected. Iterations can be frequent and generate several successive re-interpretations of both theory and practice. (Alvesson & Sköldberg, 1994) Abductive reasoning is a way of moving beyond the data by relating empirical findings to other and wider concepts and by the use of the researcher’s own experience and knowledge, ”to go beyond the data themselves, to locate them in explanatory or interpretive frameworks” (Coffey & Atkinson, 1996, p. 156). The approach is thus, to move from a conception about something to a new idea – a deepened understanding about the phenomenon – by interpreting the original notion in the light of specific theory or a more general frame of reference (Danermark et al., 2003, p. 184). It is an approach frequently used in case studies (Alvesson & Sköldberg, 1994) and an efficient way of generating theory (Coffey & Atkinson, 1996).55

Originally, I aimed for an attempt to build new theory by the abductive iterations between theory and several subsequent case studies, refining theory in the wake of each case study. The collective case study (Stake, 2000) approach was however abandoned, due to the limited time frame of the project, in favor of an instrumental case study. Thus, the aim of generating theory – to draw conclusions applicable to several types of business relationships – remained with the single case study approach.

The core iteration left in this study consisted of one main round from theory to practice and back to theory, which could be seen as a weakness of the study. However, additional iterations involving preunderstanding, theory, and empirical findings were frequent during the final phases of the analysis. By the use of my own experience and ability, the findings from the business-to-business setting were related to the theoretical base, mainly formed by service research. The aim was to achieve a thorough analysis and outcome formed by abductive reasoning where the particular empirical findings were reflected in established theory – thereby enabling a wider range of applicability of the outcome.

55 Several studies within the service marketing field have fruitfully applied an abductive reasoning, e.g. Holmlund (1997) and Roos (1999).
3.2.4 Information collection and analysis

As accounted for above, the theoretical field was approached before information collection was initiated. Thus, the conceptual framework, i.e. the tentative definition and model of customer-perceived value, informed the study and guided the investigation. Collection and analysis of information was then carried out in three phases. The first aimed at exploring the customer-perceived value concept and to reveal the facets of the concept in the actual relationship. The second phase formed a minor part of the study, focusing on the issue of translating customer-perceived value into monetary terms. The third phase involved a deepened analysis of the findings. A short description of the work is provided below.  

Phase one

The aim of the study was to explore customer-perceived value in a context not investigated before. In addition, it was recognized that many complexities were present. The total service offering with its many interconnected components embedded in a relationship implies one aspect of complexity. Another is the customer-perceived value concept itself, which involves many facets to investigate. These facts called for qualitative methods.

Interviews with customer and service provider employees were chosen for the investigation. Semi-structured interviews (appendix F) implied a focus on aspects of customer-perceived value, but at the same time a freedom to gather interesting clues for further discussion during the interviews. The method used meant that many nuances of customer-perceived value were gathered. The analysis was carried out with use of techniques drawn from grounded theory (Strauss & Corbin, 1998) – recommended for use within case studies by Ellram (1996) – resulting in an inductively formed description of elements building customer-perceived value. These techniques involve a very close investigation of the interview texts. Tools such as matrices and displays (Miles & Huberman, 1994) were also used. Value maps were constructed to visualize the elements of customer-perceived value in the relationship. The maps were supplemented with a list explaining the components building up customer-perceived value. The first phase was completed by a return to the interviewees for feedback and validation of the constructed value maps.

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56 A detailed report of the procedures is given in chapter 5.
57 “Value map” is in this thesis a detailed drawing, a sort of mind-map, describing all elements of customer-perceived value. Gale (1994), on the other hand, uses the label “customer value map” for a chart where a supplier’s and his competitors’ positions are plotted related to market-perceived price and market-perceived quality. Likewise as Gale, Ulaga and Chacour (2001), develop “CVA-maps” (CVA = Customer Value Audit).
Thus, the outcome of the first phase was a description of customer-perceived value in the relationship. A detailed account of procedures and outcomes is given in chapter 5, section 5.1 - 5.3. Complete value maps, together with an explanation list, are available in appendix G.

**Phase two**

To test techniques for translating customer-perceived value into monetary terms, a minor investigation was conducted after the first phase (see section 5.4). The statistical technique of conjoint analysis was initially considered for solving this task, but was eventually abandoned. The problems identified were connected to my aim of investigating monetary effects of customer value inside the customer's organization without involving price. In addition, a problem of very high correlation among the attributes considered for monetary translation was identified. Instead, structured interviews (appendix H) were chosen to investigate time saving in customer operations as an effect of different service provider actions. Time savings were then converted to monetary customer value by applying a man-hour rate to the answers.

**Phase three**

The third phase was a two-step deepened analysis of the findings from the first phase.

The first step implied that the description of customer-perceived value was further investigated and a substantive theory (Strauss & Corbin, 1998) developed (chapter 6). This theory proposes an explanation of the origin and effects of customer-perceived value in the actual context as well as in similar settings.

Finally, a refined conceptual model was constructed by a return to the theoretical findings. Combining these findings with the knowledge derived from the case study provides a description of customer-perceived value when framed by a total service offering and provided in a business-to-business relationship (chapter 7). The suggested conceptual model is meant to have a wider scope of application than the explanatory model. However, even if the model is probably appropriate for dyadic relationships more generally, the context of business-to-business relationships is not exceeded. Consequently, the conceptual model is also proposed as a substantive theory.

### 3.2.5 Choice of direction during the project

The path from a project’s start to the reporting stage is often represented as linear in written reports. Yet, my impression, gained from talking to other
doctoral students and experienced researchers is that a straight path is rather unusual. Almost all research projects involve decisions that lead to dead ends or involve struggles to keep to the depicted aim, a destination that sometimes seem to be rather vague, concealed in a distant haze.

This project is no exception, although the cul-de-sacs were found to be fairly small and uncomplicated to get out of. I found instead my own time optimism harder to reconcile with when tasks – and here I think especially of the analysis phase – took more time than I could have imagined at the start.

I have in previous paragraphs made some scattered comments and justifications of choices of direction during the project. By summing up the major ones I hope to help the reader to get a general view of the research process. Figure 3-2 illustrates a simplified time-line for the project. The numbers in the figure refer to the accounting below.
1. The initial project plan involved financial modeling and simulation of business cases. However, as a fellow doctoral student at Volvo Aero was investigating risk connected to logistics and thereby had arrived in the cost-side of a business case calculation, it was decided to concentrate on opportunities for increasing the income side by a deepened knowledge of customer-perceived value. The focus was then on a monetary value.

2. A Volvo Aero project, “New customer offering”, was finished in early 2002. It involved a fictitious offering with attempts at customer value-based pricing according to the approach described by Rosvall and Rosvall (2000). I had an idea of using this case as an initial one of three to investigate customer-perceived value. Time was spent on gathering information and understanding the case. However, after discussion with my supervisors, it was decided that an existing relationship should be studied.

3. A project was commenced at Volvo Aero during April 2002. A group of employees were to investigate how customer value was created in existing relationships and how this value could be improved and used to increase the margin of the business. I joined the group with the aim of adopting an action case approach (Braa & Vidgen, 1999). Problems connected to reduction of personnel, re-organisation, and the team leader’s lack of time however meant that the project was closed down after only two meetings.

4. I continued to plan for a multiple-case study and accounted for this design in the planning report presented at Karlstad University. However, at the planning seminar this design was considered too extensive with regard to available time in the project. I had to choose between investigating several cases superficially or to conduct a profound single case study. I regarded the opportunities to explore the multifaceted nature of customer-perceived value and the complex context better suited to the latter alternative. Thus, I decided to deeply investigate one single case.

5. By the choice of the relationship with Skyways, it soon became evident – due to the complexity in contract structure – that it would be very difficult to restrict the study to a sequence level, i.e. one agreement. Instead, it was decided to investigate the whole relationship.
6. As a consequence of the decision above, it was acknowledged that a focus on monetary customer-perceived value was not a fruitful approach. The research question was accordingly altered to involve both monetary and non-monetary value.

7. When planning the project I thought I could investigate the monetary customer-perceived value by using the conjoint method. However, as described in section 3.2.4, this approach was not feasible and consequently abandoned in favor of a minor investigation based on structured interviews.

In short, there were some deviations also in this project, but I consider no time spent as wasted, as I have learnt from all of these experiences.

3.3 Summarizing the research design

This chapter has dealt with some aspects of research design. From an outline of research in terms of degree of involvement and change, the focus of this study was accounted for in terms of an interpretative interest in order to reach understanding. A strategy involving an instrumental case, i.e. a single customer-service provider relationship, was eventually chosen for the investigation.

The research process started with theoretical studies and the findings were summarized into a conceptual framework. This framework informed the continued work, i.e. the elaboration of interview topics. Thus, information was collected by interviews, which provided rich descriptions of customer-perceived value in the relationship. The interviews were then closely analyzed and the essence of customer-perceived value in the actual setting illustrated in value maps. A minor investigation concerning the translation of customer-perceived value into monetary terms followed as a second phase of the work.

In the final phase of the study, the analysis was deepened and a first substantive theory built with the aim of explaining customer-perceived value in the actual setting and similar business-to-business relationships. By means of an abductive approach, theoretical and empirical findings were, in the final step, brought together to form a conceptual model; proposed as the second substantive theory originating in the study. This model contains components influencing the assessment of customer-perceived value when total service offerings are provided in dyadic business-to-business relationships.

The trustworthiness of the study could possibly have been discussed in immediate connection to the research design above. However, I have chosen to save this issue to the final chapter of the thesis. The reason is that I find it
important to present the analysis and outcome of the study before the matter of research credibility is discussed.
4. THE EMPIRICAL CONTEXT

The empirical study is conducted within the commercial aircraft engine maintenance industry. This chapter provides information about the context framing the study, with an aim to facilitate reading of the following chapters. Essentially, it is about the industry, the service provider, the customer, and their relationship.

4.1 The aircraft industry\(^{59}\)

The case study comprises the engine MRO-shop\(^{60}\) at Volvo Aero in Trollhättan and the aircraft operator Skyways. The focus of the study is the maintenance of commercial aircraft engines. This section commences with an introduction to the specific engine maintenance industry. The section is completed by putting maintenance\(^{61}\) into its larger context, the commercial aircraft aftermarket. The characteristics of the industry will be outlined in general terms, whereas the specific circumstances framing the studied case are accounted for later, in section 4.2.

4.1.1 Maintenance of commercial aircraft engines

Commercial aircraft engine maintenance is an industry with certain special characteristics that distinguish it from many other industries, even within the business-to-business sector.

Safety and reliability are prerequisites in the whole aircraft industry and no less so in the engine sector. It is, as we know, the engine that keeps the airplane flying! Hardware quality becomes, in this way, primarily a necessity and not a means for competition. A high hardware quality can imply savings for the aircraft operator when quality contributes to keeping the engine on the wing of the aircraft for a long time. However, quality above the flight regulation requirements involves a maintenance cost above the essential, making it a non-demanded feature in the present days of economic difficulties.

\(^{58}\) An extensive use of abbreviations and special terms is characteristic for the industry. Explanations are provided in footnotes at each first occurrence. In addition, a collection of abbreviations and industry terms is available in appendix J.

\(^{59}\) The text is based on interviews with staff members of the Volvo Aero Engine Services Division and has also been read and commented on by Skyways.

\(^{60}\) MRO-shop: Maintenance, Repair, and Overhaul workshop.

\(^{61}\) “Maintenance” is in this thesis used to comprise all types of maintenance, scheduled and unscheduled overhauls, hot section inspections, and repairs on an aircraft engine.
Aircraft engines generally demand large monetary investments (one new jet engine of the largest size has a list price in excess of 15 million dollars\textsuperscript{62}) and so do their maintenance. An aircraft engine has a technical life of approximately 30 years. During that time about eight to ten\textsuperscript{63} scheduled maintenances are carried out depending on the type of engine and circumstances of use.

Engines are overhauled either after a certain period of use, e.g. after 5000 hours of use, or when it is judged to be needed, “on condition”. Aviation authorities decide which type of permission the aircraft operator will receive, the former type of “hard-time” or the latter “soft-time”. To get a “soft-time” permission places high demands on the aircraft operator’s technical expertise and routines, as the engine’s condition has to be followed carefully. In addition, it is important to present a history of flight safety in the form of statistical records. An incident-free operation of the actual engine type is essential to receive the permission.

Some components in an engine are life-limited due to regulations. This means that they have to be replaced by new ones after a certain amount of time in use and the old ones are scrapped. In order to keep to the time cycles of the life-limited parts, scheduled overhauls at an engine workshop are planned at regular intervals according to planned engine use. However, the exact date for an overhaul is not decided until a rather short time in advance. When overhauls are made on-condition, performance data from the engine are followed carefully. Unfavorable trends, e.g. for engine temperature, might imply an earlier overhaul than originally planned.

In addition to the scheduled overhaul, line maintenance, i.e. a continual checking up on the engine with smaller scope overhauls, is performed at operating bases between flights.

Sometimes things happen with the aircraft engine that are not planned, just as with a simple car engine. It could be a bird ingested by the engine or an unexpected problem with some component. Repairing without removing the engine from the aeroplane can sometimes solve these incidents. Still, severe problems require a workshop visit.

Complete engine maintenance involves a total dismantling of the engine into its smallest constituents. It is often not until this has been executed that decisions can be made regarding the need for exchange and repair of individual parts. This uncertainty will of course affect the service provider’s quotation. The total price is hard to estimate in advance, so normally estimates for cost are submitted several times as the work proceeds. Depending on size of

\textsuperscript{62} New engines are however seldom sold individually as they are delivered as a part of a complete aircraft.

\textsuperscript{63} New engine models are said to require scheduled maintenance only every seventh year, implying only four complete overhauls during its life length. Lifetime maintenance cost is however approximately unchanged, as each shop visit will require more work.
the engine, condition, etc., the cost for each maintenance ranges from 100 000 dollars to 4 million dollars\(^{64}\). Spare parts account for a large part, roughly 65\%, of that cost.

To sum up, certainty about maintenance scope is mainly restricted to the life-limited parts. The remaining part is a matter of stochasticity, experience, and assumptions, with, of course, considerable assistance from the engine manufacturer’s advice and documentation.

### 4.1.2 A regulated market

Following this introduction to the distinctiveness of the commercial aircraft engine maintenance industry, I continue to the larger setting with a description of the essential parts of the commercial aircraft after-market.

The after-market for commercial aircraft engines is a strongly regulated industry. Figure 4-1 illustrates the principal actors and the main connections between them and includes the regulations and standards, flow of parts, financial solutions, and total service offerings. The following review describes the many actors in the external environment and the wider setting of the study, influencing the studied dyad.

*End users* in this supply network are *flight passengers* and shippers sending different types of *cargo*. At their service the *airlines* operate within a huge global network of flight routes.

*Cargo operators* (e.g. FedEx and DHL) constitute a distinctive category of operators, concentrating on the shipping of goods, often with the largest types of aircraft.

The passenger airlines are usually classified according to size and operating area. The *major airlines*, also labeled 1\(^{st}\) tier airlines (e.g. SAS, British Airways, and Continental), are followed by the 2\(^{nd}\) and 3\(^{rd}\) tiers airlines (e.g. Spanair and Iran Air, respectively). The latter two operate with the same type of aircraft and routes as the majors, but are, however smaller in company size. Then there are *regional airlines*, using smaller size aircraft for shorter routes in geographical regions, often within a specific country (e.g. Skyways, KLM Cityhopper, and American Eagle).

\(^{64}\) Smaller commercial engines, as the PW125, i.e. the engine maintained in the studied case, imply maintenance cost from approximately 100 000 to 600 000 dollars depending on work scope. Maintenance of larger commercial engines can cost up to about 4 million dollars.
Figure 4-1. The commercial aircraft engine after-market: Main actors and connections.
In addition to the above-mentioned categories there are executive aircraft owned by companies, governments, or even private persons. These are often smaller business jet aircraft but also the largest types of aeroplanes are to be found within this group. A classification of this group of operators can be made into business jets, operated and owned by a company, government, or private person, air charter including aircraft owned by a specialized company chartering planes and crews to executive users, and fractional ownership where several executive users share the ownership of an aeroplane.

Moving to the aircraft manufacturing and maintenance industry, important actors are of course the OEMs, i.e. the manufacturers of aircraft (e.g. Boeing and Airbus) and engines (e.g. General Electric and Pratt & Whitney). However there are other actors, independent of the manufacturers, working in the aftermarket field. Service centers undertake maintenance of the whole aircraft but occasionally transfer the engine maintenance to an MRO-shop. The engine MRO-shops’ core business is a specialization in engine maintenance and parts repair. There are independent shops, such as the Volvo Aero shops, but also OEMs, airlines, and service centers have their own repair shops.

Components for aircraft engines are manufactured by the OEMs and their partners, but also by independent companies, PMA manufacturers. The PMAs produce new parts in accordance with basic flight safety regulations. Some parts in the engine are life-limited parts (LLPs) which, due to regulations, have to be scrapped after a certain amount of flight usage. Other parts are possible to repair and re-use and because of the high cost of new parts this is often done. Consequently, a flow of new and repaired parts is recognized between OEMs, MRO-shops, PMAs, and dealers, brokers, and distributors. The difference among the latter three is that dealers have the parts in their own possession while brokers act as intermediary in an affair. Distributors, on the other hand, distribute parts on behalf of the OEMs.

The aircraft industry is capital-intensive, thus financial solutions are important and are often made in co-operation with financial institutions. There are independent institutions, but also those owned by OEMs. The solutions often consist of lease contracts for complete aircraft or spare engines.

A trend within the industry is also the demand for engine maintenance solutions labeled “Power-By-the-Hour” (PBH) or “Engine Flight Hour Agreement” (EFH). These agreements imply a risk reduction for the aircraft op-

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65 OEM: Original Equipment Manufacturer
66 In addition to engine MRO-shops there are MRO-shops specialized on the aircraft, airframe MROs. This account is however made from an engine perspective.
67 PMA: Parts Manufacturer Approval
68 EFH is the label used by Volvo Aero for maintenance agreements charged by the number of flight hours. PBH imply the same, but is a label originating from the OEM Rolls-Royce.
erator, as the maintenance is charged by a certain amount per engine flight hour instead of by the traditional time and material. The extent of services included in an agreement varies, from nothing more than scheduled overhauls to total service offerings.

The industry is strongly regulated. Different authorities issue basic flight safety standards, based on bilateral agreements and national laws and regulations. The most influential authorities are the U.S. FAA\(^{69}\) and the EASA\(^{70}\) in the EEC\(^{71}\). Many countries accede to these, but there are also national aviation authorities (NAA) that may prescribe separate or additional regulations.

The actors mentioned in these regulations are of course the aircraft operators, but also companies dealing with aircraft manufacturing and maintenance; OEMs, Service centers, MRO-shops, and PMAs.

Dealers, brokers, and distributors of used and new spare parts are not regulated by the aviation authorities. However, the MRO-shops and aircraft operators are regulated by the authorities with regard to how they can do business with these companies. The FAA has released a voluntary regulation for dealers, brokers, and distributors that many of them follow.\(^{72}\) Neither are the financial institutions directly regulated, but can step in and act on behalf of some of the regulated instances. The extent to which they are affected depends on the scope of the institutions’ commitment.

Apart from the authorities’ basic flight safety regulations, the OEMs issue specific standards and user licenses for maintenance. Certification according to various quality standards is also often demanded, e.g. by the aircraft operators ordering the maintenance. Independent accreditation units issue quality certificates after inspections.

Offerings for engine maintenance are provided by MRO-shops to aircraft operators. The extent of what the service providers offer varies from single overhauls or repair services to total service offerings. In the latter, multiple services are included besides the core of overhaul, e.g. on-wing service, pooling of parts, spare engines, engineering support, and individual engine workscopes. Sometimes the offerings are provided in co-operation with a financial institution, which then becomes the service provider that the aircraft

\(^{69}\) FAA: Federal Aviation Administration

\(^{70}\) EASA: European Aviation Safety Agency. EASA took over from its predecessor, the JAA (Joint Aviation Administration) organization in September 2003. EASA is, unlike JAA, an authority overriding the national authorities.

\(^{71}\) EEC: European Economic Community

\(^{72}\) Spare parts sold by dealers, brokers, and distributors are of course quality assured too, but these companies are not allowed to issue certificates. This is instead often done by a manufacturer or an MRO-shop with whom the intermediary cooperates.
operator has its contacts with. An example is the company Jet Support Service Incorp, owned by a range of aircraft operators and specialized in providing Power-By-the-Hour agreements for maintenance to operators.

However, charging the engine maintenance by engine flight hours could of course also be offered as an additional service directly by the MRO-shop to the aircraft operator. That is the situation in this case, where the MRO-shop Volvo Aero offers the regional operator Skyways a total service offering of engine maintenance including the service EFH-agreement.

4.1.3 The economic state of the industry
The commercial aircraft industry is a growing industry, although it is cyclic. A recession in the general economy causes repercussions in the industry, when the end users, the aircraft passengers, and goods shippers decrease their use of aircraft services. Today, in 2003, the aircraft industry is in the middle of a depression. A recession in the industry was on its way before the 11th of September 2001, but the terror attack accelerated the situation. A crisis within the industry was a fact. The Iraq war and the Severe Acute Respiratory Syndrome (SARS) epidemic during spring 2003 have later prolonged the problems. Aircraft are being scrapped, a large number of aircraft are parked in deserts, some aircraft operators have faced bankruptcy, and some American airlines are being reorganized under the protection of chapter 1173. At the same time the traditional aircraft operators are challenged by low price operators who gain market shares.

The crisis, together with the low price operators’ entrance on the market, has affected the engine maintenance industry; not only in terms of decreased volumes, but also a stronger focus on price. Short-term cost is accentuated at the expense of longer-term benefits. Thus, there is an adjustment concerning what is perceived as valuable in an engine maintenance business deal.

73 The U.S. Bankruptcy Reform Act’s chapter 11, applicable for companies in the United States, gives a company protection against its creditors during the reorganization of the company back to profitability.
4.2 The focal companies

4.2.1 The service provider – the engine maintenance shop

The service provider in the studied relationship is the commercial engine maintenance repair shop at Volvo Aero Corporation (Volvo Aero) in Trollhättan, Sweden.

Volvo Aero has a long history, starting under the corporate name Nohab Flygmotorfabriker in 1930 with an order of 40 engines from the Swedish Air Force. By 1941 AB Volvo had acquired a majority of the shares and from 1969 Volvo Aero has been wholly owned by AB Volvo. The business was almost entirely military until the beginning of the 1970s. In 1970 90% of the turnover was from military business, in 1993 it accounted for 33% of turnover, and in 2002 the share was only 7%. Today the business activities in Volvo Aero are organized into four business areas; Engines (including commercial and military aircraft components as well as aerospace components), Aviation Services, Engine Services, and Land & Marine Gas Turbines. Volvo Aero has been affected by the crisis in the aviation industry and reported a declining turnover for 2002. The total turnover for 2002 was 8.8 billion Swedish crowns (SEK) and the number of employees approximately 3700. Redundancy notices were served on employees in both 2002 and 2003.

Engine Services, with its repair shops in Trollhättan and Bromma, is the business area involved in the research project. The business area had a turnover in 2002 of 1.7 billion SEK, 19% of Volvo Aero’s total turnover, and approximately 1000 employees. Engine Services maintains large turbo-fan engines (JT8D and JT9D) for some of the world’s most common passenger aircraft (Boeing 747, Boeing MD80, DC 10, etc.) and smaller turbo-fan engines for business jets, turboprop engines for regional aircraft, and turboshaft engines for helicopters. At the time of the study, the Engine Services business area was organized into business units, each taking care of specific engine programs. The business unit in focus is the turboprop/turboshaft unit where maintenance of the Pratt & Whitney PW125B engine is conducted.

Engine Services has met an increased demand from customers to provide total service offerings for engine maintenance and overhaul. These agreements are often, but not always, charged by the number of flight-hours (EFH-agreements). A similar development is now recognized within other business areas, and initiatives are being taken to develop Volvo Aero into a total service provider. This research project is a result of this development.

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This section is based on information material and interviews with Volvo Aero and Skyways staff respectively and information from the Volvo Aero internal web-site. The account reflects known facts in November 2003.
4.2.2 The customer – the aircraft operator

The customer in the relationship, using the services from the MRO-shop, is the Swedish regional aircraft operator, Skyways Express AB (Skyways), with headquarters at Arlandastad in Stockholm. At the time of the study, the technical organization, the Technics unit, was located at Linköping, where the interviews took place. The unit was later moved to Stockholm.

Skyways’ history can be traced back to 1938 when the business started with a single aircraft used for target towing for the Swedish armed forces during the 2nd World War. Over the years the business expanded to include crop spraying, mail delivery, and taxi flights under the company name AVIA. In 1991 AVIA was merged with Salair, another regional carrier. The 1990s involved several acquisitions and a rapid development to a position as the largest – in terms of number of destinations served – regional passenger flight operator in Sweden. However, the aims for development extend higher and include expansion to become a regional aircraft operator in Europe.

Skyways Express AB is wholly owned by Skyways Holding AB, a company that in turn is owned by Salénia AB (72.7%), SAS (25%), and Janus (2.3%). The turnover for Skyways Express AB 2002 was 1,4 billion SEK. For 2003 turnover is forecast to 1,8 billion SEK and the number of employees to be above 800. During 2003, approximately 1,4 million passengers will be flying with some of the company’s 33 aircraft, operating on 11 overseas and 14 domestic routes. Three different types of aircraft are operated, Embraer 145, Saab 340, and Fokker 50, with the latter forming the majority of the fleet.

The core business for Skyways is the flight of passengers and the main target group consists of business passengers. Profit should be reached by having an efficient organization, a lean production of flights, with as small expenditure as possible. The guiding stars for the organization to achieve success are visualized through “tablets of stone” on the walls of the premises. Examples of these are to hold a fast pace in business, to work efficiently and according to schedule, to work in teams, to care and to show respect. Essentially, these leitmotifs can be summed up as lean and efficient work to reach the goal of becoming a regional carrier in Europe.

4.2.3 The frame for investigating customer-perceived value

The relationship between the parties started back in 1993 with maintenance of the CT7 engine. At that time, maintenance was performed in a repair shop located in Arboga. Volvo Aero had the year before taken over all aircraft engine service from the Swedish government owned company FFV Aerotech,
including the commercial engine maintenance performed by the FFV Aero-tech subsidiary Scan Motive AB. In 1997 the whole commercial engine repair shop was moved to the Volvo Aero shop in Trollhättan. Volvo Aero ceased performing the CT7 maintenance for Skyways when the workshop was moved, but another engine had in the meantime become an object for maintenance.

In 1995 a new engine type was introduced at Skyways when two Fokker 50 aircraft were taken into operation. Fokker 50 is an aeroplane with 50 seats, each carrying two Pratt & Whitney PW125B turboprop engines. An agreement for maintenance of these engines was signed between the parties and was later followed by more contracts, as the Skyways’ Fokker 50 fleet grew larger. A considerable part of the work in the turboprop/turboshaft business unit at Volvo Aero originates from Skyways.

The study focus is customer-perceived value in the work done to maintain the PW125B engines. A central theme is availability of engines. This is partly achieved by turn around time for engine maintenance and partly by other factors. Achieving an agreed time on wing for the engine is one such factor. This can be achieved through quality in maintenance – both of engines and components – optimized to suit the particular airline’s operations, but also through preventive and rectifying actions on wing and through careful operation as well as line maintenance by the operator. It is also important for Volvo Aero to facilitate the fleet optimization for the operator by means of different types of flexible supporting services.

At the time of the interviews (November – December 2002), 16 of the aircraft operated by Skyways were Fokker 50 with PW125B engines. However, to complicate the situation, the maintenance contracts for different engines were not uniform as both engine flight hour agreements and time and material deals occurred. Additionally, the service content, i.e. the number of services included in the price, varied between the agreements.

It should also be pointed out that although the repair shop was moved from Arboga to Trollhättan, there are still personal connections that date back to the early 1990s. There are employees in the service provider’s organization as well as in the customer’s, who recall the first years of the relationship as they were a part of it from the very beginning.

4.3 Summarizing the empirical context

This study is made in a specific part of the aircraft industry, i.e. the branch where maintenance of commercial aircraft engines is conducted – a part of the

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75 When this is written, November 2003, the fleet has grown to 18 aircraft. In fact, this size of fleet makes Skyways the largest Fokker 50 operator globally.
The relationship in focus goes back ten years in time and consists of a service provider and its customer: the engine maintenance repair shop at Volvo Aero in Trollhättan and the regional airline Skyways, both of which are Swedish companies. The services concern the maintenance of Skyways’ PW125B engines for its fleet of Fokker 50 aircraft. Business agreements between the parties consist of engine flight hour agreements as well as time and material deals. The service content differs between the contracts, but most often includes a multitude of services. An important part of Volvo Aero’s offering is to facilitate the fleet optimization for the operator by providing different types of flexible supporting services.

As mentioned in chapter 3, the particular industry for investigation was settled before the study started. To study customer-perceived value in business relationships within this specific context seems, however, to be fruitful. The relationship is long-term, rich, and deep. In addition, the complexity of the relationship can be captured by a rather small number of informants covering the different contact areas between the involved parties.
5. The empirical study

This chapter provides an account of the case study. A thorough report of the research procedures and analyses opens the chapter. This work starts with interviews in search for the qualitative description of customer-perceived value, then deals with the efforts of delineating some of these factors into monetary terms, and concludes with a phase of deepened analyses, completing the case study. A large part of the chapter is, though, devoted to the findings from the initial analysis of the empirical information, i.e. a description of the attributes building customer-perceived value in the relationship. The issue of the monetary translation of customer-perceived value will also be accounted for. Theoretical aspects are put aside here, reserved for the deepened analyses in the subsequent chapters – where the empirical findings are reunited with theory for further elaboration.

5.1 Identifying customer-perceived value

The conceptual framework, described in chapter 2, formed the theoretical platform that guides the case study. The process of information collection and analysis followed; a work divided up into three phases. The first phase was the major part of the study, leading to the identification of value attributes and the construction of value maps illustrating the customer-perceived value of the relationship. The outcome of this stage can be described as a model in the form of an elaborated framework, describing the phenomenon in the investigated context.

The second phase was a minor investigation exploring a technique of inquiring about time aspects that, in a later step, could be translated into customer monetary effects.

The final analysis, aiming to go further beyond the data and increase the level of abstraction, was the third phase of the work. The end result of the last phase was two conceptual models. The first of these was a theory-proposal, applicable in the specific or similar settings, aimed at explaining the origin and effects of customer-perceived value respectively. The second was an additional model, aimed at describing customer-perceived value in a more general perspective.

I will make a rather detailed description of the work conducted, to “mark the path” for the reader, thereby facilitating his or her judgment of the credibility of the results (Frenckner, 1986).
5.1.1 The first phase – exploring customer-perceived value within the relationship

Information collection

The initial phase of the investigation started with an examination of all contracts between the two parties in focus for the case study, Volvo Aero and Skyways. Two staff members at the particular engine department at Volvo Aero introduced me to the business agreements and their history. The content was studied in detail and, finally, as a complementary method of gathering information concerning the written details, the business agreements were examined and discussed with one of the Volvo Aero staff members76.

I also visited the customer’s organization and met the employees involved in Volvo Aero contacts. On this occasion the research project was presented and I received general information about Skyways’ organization.

This stage in the investigation could be regarded as a development of my understanding of the relationship based on earlier preunderstandings, both theoretical and practical. This learning formed the advanced preunderstanding that I took with me to the interviews. As Gummesson (2000) points out, preunderstanding, understanding, and new preunderstanding evolve in a spiral-like way when knowledge in relation to a specific project is accessed directly via personal involvement, or indirectly through access to the experience of others.

The main source for information collection was semi-structured interviews conducted in Swedish, following the advice of Kvale (1997): By the use of focused interviews, mainly based on themes rather than strictly structured questions, the aim was to get qualitative descriptions of the specifics of the relationship. The focus was on customer-perceived value realized from the interaction between the parties, as well as derived from the actual content of the business agreements, i.e. the total service offering. The aim was to get a static picture of the perceptions at the time of the interviews. I wanted descriptions of what was perceived as bringing and taking value in the relationship, and elaborated the interview topics in consequence with this direct aim. It should, however, be acknowledged that other questions perhaps had brought out other answers and thereby other nuances about the value perception might have been elucidated.

The themes and connected questions were elaborated with guidance from the theoretical findings: the conceptual framework including the tentative

76 This person had a deep knowledge about the agreements and their history, but had at this point of time normally no direct contacts with the customer. Consequently, he was not among the interviewed persons, but brought his knowledge to the investigation at this stage.
conceptual model of customer-perceived value, and in addition, from my pre-
understanding of the setting and the case. I wanted the interviewees to under-
stand what I was looking for, i.e. components of value in terms of benefits
and sacrifices, so that they could emphasize these aspects in their stories. For
that reason, a preliminary framework of customer-perceived value (appendix
F) was included in the interview guide and explained during the interviews.

To seize the extensive interaction between the parties, the first main part
of the interviews (table 5-1, part 2B) was concentrated around process and
contacts in connection to the normal maintenance situations – scheduled and
unscheduled maintenance – as well as other contacts in the relationship. I
wanted to gather stories that covered the entire process, from the preparatory
work conducted before bringing in an engine, until the final stages before it
was delivered and put back on an aircraft again.

**Table 5-1. Summary of interview topics.**

<table>
<thead>
<tr>
<th>1. Formalities</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. The relationship between Volvo Aero and Skyways</td>
</tr>
<tr>
<td>A. Introduction of the concept customer-perceived value</td>
</tr>
<tr>
<td>B. General questions about maintenance deals</td>
</tr>
<tr>
<td>Process and contacts connected to scheduled overhauls</td>
</tr>
<tr>
<td>Process and contacts connected to unscheduled overhauls</td>
</tr>
<tr>
<td>Administrative contacts</td>
</tr>
<tr>
<td>Other contacts within the relationship</td>
</tr>
<tr>
<td>Aspects of leased engines</td>
</tr>
<tr>
<td>C. Customer-perceived value in the maintenance agreements</td>
</tr>
<tr>
<td>Core service</td>
</tr>
<tr>
<td>Supporting services</td>
</tr>
<tr>
<td>Facilitating services</td>
</tr>
<tr>
<td>Time aspects</td>
</tr>
<tr>
<td>Relationship aspects</td>
</tr>
<tr>
<td>Other aspects</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>3. Critical incidents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Positive</td>
</tr>
<tr>
<td>Negative</td>
</tr>
<tr>
<td>Other comments</td>
</tr>
</tbody>
</table>

The second main part (table 5-1, part 2C) was more structured and included
an examination of all parts of the total service offering, the relationship, and
time aspects, where the informants were asked to specify which factors im-
plied a “get or give value” connected to the specific parts of the offering.

When preparing the interviews, I was uncertain as to whether the above-
mentioned questions would be sufficient to draw out descriptions of specific
situations and actions/interactions. So, to be on the safe side, I included ques-
tions concerning positive and negative critical incidents as a third main part
The critical incident technique (CIT) (e.g. Olsen, 1992) is typically used as single approach for interviewing, but in this manner, is employed as a complement. The aim was to get specific examples of service provider performance that the informant perceived as being especially positive or negative.

Information about the interview topics was sent to the interviewees in advance, appendix F.

A shortened interview was made with two of the employees in the customer’s organization, due to their limited field of contact with the service provider (appendix F). All other interviews followed the same, complete interview guide. This implies that the interviewed persons in the service provider’s organization were asked to put themselves in the position of the customer and answer the questions in accordance to what they believed to be the customer’s perception. This was a rather difficult task that resulted in several digressions into internal Volvo Aero details.

Interviews were conducted in late 2002 (figure 5-1). I tried to cover a wide range of tasks performed in the relationship, i.e. to get information from employees on different positions, in order to capture several scopes of perceptions (Holmlund, 1997) within the organizations. Thus, to identify the many facets of perceived value, interviews were made with individuals from several hierarchical levels, representing all contact areas between the parties – both on the customer and on the service provider side of the relationship. In the customer’s organization, all interviewees were found within one larger unit, Technics, which, in turn, was divided into several smaller departments, i.e. working teams focusing on different tasks but with the common mission to keep the aircrafts and engines in working order (e.g. line maintenance, technical office, and logistics). In the service provider’s organization, the interviewees were connected to the actual workshop office and to the marketing department for engine maintenance.

77 The CIT-part of the interviews contributed with a total of 60 incidents (although it should be noted that these were not 60 different incidents as interviewees mentioned the same story and, additionally, it was not always specific stories but more often general examples) of which 34 were not mentioned earlier in the same interview. The inclusion of questions concerning critical incidents thus secured some extra input of information. However, I am doubtful if it would be enough just depending on the CIT-technique to capture the intricacy of the total service offering and the complex processes within the relationship. Questions aiming to cover the interaction processes in their completeness ought to be necessary, at least when the number of interviews are fairly few.

78 In addition, a short unstructured interview, mainly concerning invoicing, was conducted with the financial controller.
The time for interviews was equally distributed between customer and service provider personnel, although fewer persons were interviewed at Volvo Aero. This was due to the internal organization of work, with one staff member as a “single point of contact” towards the customer.

The MiniDisc-recorded interviews were immediately transcribed by myself and distributed to the interviewees for reading through and thus providing opportunities for correction and completion. A procedure that resulted in only a few comments\textsuperscript{79}. Data about the interviews are found in table 5-2 below.

\textsuperscript{79} A few of the interviewees notified me that they did not have time to read through the transcript and thereby refrained from the opportunity to comment on the text. I got the impression that it was perceived as laborious to read the transcripts, which could be up to 30 pages long, although the spoken language on the discs was partly turned into written language to simplify reading.
Table 5-2. Interview data.

<table>
<thead>
<tr>
<th>Interviewee position</th>
<th>Interview dates</th>
<th>Recorded interview time</th>
<th>No. pages transcribed text</th>
</tr>
</thead>
<tbody>
<tr>
<td>INTERVIEWS WITH CUSTOMER EMPLOYEES: SKYWAYS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vice president technical</td>
<td>3 Dec. 2002, 9 Dec. 2002</td>
<td>2 hours, 19 min.</td>
<td>28 pages</td>
</tr>
<tr>
<td>Engineering manager</td>
<td>29 Nov. 2002</td>
<td>1 hour, 13 min.</td>
<td>15 pages</td>
</tr>
<tr>
<td>System engineer powerplant</td>
<td>29 Nov. 2002, 3 Dec. 2002</td>
<td>2 hours, 23 min.</td>
<td>33 pages</td>
</tr>
<tr>
<td>Purchasing/logistic manager</td>
<td>26 Nov. 2002, 9 Dec. 2002</td>
<td>1 hour, 24 min.</td>
<td>20 pages</td>
</tr>
<tr>
<td>Rotable administrator</td>
<td>26 Nov. 2002</td>
<td>45 min.</td>
<td>10 pages</td>
</tr>
<tr>
<td>Purchasing/logistic manager</td>
<td>26 Nov. 2002</td>
<td>51 min.</td>
<td>9 pages</td>
</tr>
<tr>
<td>Financial controller</td>
<td>3 Dec. 2002</td>
<td>20 min. (not recorded)</td>
<td>1 page (notes)</td>
</tr>
<tr>
<td>Financial controller</td>
<td>3 Dec. 2002</td>
<td>20 min. (not recorded)</td>
<td>1 page (notes)</td>
</tr>
<tr>
<td>TOTAL:</td>
<td></td>
<td>9 hours, 15 min.</td>
<td>176 pages</td>
</tr>
<tr>
<td>INTERVIEWS WITH SERVICE PROVIDER EMPLOYEES: VOLVO AERO</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vice president marketing and sales</td>
<td>17 Dec. 2002</td>
<td>1 hour, 42 min.</td>
<td>21 pages</td>
</tr>
<tr>
<td>Business unit manager turbo-prop/turbo-shaft</td>
<td>14 Nov. 2002, 20 Dec. 2002</td>
<td>1 hour, 47 min.</td>
<td>23 pages</td>
</tr>
<tr>
<td>Engineering and Customer support</td>
<td>22 Nov. 2002, 25 Nov. 2002</td>
<td>3 hours, 3 min.</td>
<td>31 pages</td>
</tr>
<tr>
<td>Senior engineer, Customer support</td>
<td>28 Nov. 2002, 10 Dec. 2002</td>
<td>2 hours, 42 min.</td>
<td>30 pages</td>
</tr>
<tr>
<td>TOTAL:</td>
<td></td>
<td>9 hours, 14 min.</td>
<td>105 pages</td>
</tr>
<tr>
<td>TOTAL:</td>
<td></td>
<td>18 hours, 29 min.</td>
<td>221 pages</td>
</tr>
</tbody>
</table>

Analysis

Analysis of the written material started when all of the transcribed interviews were available at the beginning of February 2003. Analysis was made with the help of a computer program (QSR N6) and started by a detailed sentence-by-sentence coding, i.e. a microanalysis of the text conducted in order to generate the first categories (Strauss & Corbin, 1998). As an initial step, coding was made according to which part of the total service offering and which specified service the interviewees were talking about.

All of the text was then examined again, using the same type of coding, but this time for the main concern – the exploration of customer-perceived value. This was made by asking the question “what customer-perceived value is talked about here?” over and over again. By this process, the value attributes were identified. The value attributes express actions or circumstances that imply value for the customer.
The value attributes were sorted by preliminary categories (Strauss & Corbin, 1998) to enhance the possibility to keep order among the many nodes, as they are labeled in QSR N6. The categories pull together value attributes of the same nature, i.e. they are concepts grounded in the attributes.

At the same time, an assessment was made of each value attribute. It concerned degree of calculability – *value type* – and what kind of benefit or sacrifice – *value dimension* – the attribute could be assigned to. Four categories were used for the value type with declining possibilities for an exact quantification – from good to not possible at all: *Possible to calculate*, *Possible to estimate*, *Difficult to assess*, and *Non monetary*. The value dimension was used to note how the customer was affected in monetary or non-monetary terms. Revenue benefits influence the income positively, cost benefits are the equivalent concerning costs, while cost to use implies direct or indirect costs for the customer. The non-monetary dimensions are expressed as *psychological benefits* and *psychological sacrifices*.

Value attribute, type, and dimension are all parts of the “value terminology” that was developed during the study and illustrated in figure 5-2 (see also definition of concepts in appendix I). To start from “the top” of the terminology, *benefits* and *sacrifices* are a classification based on whether the customer “gets” or “gives” in the trade-off ending up in the perception of customer value. The nature of these benefits and sacrifices is revealed by the labeling of the *value features* describing the essence of value. The value features are an overarching level to the *value drivers*. The value drivers focus on how value is “driven” to the customer, thereby describing facets of the value features. Each value driver is grounded in, normally, a number of related *value attributes* that in turn describe the specific actions and circumstances – or effects of these – that create value on the most detailed level. The value attributes are finally classified according to *value type* and *dimension*. As was described above, the value attributes, types, and dimensions were a part of the initial coding – although refined during the continued process. The final value drivers and the overarching value features evolved in a later stage, described further on in the text.

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80 Grönroos (2000) proposes that quantifications of value in monetary terms can be done by calculating the revenue benefits, cost benefits, and customer investments (additional costs to use the offering) from a total service offering.

81 The label “value driver” is in accordance with Lapierre’s (2000) and Ulaga’s (2003) denomination.
Asking questions is, according to Strauss and Corbin (1998), an essential technique during the analysis. And the question constantly posed at this point of time was "what customer-perceived value is talked about here?". My aim at this stage of the analysis was to let the voice of the interviewee be heard through the answers to the questions – although coding inevitably implies interpretations by the researcher – and to be neutral towards the involved parties. At the same time, it was important to maintain an awareness for detecting nuances in the material.

A problem arose during the coding that entailed a decision to convert some of the codes in order to enhance understanding. The background for this decision was that I started to code exactly according to what the interviewee said. If he talked about an attribute in positive terms it was named so, and if he talked about it in negative terms – something he perceived did not work as is should and thereby took value, although properly managed it should bring value – then the attribute was named in a negative manner, as a

![Figure 5-2. Value terminology developed in study.](image-url)
sort of sacrifice. However, my interest was not in the actual perceptions about how well the service provider managed the relationship but, rather, in the elements that built customer-perceived value when everything was working as it should. So to bring a sense of order to what I perceived as a complex mish-mash of codes, I took the decision to code all attributes according to what they ought to be when the interactions worked out as intended. All attributes were consequently converted into positive terms.

Coding was not a straightforward process, but involved the recoding and reorganization of attributes and categories, when the analysis emerged. A normal procedure during analysis according to Miles and Huberman (1994), who discuss the matter of revising codes as a natural part of an emerging coding system.

A third examination of the coded text involved a check of the attribute content, name, and description, as well as a check as to whether the attribute was in need of being divided into several attributes or on the contrary, if there was a need to unify attributes. Several revisions were made during this stage.

A very important part of the analysis – after the microanalysis – was the construction of displays. Miles and Huberman (1994) argue that the construction of displays is important to reach progress in the analytic work and state that “… You know what you display” (p. 91). Displays can take the form of matrices or networks. The first display created was a simple matrix, a list, which consisted of all value attributes sorted by the type of service they were identified in connection with. It was however not a supportive way to reflect customer-perceived value in the relationship since the general picture was lost.

After discussion with my supervisors, I decided to illustrate the findings in “mind-maps” instead. The mind-map is a form of network display, a cognitive map according to Miles and Huberman’s terminology (1994), which represents the concepts and their relationships. The map is a way of clarifying ideas and is in fact an evolved conceptual framework (p. 137).

The map construction turned out to be the key for understanding the concept in the actual context and to disentangle the complexity. It was an iterative process where different possibilities were tested as drawings made with pencil and rubber in hand. The paper drawings were eventually redrawn and refined in the computer program Microsoft Visio.

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82 The actual perception of performance is still traceable in the material as a column indicating this was included in the explanation list, appendix G.

83 In this stage the coded material was lifted from the computer program to printed lists and from this point I worked in a more traditional way with notes and marking pens. I consider the computer program invaluable in the microanalysis stage, but in the final stages of refining the material, I preferred the simplicity of working with paper and pencil. This could of course be due to my own limited knowledge of advanced use of the program.
The starting point for the value map creation was the very first developed matrix combined with a repeated examination of the coded value attributes. Now the question concerning how the attributes related to each other became critical, i.e. an axial coding\(^84\) (Strauss & Corbin, 1998). This step involved a significant dose of interpretation and use of preunderstanding. In this stage the final categorization of the value attributes was made, as well a sub categorization of the attributes forming the value drivers, i.e. the explanatory level between the value attributes and the major drivers, the value features.

The major themes were consequently found by grouping the value attributes via value drivers into the overarching value features, answering the question – what is the customer getting?

It also turned out that the interviewees talked about value in two different ways. In part they described ways for the service provider to provide value and in part what that actual value implied to the customer. In essence, these can be seen as two sides of the same coin – both of equal importance in practice as they are so strongly connected to each other. How should the service provider act to deliver the actual value feature to the customer, so that the customer perceives it as a value, and what effects should these efforts end up in?

As a result of this fact, the maps of customer-perceived value features – the “whats” – are divided into two sides. One for the “hows” and one for the “effects”. Each part includes the relevant value drivers and – on the detailed maps (appendix G) – value attributes. The exceptions are the maps of psychological value drivers and of sacrifices, which were not suited to be divided.

A revised matrix display, an explanation list for the value attributes to accompany the maps, was elaborated after the maps were completed.

**Feedback**

Feedback from the interviewees on the maps was gathered in the next step. This is a way of validation where the concepts and their connections to each other are assessed in terms of how well the abstraction fits with raw data (Strauss & Corbin, 1998). All of the interviewees\(^85\) received a personal briefing on the maps with the opportunity to pose questions, correct, and complement. The personal meeting was followed up by a telephone call to gather any

\(^84\) Axial coding implies a “[…] process of relating categories to their subclasses, termed ‘axial’ because coding occurs around the axis of a category […]” (Strauss & Corbin, 1998, p. 123)

\(^85\) Except two of the customer employees: One of the interviewees, who had left the company for a new job (this concerned one of the two shorter interviews) and the financial controller (the very short interview focusing invoicing).
additional comments. This step confirmed the analysis and resulted in minor completions made by the interviewees.

I also want to point out the order in which the tasks were performed. The microanalysis was made on interview texts from the service provider and customer concurrently. The first set of mind maps was constructed with material only from the customer interviews and then the service provider’s maps were drawn. When map presentations were made, the customer’s personnel were introduced to their maps, and the service provider’s personnel to theirs. The final and total maps – that are presented here – were put together in late May 2003, after the feedback stage.

The customer’s perspective
The concept is labeled Customer-perceived value to underline that the judgment of value is in the hands of the customer. I have, however, emphasized the importance for the service provider to master the concept by a deep knowledge of its customers and their needs. Additionally, there is the possibility that the service provider considers some facets of the offering to provide value that the customer has not noticed. Regarding the complexity of the total service offering and the many interactions between the parties by different staff members, this would not be inconceivable.

The study is made from both sides, i.e. the customer’s point of view and the service provider’s. The customer’s staff members were asked to describe the interaction from their perspective and how they perceived value. The service provider’s personnel were, on the other hand, asked to try to put themselves into the customer’s position and tell me what they thought about the customer’s perception of value in the offering and relationship.

Consequently, analyses resulted first, in two sets of ideas, where the customer’s picture of perceived value was reported back to the interviewees in the customer’s organization and the service provider’s picture to its organization. Only then were all of the value attributes presented in a joint picture.

Presented here is the total view – both the customer’s and the service provider’s – of customer-perceived value in the relationship. However, value attributes not mentioned by both parties are clearly marked as the customer’s (a marking with “C” beside the value attribute/driver code and in addition drawn with a broken line in the value maps) or the service provider’s (marked with “S” and drawn with a dotted line).

Well, is this a confusion of the concept? Critics may argue so, but my resolute answer to the question is no. I have no intention to deny the fact that it is

- Also Lapierre (1997), investigating customer-perceived value of professional services, collected both parties views in business-to-business relationships.
the customer’s judgment that will be pronounced by their decision to purchase or not. The service provider does not have any interpretation preference at all. By the clear marking of who has mentioned each attribute, it is easy to identify the customer’s view, but by also including the service provider’s view, a more complete picture is given. This includes both perception and efforts. In practice, this ought to be valuable as a tool to communicate and discuss value in the relationship. Such a discussion, staff member to staff member, ought to result in more nuanced value perceptions and maybe a rerouting of the service provider’s efforts to more yielding areas.

For development of theory the material can be an input for deeper analyses than are made in this study concerning the differences in understanding between two interacting parties in a business-to-business relationship.

**Summing up phase one**

The information collected by interviews was closely analyzed and then iteratively explored by two display techniques, matrices and displays. The end result was a number of inductively developed\(^{87}\) value maps describing customer-perceived value in the actual relationship, i.e. concepts illustrating the essence of the value perception. The description of customer-perceived value in the relationship is accounted for later in this chapter, section 5.2.

Findings like these can be advanced further by proceeding into explanation, i.e. to explain how the concepts are connected and influence each other. Another question is how the specific knowledge from this case could be applied to business-to-business relationships in a more general perspective. These issues were later addressed during the third phase of the investigation.

**5.1.2 The second phase – translating customer-perceived value into monetary terms**

The second phase was just a minor part of the study. The aim was to try to work out how value attributes could be translated into monetary terms. The outcome is presented later in this chapter under the subheading 5.4.

In the beginning, before the study started, the goal was to carry out the transformation of perceived value to monetary terms by statistical methods. Conjoint analysis was thought to be an appropriate tool, suitable for a situation when the respondents are few, as in this case. However, difficulties arose

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\(^{87}\) Although this first description has been inductively derived, e.g. by the means of analysis techniques retrieved from grounded theory, it should be remembered that the information collection phase was theoretically driven through the conceptual framework developed in chapter 2 (figure 2-6 and figure 1-3), see e.g. 3.2.4.
due to the nature of my interest. Conjoint analysis is a valuable tool e.g. when investigating the composition of different offerings and their pricing. Price is then an equivalent of value. When talking about customer-perceived value, price is, however, only one component of the sacrifice side of the total concept. I was interested in the effect side of the maps and of what value the offering and actions connected to it, implied in the customer’s organization, e.g. in terms of capital tied up, or costs for employee time.

The problem was not solved with conjoint analysis, or at least not with the knowledge of the method I had the possibility to acquire. In addition, it was recognized that the value attributes I wanted to investigate had a correlation that was too high with each other to produce a reliable outcome. The approach was consequently abandoned in favor of the method accounted for above.

Investigating “Organization efficiency”

With the value maps as a base, examples of paths from the “how-side” of the maps to the “effect-side” were disentangled. The paths were discussed with Volvo Aero personnel to ensure the correctness of the interpretations. Together, we decided, following a suggestion of mine, to investigate paths from the “Organization efficiency” map more deeply and concentrate on time aspects for the customer’s employees, i.e. what effects in working time different actions and behavior implied.

The paths were explored by means of structured interviews. Tentative questions were worked out by myself and then elaborated with the help of service provider expertise. Interviews were carried out by telephone according to the interview guide in appendix H. Each interviewee received questions that only concerned his own working field, implying that despite a large number of questions, each person only answered a subset of these.

Computation of customer-perceived value in monetary terms could be made by applying an appropriate man-hour rate to the answers. Different action alternatives could then be evaluated in monetary customer-perceived value terms. A closer account of these procedures will be given in section 5.4.

88 One of the respondents wanted the questionnaire by mail and chose to respond it in writing due to lack of time. Another respondent – with a rather high number of questions with many alternatives – had his questionnaire e-mailed so it was accessible on screen during the telephone interview.
5.1.3 The third phase – deepening the analysis

The final phase consisted of two steps, first a deepening of the empirical analysis and then a return to the theory and the conceptual framework, thereby enabling the development of a conceptual model of customer-perceived value.

An important action was performed prior to the deepened analysis, namely writing down the findings from the case – that far – in a report to Volvo Aero. A text that later formed the basis for section 5.2 – 5.5 in this chapter. Writing up the case study report was found to facilitate the further analysis and could be compared to a form of storyline writing. Storyline writing is a technique recommended byStrauss and Corbin (1998) to facilitate the step of articulating what the research is all about, to answer the question “what seems to be going on here” (p. 148). The technique is meant to ease the process of the selective coding, i.e. the process of shaping a theory by integrating and refining the categories (ibid. p. 143). An important step in this process consists of deciding on the central category, representing the core theme of the research.

The Volvo Aero research report became important for the final abstractions in the same way as storyline writing might have been. Rereading of the text facilitated the building of an explanatory theory as the central concept, forming customer-perceived value in the specific setting, which was actually found in the narration. This new phase of the iterative building of matrices and displays with pencil and paper in hand ended up with the first substantive theory (Strauss & Corbin, 1998) of the study, presented in chapter 6, i.e. a model explaining the connections between factors influencing the total customer-perceived value. Thus, it is an example of an “explicit theory: a set of concepts that might be organized in list form, or in a hierarchy, or in a network of propositional statements” (Miles & Huberman, 1994, p. 91).

In the very last step of abductive reasoning (Coffey & Atkinson, 1996) the above-mentioned substantive theory was brought back to the theoretically developed tentative conceptual model of customer-perceived value in chapter 2. The tentative model was in this way refined by the empirical findings and a new one proposed to describe the concepts building the customer-perceived value assessment of total service offerings when embedded in dyadic business-to-business settings (chapter 7). The refined conceptual model is proposed as the second substantive theory achieved in the study.

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89 The report was also distributed to and commented on by the customer.
5.1.4 Summarizing the investigation procedures

The main collection of empirical information started with interviews of several informants in both the customer’s and the service provider’s organizations. The interview topics had been elaborated in advance, based in the initial theoretical findings – the conceptual framework of customer-perceived value – and in my preunderstanding of the setting and the case. The interviews were then closely analyzed and the essence of customer-perceived value in the actual setting illustrated in value maps, describing customer-perceived value. A minor study was then conducted to explore how a monetary translation of customer-perceived value could be achieved.

In a later step the analysis was deepened and the first substantive theory, aiming to explain customer-perceived value in the actual setting and similar business-to-business relationships, was built. By an abductive approach, the theoretical and empirical findings were, in the final phase, brought together in a conceptual model, proposed as the second substantive theory of the study, describing the components influencing the assessment of customer-perceived value of total service offerings embedded in dyadic business-to-business relationships.

5.2 Illuminating customer-perceived value

As accounted for in previous sections, attributes building up customer-perceived value in the relationship were searched for by means of a qualitative study, namely semi-structured interviews (appendix F). These were conducted with staff members in the customer’s organization as well as members of the service provider’s organization. One factor common to all of the interviewees was that they had direct contact with the other party. Of course, these contacts were of differing frequency and in different roles, but together they covered all aspects of the interactions in the relationship.

Interviews were written down, sent to the interviewees for reading through and giving them the possibility to add, comment, and/or correct themselves. The procedure resulted in a very limited number of comments. The text was subsequently analyzed by asking the question “what customer-perceived value is talked about here?” over and over again.90

The analysis revealed that customer-perceived value was built around five benefit categories, i.e. value features, on the “get-side” and a general sacrifice category on the “give-side”. Together, these value features form a total view of customer-perceived value on a relationship level (figure 5-3).

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90 See section 5.1.1, p. 85 ff. for the detailed account of information collection and analysis.
Three of the value features, Availability of engines, Organization efficiency, and Financial benefits, form features of the product on a basic level of the relationship. The other two illustrate a higher level of the cooperation. The partnership in general terms is captured under the heading Collaborative partnership while the psychological side, feelings connected to the relationship, is summarized as Trust.

Prerequisites for the industry – in forms of laws, regulations, and standards – are left outside the investigation, since these form a base to which all actors have to adhere and no one can escape from.

The scales image

The pair of scales was chosen as an image to illustrate the concept of customer-perceived value and its trade-off between benefits and sacrifices – or in simplified terms – what you get against what you give.

Figure 5-3 includes the balance image, but notice that in fact it does not demonstrate a surplus value for the customer as both pans are even. In this state, the customer gives as much as he gets and that ought to mean that the relationship is instable. An attentive customer would, in this situation, be looking for a better service provider, i.e. one where the get-side weighs more than the give-side. One interviewee in the customer’s organization commented on the image thus:

Figure 5-3. Customer-perceived value of the specific relationship.
“It is a rather good image because when you see that it is starting to weigh even, then you are looking out to see if there are any other pair of scales out there where the pans weigh more to my advantage. Actually, there can be a number of scales meaning that Volvo’s competitors are on the other ones. And the question is which pair of scales to choose – should you jump over to another pair?” (Customer IP1)

Sacrifices stand for the give-side of the balance, but it should be remembered that all the value features on the “get-side” could be seen as small pairs of scales. This is an important issue; if value is not delivered in an optimal way in each category, benefits lost are moved over in the give-pan and weigh it down.

The following sections contain a rather close account of benefits and sacrifices found in the relationship. It is a static view of perceived customer value at the time of interviewing. First, benefits originating in the total service offering, the product level, will be accounted for and then benefits from the partnership level and the psychological level. Sacrifices from use of offering complete the report. Condensed value maps illustrate the value features – the essence of “what” the customer is getting – with connected drivers of value. The left-hand side of the maps illustrates “how” the service provider should act to deliver value to the customer. The right-hand side describes what this value implies to the customer, i.e. the “effects” of value. In addition, tables with accounts of attributes connected to each value driver are provided. The numbers of these refer to the complete value maps and the list of all value attributes and their explanations, found in appendix G. A study of these complete value maps is highly recommended to the reader.

5.2.1 Product level

The basic level of value creation is the product – the total service offering – with its core consisting of the maintenance service. The core is surrounded by different additional services, some of them pronounced separate services and some of them services that are necessary for the success of the interaction. The latter is, in practice, sometimes not always even thought of as services, but instead simply considered to be administrative routines. The product is thought to bring a greater value to the customer as a whole than the single services would do one by one. The circumstances surrounding its delivery, mainly the prerequisites of the service provider, influence the perceived value.

\[91\] For example questions to customer concerning scope of overhaul, invoicing, and forwarding of acknowledgement of orders.
One of these circumstances evident in this case is the geographical proximity between the parties.

In this investigation the product offering is regarded as a unity meaning that no disentanglement of the different services and their respective value creative contribution is made. Nor have the effects of time been separated from the maps. This later topic will be discussed under a separate headline below.

5.2.1.1 Availability of engines

Specific for the reality of an aircraft operator is the focus on the time schedule and the ability to perform flights as planned. Cancelled flights mean a failure to bring in revenue that can never be regained. The following quotation is an expressive illustration of this fact.

“... a cancelled flight is a cancelled flight. There is no value left in it. A departure which is cancelled is gone, it’s never going to come back again. It’s like rotten fruit, once it’s rotten you can’t sell it. You are left with no option than to throw it away. You see, that’s how tough it is. You know, if you have wooden boards of a low quality, say with too many knots in them, at least you can sell them as second selection. You can’t sell a lost flight, there is no such thing as a second selection flight.” (Customer IP1)

The time schedule for this operator is day-time and mainly week-days. Minor maintenance is performed nightly and operations of a larger scope – such as the removal or change of an entire engine – are concentrated to weekends. The technical department of the operator has this focus clear – it is their mission to keep the aircraft in a condition to keep to the time schedule. Problems often must be dealt with at once to avoid the worst situation, an AOG, meaning that a technical problem makes it impossible to perform the flight as planned.

Another aspect of availability of aircraft engines is financial. Availability is essential to a flight operator striving for a production of flight hours with a lean use of assets. This is quite reasonable as approximately 65-70% of the value of an older aircraft is assignable to the engine. Maintenance of engines is strictly controlled by authorities, e.g. meaning that life-limited parts inside the engine provide stop points when the engine has to be removed from the wing and sent to a maintenance shop. To keep the aircraft in the air, a spare en-

---

92 AOG: Aircraft on Ground
93 The description is based on an airline working on “soft-time” for maintenance intervals, meaning a certain degree of freedom to choose the point of time for overhaul. The opposite, “hard-time” implies that the engine should be overhauled irrespective of its condition e.g.
gine or a rental engine can replace the original. Spare engines imply tied up capital, and therefore, in order to minimize the capital tied up in assets, it is crucial for the maintenance shop to keep to promised turn around times. However, other actions, e.g. planning and backup service, as well as maintenance quality – to avoid unplanned removals – are also essential when taking a comprehensive view of the availability problem.

Availability of engines – “how”

How should the service provider work to provide customer-perceived value according to the interviewees in this case? Table 5-3 specifies all value attributes grouped by their main driver.

"Turn around time is a base factor for the service provider to fulfill in order to create value. The two aspects of turn around time are precision and length, both important but with slightly different nuances. Length of turn around time is, as mentioned above, important to minimize capital tied up in a very straightforward way. It also influences the maintenance cost consisting of spare engine rental in cases when no company-owned spares are available. The length and precision of turn around time also affects opportunities to undertake an accurate planning and thereby execute the engine change on schedule."

“If the customer has a large number of engines and many of them are in the shop at the same time, and if we then reduce the turn around time in our shop, we will reduce the need for use of spare engines as well as reduce the need for rental spare engines. In other words we will reduce the overall cost for our customer.” (Service Provider IP3)

Turn around time is not just important for engines, but also for components such as LRUs94.

“We build our provisioning on the fact that we have a certain number of spares and that the unserviceable LRU is allowed to be away for a certain number of days. If it’s gone too long, then we need to get more spare LRUs.” (Customer IP1)

To keep the engine a long time on wing is another way to bring about availability. Principally, this is achieved through quality in maintenance – both of engines and LRUs – optimized to suit the particular airline’s operations, but also through preventive and rectifying actions on wing and through a careful operation as well as line maintenance95.

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94 LRU: Line Replaceable Unit
95 Line maintenance consists of continuous inspections and limited overhaul in daily traffic, conducted at airports, often by the operator’s own personnel.
Table 5-3. Value drivers and attributes concerning “how” to deliver Availability of engines.

<table>
<thead>
<tr>
<th>Value driver – main level</th>
<th>Value attributes – detailed level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Turn around time – precision</td>
<td>Priority in shop A5-C</td>
</tr>
<tr>
<td></td>
<td>Stability in maintenance process A212-S</td>
</tr>
<tr>
<td></td>
<td>Flexibility A79-C</td>
</tr>
<tr>
<td></td>
<td>In-house maintenance components A1058-S</td>
</tr>
<tr>
<td></td>
<td>Communication:</td>
</tr>
<tr>
<td></td>
<td>Accuracy of promised delivery dates A7</td>
</tr>
<tr>
<td></td>
<td>Accuracy of promised turn around time A6</td>
</tr>
<tr>
<td></td>
<td>Early information on delivery schedule A3</td>
</tr>
<tr>
<td></td>
<td>Alertness day-to-day – updated on customer operations A12-C</td>
</tr>
<tr>
<td>Turn around time – length A10</td>
<td>Priority in shop A5-C</td>
</tr>
<tr>
<td></td>
<td>Stability in maintenance process A212-S</td>
</tr>
<tr>
<td></td>
<td>Flexibility A79-C</td>
</tr>
<tr>
<td></td>
<td>In-house maintenance components A1058-S</td>
</tr>
<tr>
<td></td>
<td>Swiftness in action A17</td>
</tr>
<tr>
<td></td>
<td>Transport preparation A27</td>
</tr>
<tr>
<td></td>
<td>Communication:</td>
</tr>
<tr>
<td></td>
<td>Early information on delivery schedule A2</td>
</tr>
<tr>
<td></td>
<td>Pro-actively, before engine in shop A13</td>
</tr>
<tr>
<td></td>
<td>Geographical closeness – transport time minimized A21</td>
</tr>
<tr>
<td>Engine change on schedule</td>
<td>Turn around time (precision and length – as above) A219-S</td>
</tr>
<tr>
<td></td>
<td>Receiving/acceptance assistance A226-S</td>
</tr>
<tr>
<td></td>
<td>Document correctness A137</td>
</tr>
<tr>
<td></td>
<td>Swiftness in corrective action A1</td>
</tr>
<tr>
<td></td>
<td>Packaging A11</td>
</tr>
<tr>
<td></td>
<td>Maintenance quality – engine A3, A4</td>
</tr>
<tr>
<td></td>
<td>Maintenance quality – LRUs A18-C</td>
</tr>
<tr>
<td>Long time on wing</td>
<td>Precision and length turn around time, related to time on wing A191-S</td>
</tr>
<tr>
<td></td>
<td>Maintenance quality – engine A3, A4</td>
</tr>
<tr>
<td></td>
<td>Maintenance quality – LRUs A18-C</td>
</tr>
<tr>
<td></td>
<td>Optimal maintenance A132-S</td>
</tr>
<tr>
<td></td>
<td>Preventive maintenance LRU A190-S</td>
</tr>
<tr>
<td></td>
<td>Preventive/rectifying actions on wing</td>
</tr>
<tr>
<td></td>
<td>Geographical closeness – transport time minimized A41</td>
</tr>
<tr>
<td></td>
<td>Communication:</td>
</tr>
<tr>
<td></td>
<td>Swiftness to inform about possible problems A14-C</td>
</tr>
<tr>
<td></td>
<td>Service providers advice A28</td>
</tr>
<tr>
<td></td>
<td>Informative contents of technical documents A11</td>
</tr>
<tr>
<td></td>
<td>Advice – line maintenance and operational practices A213-S</td>
</tr>
<tr>
<td>Fleet optimization</td>
<td>Long term engine maintenance optimization A32</td>
</tr>
<tr>
<td></td>
<td>Spare engine use A21</td>
</tr>
<tr>
<td>Backup service</td>
<td>Provision of rental spare engines A36</td>
</tr>
<tr>
<td></td>
<td>Lending of LRUs by service provider A35-C</td>
</tr>
<tr>
<td></td>
<td>Provision of components A12-C</td>
</tr>
<tr>
<td></td>
<td>“Robbing” LRUs on engines in shop A24</td>
</tr>
<tr>
<td></td>
<td>Communication consists of:</td>
</tr>
<tr>
<td></td>
<td>Contacts phone/e-mail/fax A15-C</td>
</tr>
<tr>
<td></td>
<td>Provision of logistical documents, engines A14-C</td>
</tr>
</tbody>
</table>

To operate a larger fleet involves a great deal of planning to maintain availability. The service provider could therefore facilitate the fleet optimization for the operator. This includes considerations of utilization of the operator’s own spare engines, avoiding unnecessary rentals and change costs.
If problems should arise, different types of backup services form the service provider’s way of assisting the operator. This could be expressed by provision of components or spare engines. A special effect of the geographical closeness is the ability for the operator to use their own engines in shop as a spare part supply.

“They have another bonus of having us close and that’s when they’re short of components and LRUs on engines, then the engines they have here with us serve as a spare part supply. ... Clearly we have an advantage here. They have access to their components in a totally different way, than if they had them sent to another shop elsewhere in the world.” (Service Provider IP3)

Communication between the service provider and the customer is an important attribute to provide customer-perceived value. It is through the flow of information that customer staff members can act inside their organization to fulfill the aim of availability.

“… to know when the engine will be delivered. If Volvo Aero plans to run the engine in a test cell on Wednesday / Thursday, then I would like to know if we can get the engine by Wednesday / Thursday next week, so we can include that aircraft in our schedule. You know, this has an impact on the whole traffic schedule. We can’t just move aircraft back and forth. We need to know in advance – when the engine will be delivered and when we can do the engine re-fit. But we aim to improve the communication so that we know when the engine will be delivered.” (Customer IP3)

Availability of engines – “effects”

Table 5-4 covers all value attributes connected to the customer effects of available engines. The “effects” of availability of engines by the customer can be summarized under the following four main headings.

Tied up capital – minimization concerns the need for spare engines and LRUs. A low need for spares has a substantial effect on tied up capital, due to its considerable worth in monetary terms.

Even with a flight hour agreement the maintenance cost – minimization driver could be important, although this will depend on the scope of the agreement. Rental spare engines could involve considerable amounts in monetary terms, of which direct rent stands for the main part, but there are also costs bound to transport and personnel time.

How the engines are operated is another attribute affecting the maintenance cost, mainly in the long term.
Table 5-4. Value drivers and attributes concerning “effects” of Availability of engines.

<table>
<thead>
<tr>
<th>Value driver – main level</th>
<th>Value attributes – detailed level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tied up capital – minimization</td>
<td>Need of own spare engines A9</td>
</tr>
<tr>
<td></td>
<td>Need of own spare LRU’s A9-C</td>
</tr>
<tr>
<td>Maintenance cost – minimization</td>
<td>Need of rental spare engines A9</td>
</tr>
<tr>
<td></td>
<td>Rent A9</td>
</tr>
<tr>
<td></td>
<td>Transports A9</td>
</tr>
<tr>
<td></td>
<td>Time for extra change</td>
</tr>
<tr>
<td></td>
<td>Need of LRU-robbing on own engines in shop A9-C</td>
</tr>
<tr>
<td></td>
<td>Transports A9-C</td>
</tr>
<tr>
<td></td>
<td>Personnel time to arrange</td>
</tr>
<tr>
<td></td>
<td>Optimize use of life limited parts (applicable for time &amp; material engines)</td>
</tr>
<tr>
<td></td>
<td>Careful use of engines A9-C</td>
</tr>
<tr>
<td></td>
<td>Long term maintenance cost</td>
</tr>
<tr>
<td>Flexibility C</td>
<td>Possibilities for rapid adaptation to internal/external demands A139-C</td>
</tr>
<tr>
<td></td>
<td>Aircraft A139-C</td>
</tr>
<tr>
<td></td>
<td>Engine A139-C</td>
</tr>
<tr>
<td></td>
<td>Crew A139-C</td>
</tr>
<tr>
<td></td>
<td>Technical staff A139-C</td>
</tr>
<tr>
<td>Revenue security</td>
<td>Punctuality – minimization of delays A22</td>
</tr>
<tr>
<td></td>
<td>Avoidance of cancelled flights A22</td>
</tr>
<tr>
<td></td>
<td>Unscheduled situations A22-C</td>
</tr>
<tr>
<td></td>
<td>Problem delivered engine A22-C</td>
</tr>
<tr>
<td></td>
<td>Avoidance of bad will A21-C</td>
</tr>
</tbody>
</table>

*Flexibility* is a value driver only mentioned by the customer, pointing to the need for rapidness in response to changes in flying operations due to external and/or internal demands.

The last value driver concerns the customer’s customers – the flight passengers – and the opportunities to achieve *revenue security*. The importance here, connected to maintenance of the engines, is that they are working when they are needed. Passengers do not appreciate cancelled flights and delays. Nor do these incidents only imply lost revenue – and extra costs – at that present time. They also contribute to the passengers’ image of the company. It is known that getting a reputation for having technical problems contributes to badwill that, in the long term, can lead to lost revenue.

“The operator is making money on selling services, that is to say on completed flights. A cancelled flight is lost revenue for them, and a cancelled flight cannot be reverted. You know there is no way that they can recoup that money, that lost revenue. It can even be cheaper for them to use a wet-lease, that is an aircraft with a crew from another company to make the flight. At least they have broken-even on that flight or that day. Put this in contrast to not having flown at all. Then you are left with all the costs but no revenue, including the capital cost. It’s only the variable costs that disappear if you can’t complete the flight.”

(Service Provider IP3)

The value drivers for the “hows” and “effects” of Availability of engines are summarized in figure 5-4 (for a detailed value map, including value attributes, see appendix G).
5.2.1.2 Organization efficiency

While availability is a well know variable within the industry, the importance of creating organizational efficiency for the customer showed up as rather a novelty in the analysis. “Turn around time” was emphasized by Volvo Aero staff members as the main focus of the industry. Facilitating the work of the operator’s personnel was never mentioned in advance, but crystallized during interview analysis as important for the customer-perceived value.

Organization efficiency – “how”

Common to all “hows” of Organization efficiency (table 5-5) are their effects as time savers for operator staff. If not working out, someone at the customer’s side has to carry out direct actions that take time, or they may simply have to worry about if, or how, things are working out – a hidden time thief.

Quality of delivered engines (mentioned only by the customer), supportive actions (mentioned only by the supplier), and geographical closeness all affect time.
Table 5-5. Value drivers and attributes concerning “how” to deliver Organization efficiency.

<table>
<thead>
<tr>
<th>Value drivers – main level</th>
<th>Value attributes – detailed level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quality of delivered engines</td>
<td>Supportive planning O39-D</td>
</tr>
<tr>
<td></td>
<td>Receiving/acceptance assistance O215-S</td>
</tr>
<tr>
<td>Delivery accuracy</td>
<td>Communication</td>
</tr>
<tr>
<td>Simplicity in contacts</td>
<td>Communication</td>
</tr>
<tr>
<td>Knowledge transfer</td>
<td>Realistic training situation O138-S</td>
</tr>
<tr>
<td>Simplicity in routines</td>
<td>Communication</td>
</tr>
<tr>
<td>Geographical closeness</td>
<td>Communication</td>
</tr>
</tbody>
</table>

Communication, the flow of information, and how it is carried out have significant affects on the value drivers delivery accuracy, simplicity in contacts, and simplicity in routines. The last driver concerns the basic structure to facilitate contacts on a daily level, i.e. facilitating the value driver of “simplicity in contacts”. Attributes concerning structure include circumstances about the business agreement, length and width of the commitment, as well as how the service provider organizes to facilitate the use of different services.

Knowledge transfer is a driver that involves how the service provider offers its expertise to the customer’s personnel. This could be done in organized training sessions, but everyday learning through technical support and documents is thought to be of great importance.

“It takes many years to get to know a product like this and to know all the ‘ins’ and ‘outs’ of it. Well, now I guess that they are that experienced that they manage it themselves. However, I believe it is common with all operators that have little experience on a particular type of aircraft to have a large number of questions, which most probably can be answered by reading the manuals, but it is quicker and simpler to get an answer straight away by calling someone.” (Service provider IP4)

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96 T&M: Time and Material
97 OEM: Original Equipment Manufacturer
“Yes, it is good for my experience, my knowledge bank. I need to know… that I can get access to their expertise. It is important for me. I would like to do my job to 100%.” (Customer IP3)

Table 5-6 accounts for the attributes connected to communication. Communication consists of support and documents. Technical support concerns all types of advice related to the use of the engine, e.g. problems in operation, line maintenance, or assembly/disassembly. Customer support is defined as all other types of contacts, e.g. discussions about the scope of maintenance, findings during disassembly, proceeding of engine in shop, or transport preparations.

Table 5-6. Value drivers and attributes concerning Communication connected to “how” to deliver Organization efficiency.

<table>
<thead>
<tr>
<th>Value driver Communication – main level</th>
<th>Value attributes Communication – detailed level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Communication</td>
<td>Swiftness in response O104</td>
</tr>
<tr>
<td></td>
<td>Correct instance O105-S</td>
</tr>
<tr>
<td></td>
<td>Sufficient size of staffing O60-C</td>
</tr>
<tr>
<td>Support</td>
<td>Dialog – feedback O97</td>
</tr>
<tr>
<td>Customer support</td>
<td>Delivery information – early O54, - plain O58-C</td>
</tr>
<tr>
<td></td>
<td>Confirmatory O55</td>
</tr>
<tr>
<td></td>
<td>Systematic organization O61-C</td>
</tr>
<tr>
<td></td>
<td>Face to face meetings O66-C</td>
</tr>
<tr>
<td></td>
<td>Presentation of performance measures O62-C</td>
</tr>
<tr>
<td>Technical support</td>
<td>Effective problem solving O53</td>
</tr>
<tr>
<td></td>
<td>Pedagogy in explanations O50</td>
</tr>
<tr>
<td></td>
<td>Easy to contact O79-C</td>
</tr>
<tr>
<td>Documents</td>
<td>Tidiness O111-C</td>
</tr>
<tr>
<td></td>
<td>Adaptation to customer routines O37</td>
</tr>
<tr>
<td></td>
<td>Correctness in content O41, O55</td>
</tr>
<tr>
<td></td>
<td>Facilitating format O53</td>
</tr>
<tr>
<td></td>
<td>Promptness in delivery O46, O52-C</td>
</tr>
<tr>
<td></td>
<td>Facilitating content O40, O51-C</td>
</tr>
<tr>
<td></td>
<td>Delivery information – early O34, - plain O35-C</td>
</tr>
<tr>
<td>Technical documents</td>
<td>Explanation of content O39-C</td>
</tr>
<tr>
<td></td>
<td>Careful check of incoming documents O45</td>
</tr>
<tr>
<td></td>
<td>Explanations to facilitate control of parts O58-C</td>
</tr>
<tr>
<td></td>
<td>Advance information O54-C</td>
</tr>
<tr>
<td>Logistical documents</td>
<td>See documents</td>
</tr>
<tr>
<td>Contracts</td>
<td>Clearness in wording O74</td>
</tr>
<tr>
<td></td>
<td>Simplicity in structure/variants O75</td>
</tr>
<tr>
<td></td>
<td>Documentation of interpretations O77</td>
</tr>
<tr>
<td></td>
<td>Refreshment of content O76</td>
</tr>
<tr>
<td></td>
<td>Negotiation ability O82-C</td>
</tr>
<tr>
<td>Invoices</td>
<td>EFH* - rate determination – information O48</td>
</tr>
</tbody>
</table>

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*EFH: Engine Flight Hour Agreement*
Four main types of documents have been identified; technical, logistical, contracts, and invoices. All of them part of the communicative process and the flow of information. It is of the utmost importance that all of these, and especially the technical documents, are absolutely correct. The customer, as well as the service provider, underline this and note that this has been a problem, when talking about technical documents.99

“The work is completed with quality, however, sometimes it is lacking document quality, for example readings are not carefully noted, including part or serial numbers. For us this is so important. Everything needs to be done by the book. Everything needs to be accurately recorded, every engine with all its components.” (Customer IP6)

“Well, that’s a sad story because there are an awful lot of numbers to keep in order, read off, write off, get correct. And now when the operator has implemented their new system, they’re working hard to get all information verified and adjusted when they’re receiving an engine. And that means that they will find all the little reading errors. If there are any, they will find them. That could be perceived as disturbing, having to contact us and having us to send a new document confirming that the information is correct. It takes extra time for them and for us.” (Service provider IP4)

Organization efficiency – “effects”

The effects (table 5-7) of the service provider’s efforts connected to Organization efficiency are mainly found under the heading employee efficiency. As mentioned above, the “hows” are heavily concerned with time saving. An example of this is given in the following quotation, connected to time saving due to simplicity achieved by a total care commitment.

“It is an administrative burden for the customer to send all their components to different workshops, e.g. send the pump to the first, the pneumatic system to the second, and the valve to the third and so on, instead of sending it all to one shop which can handle it all.” (Service provider IP1)

A high level of employee efficiency contributes to organization minimization, implying that the size of staffing can partly be reduced thanks to the efficiency that is achieved. However, a reliance on the service provider’s ability to carry

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99 After this analysis was completed, I obtained a copy of the “Airline Maintenance Market Study” (Air Transport World, 2002). The survey comprised 121 usable responses (only 5% rate of return) but as all leading airlines were included, reliability was judged as high by Volvo Aero staff members. From this study it can be noted that “correctness of paperwork” is regarded as very important by customers generally. It was ranked as the second top factor considered when selecting an engine maintenance provider. “Correctness of paperwork” only surpassed by “long-term reliability and quality”, and with “on-time delivery” and “turn around time” ranked as the fourth and fifth factor respectively. However, all factors are within a very small range of differences in ratings. (Levels of significance not provided.)
out supportive actions and act as a backup partner can reduce both general needs of staff size, as well as safety margins for vacations, sick leave, etc.

The geographical closeness between the parties is connected to the last effect (only mentioned by the customer), namely travel expenditure savings. This attribute is also affected by routines and contacts with regard to the extent that travel must be made to and from the maintenance shop.

Table 5-7. Value drivers and attributes concerning “effects” of delivering Organization efficiency.

<table>
<thead>
<tr>
<th>Value drivers – main level</th>
<th>Value attributes – detailed level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Employee efficiency</strong></td>
<td>Minimization of change costs – engines O67, LRUs O94-C</td>
</tr>
<tr>
<td></td>
<td>Mechanic time</td>
</tr>
<tr>
<td></td>
<td>Administrative time</td>
</tr>
<tr>
<td><strong>Administrative efficiency</strong></td>
<td>Time saving in:</td>
</tr>
<tr>
<td></td>
<td>Planning/re-planning O155</td>
</tr>
<tr>
<td></td>
<td>Document handling O150</td>
</tr>
<tr>
<td></td>
<td>Component provision O85-C</td>
</tr>
<tr>
<td></td>
<td>Component control O92</td>
</tr>
<tr>
<td></td>
<td>Simplicity – total care O149</td>
</tr>
<tr>
<td></td>
<td>Purchasing O146</td>
</tr>
<tr>
<td></td>
<td>Financial administration O71</td>
</tr>
<tr>
<td></td>
<td>Warranty handling O96</td>
</tr>
<tr>
<td></td>
<td>Warranty handling OEM O47-C</td>
</tr>
<tr>
<td></td>
<td>Flexibility in personnel planning O86-C</td>
</tr>
<tr>
<td></td>
<td>Mechanics</td>
</tr>
<tr>
<td></td>
<td>Administration</td>
</tr>
<tr>
<td></td>
<td>Aircraft crew</td>
</tr>
<tr>
<td></td>
<td>Personnel “upgrading” O151</td>
</tr>
<tr>
<td></td>
<td>Usefulness in various tasks</td>
</tr>
<tr>
<td><strong>Organization minimization</strong></td>
<td>Size of staffing O88</td>
</tr>
<tr>
<td></td>
<td>General “Safety margins”</td>
</tr>
<tr>
<td><strong>Travel expenditure savings</strong></td>
<td>Short travel distance O47-C</td>
</tr>
<tr>
<td></td>
<td>Minimization of coordination travels O47-C</td>
</tr>
</tbody>
</table>

Figure 5-5 summarizes all value drivers connected to the value feature Organization efficiency (see appendix G for detailed value map including all value attributes).
5.2.1.3 Financial benefits

The third value feature on the product level takes the financial aspects of the offering into consideration – Financial benefits.

Financial benefits – “how”

The value drivers building up the “how-side” of the feature are risk reduction, simplicity in routines, and maintenance practice (table 5-8). The latter is only mentioned by the service provider.

Risk and financial effects are well connected, with the level of risk reduction highly dependable on the type of agreement. In a straight time and material deal, the risk is entirely the customer’s. Engine flight hour agreements, on the other hand, can include a range of services, implying that the width of services
comprised regulates the risk reduction level. However, warranties provide some sort of risk reduction which is also applicable to time and material deals.

Administratively, an engine flight hour price means *simplicity in routines*. The last driver, *maintenance practice* stands for an attitude to overhauls, meaning that not only inescapable repairs or regulated exchanges of today should be carried out. It is about taking a longer-term view, paying regard to present condition, planned operations, and the next maintenance event. A level of overhaul that will preserve the financial value of the engine at an optimal level is thus proposed.

**Table 5-8. Value drivers and attributes concerning “how” to deliver Financial benefits.**

<table>
<thead>
<tr>
<th>Value drivers – main level</th>
<th>Value attributes – detailed level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk reduction</td>
<td>Warranties (T&amp;M) &lt;sup&gt;F190&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Engine liability shop visit &lt;sup&gt;F193-S&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Price per EFH &lt;sup&gt;F85&lt;/sup&gt;</td>
</tr>
<tr>
<td>Simplicity in routines</td>
<td>Price per EFH &lt;sup&gt;F45&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>EFH-rate – early information &lt;sup&gt;F49&lt;/sup&gt;</td>
</tr>
<tr>
<td>Maintenance practice &lt;sup&gt;S&lt;/sup&gt;</td>
<td>Value preserving maintenance routines &lt;sup&gt;F217-S&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

**Financial benefits – “effects”**
The effects of the Financial benefits (table 5-9) consist of *budget simplicity*, *budget security*, *cash flow balance*, and *asset protection* (only brought up by the supplier).

**Table 5-9. Value drivers and attributes concerning "effects" of delivering Financial benefits.**

<table>
<thead>
<tr>
<th>Value drivers – main level</th>
<th>Value attributes – detailed level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Budget simplicity</td>
<td>Easy to calculate maintenance cost &lt;sup&gt;F96&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Benchmarking facilitating &lt;sup&gt;F194-S&lt;/sup&gt;</td>
</tr>
<tr>
<td>Budget security</td>
<td>Control of cost &lt;sup&gt;F141&lt;/sup&gt;</td>
</tr>
<tr>
<td>Cash flow balance</td>
<td>Security of cash flow-level &lt;sup&gt;F87&lt;/sup&gt;</td>
</tr>
<tr>
<td></td>
<td>Release of capital or forced saving &lt;sup&gt;F142&lt;/sup&gt; (interest effects)</td>
</tr>
<tr>
<td>Asset protection &lt;sup&gt;S&lt;/sup&gt;</td>
<td>Value of engines &lt;sup&gt;F218-S&lt;/sup&gt;</td>
</tr>
</tbody>
</table>

*Budget simplicity* and *security*, as well as *cash flow balance*, are all effects of an engine flight hour agreement. Paying a monthly fee, depending on number of hours the engine has been in the air, provides an easy way to calculate maintenance cost. The monthly fee also implies a control of cost and cash flow for the customer, based on his production plan and budget.

The value of an engine is very high and its technical life is long, often up to 30 years. *Asset protection* implies the effects of keeping this value at a desired
level by the above mentioned maintenance practice. Desired value could mean either a fixed value determined by a leasing company or by a value policy created by the operator himself.

Figure 5-6 illustrates all value drivers connected to the Financial benefits value feature. For a detailed value map of Financial benefits including all connected value attributes, see appendix G.

5.2.2 Partnership level – Collaborative partnership

The partnership level, Collaborative partnership, emerged as a benefit category forming a more general level of value than those closely linked to the specific product. Here, the interviewees talked about how they wanted the relationship to be carried out in more general terms. It was also about the mutual development of the business that both parties – customer and service provider – had to take part in.
The content of Collaborative partnership is framed by the circumstances around the relationship. The parties have been linked to each other as customer and service provider over many years. During this time, the extent of the business has evolved and is now substantial; their importance to each other is essential. History is present as there are employees on both sides who have participated in the journey to this point of the relationship. These circumstances entail that memories of former interactions are always present, serving as some sort of comparison standard.

This frame is to be remembered when studying the value drivers and attributes. It is not just to copy these over to another dyad without asking what that relation consists of, and what it is desired to be.

Collaborative partnership – “how”

The “how-side” of the map illuminates the importance of closeness and serious interest from the service provider’s side. The value drivers (table 5-10) are cooperation, contacts, engagement in customer’s daily operations – the latter leading to opportunities for the service provider to have a general picture of fleet and operations (only mentioned by the customer) – and social activities.

Cooperation concerns the willingness from the service provider to participate in the collaboration. It is about showing an active interest in developing the content of the business as well as developing the present interaction to work out smoothly and effectively. It is also about the service provider putting together a competent team of staff members to take care of the collaboration, competent both in terms of expertise and in chemistry between staff members in the two organizations.

Contacts is about the way interactions and communications are carried out. It concerns how the service provider’s personnel treat the customer’s – a matter of attitude and behavior – and points to the need for soft skills.

“You would like to see some positive spirit. You know, a bit of let’s do mentality. ‘We will do our best.’ That’s what you ask for, I suppose.” (Customer IP2)

Another important aspect of contacts is the necessity of regular personal meetings. Even if contacts take place on a daily basis, communication via telephone and e-mail cannot totally replace the feelings from face-to-face meetings. The following quotation points to that, but also to the fact that the behavior of other suppliers is used as a comparison standard.

“Even if I don’t ask for it, most of our suppliers try to get a meeting with us at least twice a year. You don’t leave a customer for a longer period than six months without having a formal meeting. Well, I don’t know if it’s because we have so frequent contacts with Volvo that they don’t think it’s necessary to meet. But my colleagues have noted it anyway.” (Customer IP4)
Table 5-10. Value drivers and attributes concerning “how” to achieve Collaborative partnership.

<table>
<thead>
<tr>
<th>Value driver – main level</th>
<th>Value attributes – detailed level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooperation</td>
<td>Interest in continuous improvement of collaboration</td>
</tr>
<tr>
<td></td>
<td>Interest to expand business offering</td>
</tr>
<tr>
<td></td>
<td>Right persons in right positions</td>
</tr>
<tr>
<td></td>
<td>Flexibility</td>
</tr>
<tr>
<td></td>
<td>Simplicity</td>
</tr>
<tr>
<td></td>
<td>Efficiency</td>
</tr>
<tr>
<td></td>
<td>Seriousness</td>
</tr>
<tr>
<td>Contacts</td>
<td>Seriousness</td>
</tr>
<tr>
<td></td>
<td>Continuously</td>
</tr>
<tr>
<td></td>
<td>Regularity in face to face meetings</td>
</tr>
<tr>
<td></td>
<td>Optimism</td>
</tr>
<tr>
<td></td>
<td>Compliance</td>
</tr>
<tr>
<td></td>
<td>Swiftness</td>
</tr>
<tr>
<td></td>
<td>Non-prestigious</td>
</tr>
<tr>
<td>Engagement in customer’s daily operations</td>
<td>Interest in daily business</td>
</tr>
<tr>
<td></td>
<td>Interest in long term plans</td>
</tr>
<tr>
<td></td>
<td>From all levels in service provider’s organization</td>
</tr>
<tr>
<td></td>
<td>Closeness</td>
</tr>
<tr>
<td></td>
<td>Understanding</td>
</tr>
<tr>
<td></td>
<td>Commitment</td>
</tr>
<tr>
<td></td>
<td>Actively</td>
</tr>
<tr>
<td></td>
<td>Provision of information</td>
</tr>
<tr>
<td>General picture of fleet and operations</td>
<td>Engagement in customer’s daily operations – see above</td>
</tr>
<tr>
<td>Social activities</td>
<td>Network developing - service provider – other operators</td>
</tr>
<tr>
<td></td>
<td>Marketing events</td>
</tr>
</tbody>
</table>

The customer, in particular, underlines the importance of a close cooperation between customer and service provider, illustrated in the driver engagement in customer’s daily operations. They see it as teamwork where closeness, understanding, commitment, and an active interest in the customer’s business, from all levels in the service provider’s organizational hierarchy, are all prerequisites for the mutual development of the relationship.

“... you’ll have to be present in the airlines operation all the time, be rather close in some way, to know what's happening in the industry. ‘Will you still be using Fokker 50 in three years? Or five years? What's the prospect of that?’ In fact, that’s what management ought to engage in, what long-range plans we have, how we look at it in the long run. And also maybe to come with some advice on how they look at the world market. Because then we can be a team and help each other to move forward.” (Customer IP1)

General picture of fleet and operations is pointed out by the customer to be an advantage of the business relationship.

“The advantages are ... that it’s near and accessible. Plus it’s an advantage that they have a general picture. They know which engines we have and their status.
They know who you are and we know each other. That’s a great advantage.”
(Customer IP2)

Social activities is the last value driver. Both parties underline their importance and effects. However, a slight difference in focus was noticed. The customer’s staff stressed social activities as a key to maintain and build networks, while the service provider noted them as different sorts of marketing events.

“We went on a trip to Sälen together with other operators that work with the same aircraft type. It was a useful event, we got to know other operators. I believe we all felt that it was a good event. We talked about the Fokker 50, not just about the engines and engine related problems, but other stuff as well. It is important to network with other operators. We call them and they call us.”
(Customer IP3)

“Contacts are made during aircraft fairs and other similar events, for example we had Volvo Ocean Race that we invited customers to. We’re inviting customers to activities at fairs, jubilees and so on. Sometimes we get invited to the customers, we congratulate when key personnel celebrate even birthdays, it’s things like that we try to do. Nothing remarkable, but the thing is that you are personally engaged.” (Service provider IP1)

Collaborative partnership – “effects”

The effects of collaborative partnership are accounted for in table 5-11. The first value driver development of relation – interactions and communications ought to be rather obvious following the reasoning above.

“But these are the kind of things that ought to be resolved if you sat down together with Volvo Aero and talked to them. Discussed routines. ‘How should you have your routine and how does it work with ours?’ ” (Customer IP3)

The next driver, development of customer organization (just mentioned by the customer), points to the fact that it is perceived as important by the customer that this kind of relationship involves an information inflow, development of knowledge, exchanges of experience, and facilitates network expansion.

<table>
<thead>
<tr>
<th>Value driver – main level</th>
<th>Value attributes – detailed level</th>
</tr>
</thead>
</table>
| Development of relation – interactions and communications | Routines and documents P178
Problem solving P176
Long term development of business P184 |
| Development of customer organization | Information inflow P177-C
Knowledge development P179-C
Experience exchange P180-C
Network expansion P182-C |
| Relationship cognizance | Personal knowledge P172
Partner assurance P185-C |
**Relationship cognizance** represents the value of really knowing each other. Personal knowledge – not just a name, but also the face and the person behind it – of the people you are dealing with facilitates contacts. It also means that you know “where you have each other”, what to expect, and what to get.

The condensed map of Collaborative partnership is found in figure 5-7 below. All connected value attributes can be seen on the detailed value map in appendix G.

![Figure 5-7. Map of Collaborative Partnership.](image-url)
5.2.3 Psychological level – Trust

In this section, the aspects that imply a psychological level\(^{100}\) of customer-perceived value (table 5-12 and figure 5-8) are accounted for. The section is labeled *Trust* since this was the basic outcome that the value attributes and drivers were traced to. Trust should be interpreted as the customer's feelings of confidence for the relationship, the service provider, and the product, giving him peace of mind.\(^{101}\) Thus, this value feature is an expression of benefits on a psychological level, influenced by emotions, and consequently all of the connected value attributes are categorized as a non-monetary type of value.

Six value drivers that lead to Trust, i.e. illustrating how the service provider should act, can be identified. The effect side is left out of this map, as it seemed that Trust was the ultimate effect in psychological terms.

*Reliability* is a basic factor, illustrating the importance of the customer being able to depend upon the service provider, and to gain a sense of security. It is of course about the quality of the maintenance but also about the ability to keep to promised turn around times and delivery dates.

“Planned time off wing, to know that now we are taking it off and in a number of weeks, it will be re-installed. Then you can sleep at night.” (Service provider IP3)

“... it is the feeling of security, to know that it is that particular weekend it is going to happen and everyone can do their planning according to that.” (Customer IP4)

The feeling of reliability is also achieved through, for example, accessibility to services, to correctness of documents, expertise, and honesty.

“Especially during periods of vacation and those times when he runs into something that he has not experienced before. That’s unavoidable, there are many problems that he has not run into yet, although he has had this engine in use for

\(^{100}\) Grönroos (2000, p. 134) uses the concept “psychological costs” to denote a sort of sacrifice occurring when employees at a customer firm worry about a relationship, when they feel insecure and out of control, i.e. when they feel they cannot trust a supplier. Here, on the contrary, benefits on a psychological level are considered. However, if the relationship does not work as it should, these benefits can become sacrifices, i.e. psychological costs.

\(^{101}\) Trust is, in this investigation, a value feature of psychological nature, influenced by emotions; a concept grounded in the analysis. Thus, it is defined as expressed above and when further referred to spelt with a capital letter (as all value features are). The wider implications of Trust will be further discussed in chapter 6. However, “trust” is frequently found in literature where it is regarded as an important concept although hard to define, i.e. there is a lack of consensus among researchers concerning its definition (Cousins & Stanwix, 2001). Trust was also, in the theoretical review, found to be emphasized within the industrial network theory. A selection of work on trust is presented in appendix E.
ten years. So it’s certainly a pleasant feeling to know there is somebody that you can turn to.” (Service provider IP4)

“Because it’s important with reliability, that we can trust the service provider, so they don’t cheat us of the financial matters.” (Customer IP3)

Table 5-12. Value drivers and attributes concerning “how” to achieve Trust.

<table>
<thead>
<tr>
<th>Value drivers – main level</th>
<th>Value attributes – detailed level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reliability</td>
<td>Quality of maintenance T207</td>
</tr>
<tr>
<td></td>
<td>Credibility TAT/delivery dates T202</td>
</tr>
<tr>
<td></td>
<td>Accessibility</td>
</tr>
<tr>
<td></td>
<td>Honestly T126-C</td>
</tr>
<tr>
<td></td>
<td>Expertise – Technical advice T134</td>
</tr>
<tr>
<td></td>
<td>Document correctness T110</td>
</tr>
<tr>
<td></td>
<td>Assurance – information of cost T113</td>
</tr>
<tr>
<td></td>
<td>Warranty handling OEM (T&amp;M) T120</td>
</tr>
<tr>
<td></td>
<td>Contract attention T123-C</td>
</tr>
<tr>
<td></td>
<td>Regular performance reporting T108-C</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>Swiftness in action T135</td>
</tr>
<tr>
<td></td>
<td>Cooperativeness T123-C</td>
</tr>
<tr>
<td></td>
<td>Regularity in communication T119</td>
</tr>
<tr>
<td></td>
<td>Flexibility T110-C</td>
</tr>
<tr>
<td></td>
<td>Helpfulness T116</td>
</tr>
<tr>
<td></td>
<td>Small company approach T125-C</td>
</tr>
<tr>
<td></td>
<td>Kindness T117</td>
</tr>
<tr>
<td>Understanding</td>
<td>Day-to-day commitment T114-C</td>
</tr>
<tr>
<td></td>
<td>Good chemistry between staff T207-S</td>
</tr>
<tr>
<td></td>
<td>Sensitiveness to customer needs T125</td>
</tr>
<tr>
<td></td>
<td>General picture of customer fleet and operations T124-C</td>
</tr>
<tr>
<td>Long term commitment</td>
<td>Long term agreement T211</td>
</tr>
<tr>
<td></td>
<td>EFH-agreement T102</td>
</tr>
<tr>
<td></td>
<td>Multi service agreement T330</td>
</tr>
<tr>
<td></td>
<td>Long relationship T112</td>
</tr>
<tr>
<td>Geographical closeness</td>
<td>Language T63</td>
</tr>
<tr>
<td></td>
<td>Cultural closeness T131</td>
</tr>
<tr>
<td>Image</td>
<td>Service provider’s experience T102</td>
</tr>
<tr>
<td></td>
<td>Service provider’s resources T339-S</td>
</tr>
<tr>
<td></td>
<td>Brand image T126-S</td>
</tr>
</tbody>
</table>

102 ECTM: Engine Condition Trend Monitoring
Responsiveness is about showing cooperativeness, to carry out actions as swiftly as possible, and to do so with a smile on your face. It is about having an attitude of serving the customer correctly and pleasantly.

“They are fantastic in helping us in critical situations. There are never any problems and NN he’s off from home in the middle of the night, helping and fixing.” (Customer IP5)

“... Yes, and then he’ll have to explain. And he does that very well and simply, very helpful. Or if something has gone wrong and I want it to be corrected, he apologizes and sends a fax to apologize again in writing. He is very nice.” (Customer IP6)

Understanding points to the need of being sensitive to customer needs, to show a commitment in every day contacts, and having a general picture of customer operations. It is thought that a good chemistry between staff in the organizations is almost a prerequisite to get this working.

Trust is also achieved through the long term commitment, i.e. by the length, width, and type of agreement. It is also based in the long relationship between the organizations.

“It’s a comfort for me to know, when there’s a planned overhaul on my engine, then I’ll send it to Volvo. ... Yes, the advantage is maybe also ... the whole. We know that Volvo has capability to do these [LRUs] and we usually send them there. And implicitly this means some sort of comfort when we’re sending the engines there, it feels good to send the other [LRUs] there too. They maybe have the same contact person, the purchasers here. It’s the same contacts, the same persons, and so on.” (Customer IP4)

Geographical closeness together with the common language and cultural closeness, is also mentioned as a psychological benefit.

“We are not so used to being allowed to speak Swedish here at purchasing. Most of our relations involve English. So, it feels always a bit secure to use one’s own language.” (Customer IP4)

Finally, the image of the service provider, including experience and resources, accomplish the Trust value drivers. All of them are accounted for in table 5-12 and are illustrated by the map in figure 5-8 below. The detailed value map of Trust, including all value attributes is found in appendix G.
5.2.4 Sacrifices to use offering

All drivers of Sacrifices to use offering are illustrated by the map in figure 5-9, on page 124. The detailed level is accounted for in table 5-13 and in appendix G.

*Price* is the most obvious part of what the customer has to give to take part in the offering. Price is, in this case, mentioned in several aspects. The first viewpoint is the price to pay, as stated on the invoice. In this case, an engine flight hour price where it is recognized that this way of charging implies a cost premium, partly for the risk reduction and partly for the multitude of services included, services which are not included in a time and material deal. However, in this case, all engines are not included in the engine flight hour agreement, nor are all services, which entail extra charges utilized.
### Table 5-13. Value drivers and attributes – Sacrifices to use offering.

<table>
<thead>
<tr>
<th>Value drivers – main level</th>
<th>Value attributes – detailed level</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Price</strong></td>
<td></td>
</tr>
<tr>
<td>EFH-rate</td>
<td>Risk premium&lt;sup&gt;99&lt;/sup&gt;</td>
</tr>
<tr>
<td>Price – not included engine maintenance&lt;sup&gt;590&lt;/sup&gt;</td>
<td>Total care premium&lt;sup&gt;591&lt;/sup&gt;</td>
</tr>
<tr>
<td>Spare engine rent&lt;sup&gt;584&lt;/sup&gt;</td>
<td>Service team charge&lt;sup&gt;598&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Other related costs&lt;sup&gt;5&lt;/sup&gt;</strong></td>
<td>Lack of freedom – use of PMA&lt;sup&gt;593&lt;/sup&gt; parts&lt;sup&gt;598-C&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Customer administration</strong></td>
<td></td>
</tr>
<tr>
<td>Continuous daily contacts</td>
<td></td>
</tr>
<tr>
<td>Engine change costs – extra due to rental spare engine use&lt;sup&gt;594-S&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Maintenance planning&lt;sup&gt;5143&lt;/sup&gt;</td>
<td>Coordination traffic department</td>
</tr>
<tr>
<td></td>
<td>Coordination service provider</td>
</tr>
<tr>
<td></td>
<td>Personnel planning – engine change</td>
</tr>
<tr>
<td>Technical accounting&lt;sup&gt;5144&lt;/sup&gt;</td>
<td>Registrations for traceability</td>
</tr>
<tr>
<td></td>
<td>Repair orders</td>
</tr>
<tr>
<td></td>
<td>Reporting aircraft owner</td>
</tr>
<tr>
<td>Flight hour reporting&lt;sup&gt;5145&lt;/sup&gt;</td>
<td>Data for reporting (techn.dept.)</td>
</tr>
<tr>
<td></td>
<td>Reporting (financial dept.)</td>
</tr>
<tr>
<td></td>
<td>Check of invoices (financial dept.)</td>
</tr>
<tr>
<td>Condition reporting&lt;sup&gt;5146&lt;/sup&gt;</td>
<td>ECTM-data</td>
</tr>
<tr>
<td></td>
<td>Boroscope-reports</td>
</tr>
<tr>
<td></td>
<td>Ground power assurance reports</td>
</tr>
<tr>
<td></td>
<td>LCF&lt;sup&gt;5147&lt;/sup&gt; updating</td>
</tr>
<tr>
<td><strong>Bonds</strong></td>
<td>Lack of freedom – choice of cheapest alternative&lt;sup&gt;598&lt;/sup&gt;</td>
</tr>
<tr>
<td>Deviation from contract terms&lt;sup&gt;5137&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Loss of price knowledge</td>
<td></td>
</tr>
<tr>
<td><strong>Indirect sacrifices&lt;sup&gt;5&lt;/sup&gt;</strong></td>
<td>Quality risk – use of rental spare engines&lt;sup&gt;598-C&lt;/sup&gt;</td>
</tr>
<tr>
<td><strong>Other influencing factors</strong></td>
<td></td>
</tr>
<tr>
<td>Price – related to time on wing&lt;sup&gt;591-C&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Price – related to turn around time&lt;sup&gt;597-C&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Price – coordination of schedule/unscheduled maintenance by service provider&lt;sup&gt;5101&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Price – preventive actions to influence EFH-rate on long term&lt;sup&gt;592&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>Possibility to use LRU as fault detecting aid&lt;sup&gt;5203-S&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>OEM-warranties – use to minimize maintenance cost (T&amp;M)&lt;sup&gt;590&lt;/sup&gt;</td>
<td></td>
</tr>
<tr>
<td>&quot;Internal&quot; transports of material&lt;sup&gt;5203-S&lt;/sup&gt;</td>
<td></td>
</tr>
</tbody>
</table>

Among other influencing factors, another aspect of price is raised. The price level is recognized as being related to time on wing. If a higher price means higher quality leading to fewer shop visits, it could be worth paying. This is obvious for time and material deals, but also for engines in an engine flight hour agreement, since removals from the aircraft involve costs for mechanics and administration for the customer. Price is also related to turn around time; the customer emphasizing this fact strongly in the following quotation.

“...there are many shops around the world and the competition is really between turn around times and price. If I get an offer from a shop that, say, needs...

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<sup>591</sup> PMA: Parts Manufacturer Approval

<sup>5147</sup> LCF: Low Cycle Fatigue

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five more days in turn around time than a competitor, but is cheaper in price, you can put a price on it, what will these five days cost me more, if they then are weighing equal... So, price is all the time a factor in this. If I get a good price from a competitor to Volvo, then I'll have to look at it to see how it compares to the turn around time the competitor gives me. If the price is considerably better than Volvo's, but the turn around time is worse, I have to weigh that up. Is turn around time better than Volvo's and also the price can’t compete, Volvo's position is of course in a bad shape.” (Customer IP1)

*Customer administration* involves all types of work that the customer’s staff have to conduct in order to carry out their part of the contacts with the service provider and to handle the maintenance of their engines. These types of actions are not unique for this deal. If the customer would do business with another maintenance shop, these sacrifices would have to be made too. However, within a long relationship with an extensive number of engines to be maintained, followed by numerous interactions, the service provider would have every opportunity to facilitate the process for the customer, thus making all interactions work smoothly.

*Other related costs* can occur when the relationship involves restrictions in choice of goods or perhaps forces the customer to use specific purchasing channels. The effect is a higher direct cost for the customer.

*Bonds* stands for the tie to the service provider that a long-term agreement denotes. It is mostly about giving up freedom, in the sense of the freedom to follow changes in the markets and among potential suppliers. In the current market situation of the industry this bond is itself a cost since the economic recession has brought down prices. This is a type of sacrifice that the customer has to consider before entering tight commitments. The benefit side of the deal will have to weigh up prospective market and business alterations.

The last main value attribute is *indirect sacrifices*, in this case a remark by the customer that rental material could mean a risk of quality as the control and history of the goods lie outside the customer’s control.
5.2.5 Time aspects

“Time – that’s what this is all about. That’s how I see it. It’s time to respond to questions from the customer, it’s turn around time for the engines, it’s time between shop visits; it’s all about time all the time; time, time, time.” (Service provider IP1)

Time is very important in this context. Airline operations are about large sums of money, the aircraft industry is about large sums of money, and so is the maintenance of engines. Time is money.

The operator faces time aspects concerning both costs and revenues. The revenue aspect of cancelled flights was illustrated previously in section 5.2.1.1, “Availability of engines”. To avoid cancellations and delays, the operator is prepared to incur costs and it is of the utmost importance that the service provider responds swiftly to his needs.

“... time is always important. That’s what’s making them think it’s worth – yes, what do we charge for a cab trip to Arlanda? – that they think it is worth to get

Figure 5-9. Map of Sacrifices to use offering.

What

- Price
- Other related costs (C)
- Customer administration
- Bonds
- Indirect sacrifices (C)

Sacrifices to use offering

Other influencing factors

- Direct sacrifices (C)
- Other related costs (C)
- Customer administration

Mentioned by:
- Customer only
- Both parties

[Diagram of Sacrifices to use offering]
people up in the middle of the night and to drive to Arlanda with a minor component that’s worth relatively little money; money doesn’t matter. But, it’s all about doing that morning flight. Then it doesn’t matter if that transport is 5000, 10000 or 15000 Swedish crowns. They don’t ask about that. They ask ‘can you get it here?’. So, let’s go.” (Service provider IP3)

The cost side of the income statement is affected by the cost of capital, resources tied up in assets such as engines and components. To run a lean operation it is fundamental to carry out the operations with few spares and this is where the importance of short turn around times has an effect.

“Time is money, it’s capital tied up and, as you’ve heard yourself in the discussion, the connection is long turn around time, many spare engines, short turn around time, few spare engines. It’s really the same with LRUs, because if you’ve got a spare engine with LRUs you have a spare pool of equipment that you can pinch from. Even if you don’t need the engine, you can take the LRUs. So it [time] is money, that’s how I would summarize it.” (Service provider IP2)

Time is also about running the operations effectively, to achieve a smooth planning, not having to re-work.

“If we don’t get an engine back in time, then maybe we’ll have to move another change. And that change was supposed to have been done when the plane was in for an overhaul. And perhaps that overhaul isn’t possible to move, because you’ve already flown out that time. Then you’ll have to apply for an extension or even do the overhaul anyway. There could be consequences like this all the time. Or that you, if every overhaul moves off schedule and takes longer time, that you eventually stand there, having too few engines, and then you would need one more to cover up everything. So it [time] is important and above all that you count with these times as you make your plan. If one or a couple engines are lacking, you’ll have to move it all around.” (Customer IP2)

To sum this up, I would like to characterize the business as highly logistical. The maps of Availability of engines and Organization efficiency are permeated by time aspects under a guise of material and information flow. To provide value, the flow of material and of information has to run effectively. A successful service provider in this industry has to master the logistical aspects of the business, since these are highly connected to the value delivered to the operator.

5.3 A fruitful relationship

A fruitful relationship ought to be a relationship bringing value to both customer and service provider, a mutual gaining, a win-win situation. This is an investigation of the customer’s share of return from the interactions, leaving
the service provider as nothing more than precisely that; a provider of services. Though it ought to be possible to explore the supply side of the relationship by turning the balance straight over and examining the effects inside the service provider’s organization, I will leave that for another study and return to the customer’s focus.

The relationship, in terms of value, consists of all three levels of the benefit side of the balance: the product level, the partnership level, and the psychological level. The benefit categories are interwoven in an intricate pattern that also influences sacrifices. Actions and behavior can affect several benefit categories at the same time. Or more correctly, they do so almost exclusively.

Customer-perceived value of the total relationship is the net-value, the outcome when sacrifices given are subtracted from the value delivered on the benefit side of the balance. If the relationship is to be fruitful for the customer, sacrifices are of course to weigh less than the benefits. Remember also what was said in the beginning of this chapter related to the scale-image (page 99). Failures to deliver value to a full extent will imply sacrifices to appear within the affected benefit category/ies.

The financial aspects of the customer-perceived value, i.e. the translated value in monetary terms, go straight into the customer’s income statement. However, all aspects of value are not transferable to revenues and costs. This will be discussed in the next section. In connection to relationship aspects of customer-perceived value, it is appropriate to emphasize that money is not everything. Doing business is not always logical. Non-monetary aspects of a relationship can be decisive when considering whom to do business with.

“You know, there are occasions when dealing with minor suppliers where we deliberately pay more, just to reduce the need for dealing with others. Of course, it is not that important when the sums involved are small.” (Customer IP4)

5.4 Translation into monetary terms

5.4.1 Degree of calculability

I have now delineated the attributes building customer-perceived value in this relationship. The next step is to investigate how these can be translated into monetary terms, if at all possible.

From as early as the analyze phase, while detecting the attributes, a categorization of them was made according to their dimension and type. This was made irrespectively of whether the attribute was located on the “how” or the “effect-side” of the value map. The list of explanations of the value attributes in appendix G includes this classification.
The value dimension concerns how the attribute affects the income statement. Cost benefits influence the costs positively, i.e. decreased costs, revenue benefits increase revenue, and cost to use means a direct/indirect cost for the customer. Additionally, there are psychological benefits and sacrifices respectively, implying non monetary value dimensions.

No revenue benefits in terms of increased turnover were found in this case. Some actions however implied a protection of revenues wherefore the label revenue benefits was expanded to include this situation. It may be specific for the nature of the services, mandatory maintenance work, that it will be the cost benefit side that is the key to create enhanced customer-perceived value.

The value type expresses degree of monetary calculability. Four classes have been used. Possible to calculate refers to an attribute that ought to be able to be computed with a rather high degree of precision, possible to estimate when the translation ought to end up in an estimation, difficult to assess where the calculability is judged to be very hard, and, finally, non monetary when attempts to translate are considered pointless.

A complicating circumstance to consider, exceeding the classification above, is the high degree of irregularity connected to the specific context. The nature of the services implies high stochasticity. Additionally, every customer, every engine, and every deal is unique.

Consider the following types of questions. “How will the airline operate this engine for the next five years, i.e. how many times will it need overhaul during the contract period?”, “How often is it likely that there will be unplanned removals and what will be the scope of actions needed to repair?”, “How often will there be AOGs that will need the service provider to step in with backup service?”, or “How deep a knowledge about the engines do line maintenance staff and engine engineers have, i.e. how often is technical support likely to be required?”.

The stochasticity implies that a number of assumptions, with connected and differing degrees of uncertainty, will have to frame any attempt to calculate the monetary customer-perceived value. A total value of an offering during a normal contract period, say ten engines for three or five years, could of course be calculated, but with substantial effort and upon a series of assumptions and judgments of uncertainties. This would especially be the case if all aspects of value, as accounted for above, were to be included. Still, is it really useful to know this total and precarious value? An entirely value based pricing can gain ground in the future, but today the market based pricing within this industry ought to be hard to totally conquer.

On the other hand, from other viewpoints, knowledge about monetary customer-perceived value can be extremely useful. It then concerns development of products, composition of services, efforts to decrease relationship
costs (Grönroos 2000), comparisons with competitors, or the offering of additional services to a regular maintenance bid. The latter perhaps implies opportunities to negotiate a win-win deal with the calculated and agreed customer-perceived value as a base.

Common to the suggested applications is the non-totality of the required calculation. Instead, it concerns parts of the value features, a single or a limited mix of value attributes. A relevant time frame has also to be included. An example of this is the calculation of monetary worth of different turn around times for engines, which the customer relates in the following quotation.

“We need to have our spare parts at our suppliers as a little time as possible. For example, if an engine normally has a 30-day overhaul time and if we need to send on average one engine per month for overhaul this is 12 engines per year. That means that on average there should only be one engine per month at Volvo. However, if the turn around time is 60 days, that means that there will be two engines at Volvo. An engine I can’t use costs $18 000 – 20 000 per month. That is $18 000 – 20 000 in lost value due to the supplier not being able to keep the turn around time. ... [That is] the opportunity cost, I need to get hold of a rental engine.” (Customer IP1)

The following sections will deal with how assessments of monetary customer-perceived value could be accomplished.

5.4.2 Finding the paths

The “hows” and the “effects” are tightly connected, and variations of the “hows” make impressions on the “effects”. In other words, the way a service provider carries out what he offers will be measurable by the customer.

The “how-side” of the value map concerns features of the product, behavior, and attitudes, and it covers the logistical flow of goods and information. Yet, it is the result of these that creates value inside the customer's operations. If they are possible to trace to the income statement as calculated or estimated effects on revenue or costs, then the monetary translation is a step worth focusing on. Otherwise, they should be allowed to stand as the qualitative attributes they are and be used as such.

It is important to recognize that the calculation of customer-perceived value is about trying to put a monetary worth on a value attribute on the “effect-side” of the value map. Consequently, it is not just about exploring which price to put on a product. Yet, the computed customer-perceived value could be a priceless aid in that decision or as an input in negotiations.

The following procedure was used in the studied case in order to systematize the work of translating qualitative attributes into monetarily calculable terms. Knowledge about the industry, as well as mapped customer-perceived
value, is a necessary input in the work. In the actual project the work was discussed inside the service provider’s organization. Involvement of expertise from a customer could enhance the quality of the work further.

For the purpose of monetary translation, it is necessary to find the paths between the “hows” and the “effects” on the value maps. Availability offered by the service provider, in terms of turn around time for engines, leads, for example, to effects on tied up capital for spare engines for the customer.

The next step is to find out in which unit variations in performance could be described. Some of these may be settled in the contract, as in the example above where turn around time is measured in calendar days. In other cases the unit has to be considered more thoroughly and innovation may be necessary. The reason for finding out the unit of variance is to be able to consider different alternatives and compare them in terms of created customer value. Additionally, different levels of performance are usually connected with differing service provider costs. The unit of variance and selected performance levels could, accordingly, serve as input to internal cost estimates considering different service alternatives.

Then it is time to face the customer and consider how the “effect” could be measured. In the first example of availability in table 5-14 (below), spare engines imply a capital cost that is proposed to be calculated as interest and depreciation of the capital tied up per calendar day. In the case of actions to improve organization efficiency the calculation ought to be based on a cost per man-hour multiplied by the actual number of hours.

Table 5-14 comprises paths from different benefit categories with the purpose of serving as an illustration of how the work could be carried out. The table should be read from left to right. Each path originates from a specific value feature. The path is then traced through a value driver, which explains how the service provider creates value. Then a unit of variation is proposed, i.e. the unit for evaluations in terms of different levels of performance. Then, the path moves into effects within the customer’s organization and the outcome in terms of affected value driver and attribute. Finally, a proposal for calculation of the monetary value is found in the last column.
Table 5-14. Paths of customer-perceived value with proposals for monetary calculation

<table>
<thead>
<tr>
<th>Paths: ex. no.</th>
<th>Value feature</th>
<th>Value driver/ attribute</th>
<th>Unit of variation</th>
<th>Value driver</th>
<th>Value attribute</th>
<th>Calculation proposal</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Availability</td>
<td>Turn around time – engine</td>
<td>Calendar days</td>
<td>Tied up capital</td>
<td>Need of own spare engines</td>
<td>(Capital tied in engine * interest + depreciation/365 * no of days)</td>
</tr>
<tr>
<td>2</td>
<td>Availability</td>
<td>Turn around time – engine</td>
<td>Calendar days</td>
<td>Maintenance cost</td>
<td>Need of rental spare engines</td>
<td>Rent + transportation cost + (man-hours for change (mechanics + administrative staff) * cost per hour)</td>
</tr>
<tr>
<td>3</td>
<td>Availability</td>
<td>Backup service</td>
<td>AOG-service level</td>
<td>Revenue security</td>
<td>Punctuality – minimization of delays</td>
<td>(Failed ticket fare + cost for re-booking) * presumed number of re-booked passengers</td>
</tr>
<tr>
<td>4</td>
<td>Financial benefits</td>
<td>Risk reduction</td>
<td>Type of agreement</td>
<td>Budget Security</td>
<td>Control of cost</td>
<td>Number of engines * mean cost unscheduled * probability of unscheduled</td>
</tr>
<tr>
<td>5</td>
<td>Organization efficiency</td>
<td>Delivery date accuracy</td>
<td>Calendar days</td>
<td>Administrative efficiency</td>
<td>Planning/re-planning</td>
<td>Man-hours * cost per hour</td>
</tr>
<tr>
<td>6</td>
<td>Organization efficiency</td>
<td>Delivery information – early and plan</td>
<td>Type and frequency of report</td>
<td>Administrative efficiency</td>
<td>Planning/re-planning</td>
<td>Man-hours * cost per hour</td>
</tr>
<tr>
<td>7</td>
<td>Organization efficiency</td>
<td>Easy to contact</td>
<td>AOG-service level</td>
<td>Administrative efficiency</td>
<td>Component provision</td>
<td>Man-hours * cost per hour</td>
</tr>
<tr>
<td>8</td>
<td>Collaborative partnership</td>
<td>Cooperation</td>
<td>Cooperation level in letter of intent/ contract</td>
<td>Development relation</td>
<td>Routines &amp; documents</td>
<td>Man-hours * cost per hour</td>
</tr>
</tbody>
</table>

5.4.3 Exploring the paths

Eventually, a limited investigation was made within the studied case concerning value attributes connected to the Organization efficiency value feature. The purpose was mainly to explore a technique for putting numbers to a value path.

The method used was structured telephone interviews\(^\text{105}\) with personnel in the customer’s organization (appendix H). Each person was asked questions only concerning his own area of work, hence whilst a large number of questions were posed in total, each person only answered a subset of these.

A number of value paths were chosen for investigation by me, and tentative questions were worked out. These were then discussed and elaborated together with service provider expertise.

\(^\text{105}\) One of the respondents wanted the questionnaire by mail and chose to answer it in writing due to lack of time. Another respondent – with a rather high number of questions with many alternatives – had his questionnaire e-mailed so it was accessible on screen during telephone interview.
The focus for the investigation was to find out time consumption in connection with information flow and some other actions. In some areas there was also an interest in finding out the critical point of time for information. To solve this, different scenarios were constructed. Answers were mostly given in terms of numbers of hours. Alternatives for responses were given to facilitate for the respondent.

Through an analysis of the answers compared to knowledge about the actual situation, customer value could be computed. To transform the hours into monetary terms, an appropriate man-hour rate should be used.\textsuperscript{106}

If the current situation involves a use of more hours than an optimal situation would, the customer suffers from indirect relationship costs (Grönroos, 2000). A basic way to enhance the customer-perceived value is really to eliminate these. Of course actions to do so can involve costs for the service provider, but often they actually involve efficiency gains for both parties (Grönroos, 2000).

5.4.4 Monetary estimates in practice

Below three examples of monetary assessments of customer value will be presented. These will serve as an illustration of those procedures that are used – and indeed those not used – in the specific practice and associated problems for reaching precision in estimates.

The problems that were discussed previously regarding uncertainties when calculating for an offer are indeed present in the service provider’s practice. When long-term engine flight hour agreements are to be quoted and negotiated, these problems have to be handled with care. Facts are gathered, expertise and experience used, and then assumptions are made. The service provider makes, with support of these assumptions, a business case calculation of the full cost for entering the deal. Based on this calculation – and knowledge of market price – the service provider quotes an engine flight hour price to the customer. The normal procedure is then negotiations to reach the final composition and pricing of the total service offering.

Occasionally the service provider makes assessments of customer value\textsuperscript{107} in monetary terms, but also in these estimates assumptions have to be made.

\textsuperscript{106} It can be noted that this approach to investigate the monetary worth is quite close to the technique applied by Leino (2004) in her recent study of monetary customer value in professional services.

\textsuperscript{107} The value assessment technique used by the service provider is principally – according to Anderson and Narus’ (1999) classification – internal engineering assessment. Other possible methods according to these authors are field value-in-use assessment, indirect survey questions, focus group value assessment, direct survey questions, conjoint analysis, benchmarks, compositional approach, and importance ratings.
concerning uncertainties. Customer value based pricing is, however, still rare in the industry, not least due to the current economic situation. Market price rules, prices are pressed down during negotiations, and customers usually have a good knowledge of workshop and spare part costs.

Naturally, the customer makes evaluations of an offer’s monetary worth too. In this study however, information was not gathered in more detail concerning the evaluation process, i.e. what exact tools for evaluating monetary worth from a quotation or a running business agreement that was used, since the main focus was directed to “what” created customer-perceived value. During interviews with customer employees the matter was however touched upon, for example when I was told how a quoted price was always weighed against the promised turn around time.

Short turn around time was emphasized by the customer as very important to be able to reduce the amount of the capital tied up in assets. The service provider raised the same issue, in this case relating need of spare engines to turn around time:

“If the customer has a large number of engines and many of them are in the shop at the same time, if we then reduce the turn around time in our shop we will reduce the need for use of spare engines as well as reduce the need for rental spare engines. In other words we will reduce the overall cost for our customer.” (Service Provider IP3)

Length of turn around time is thus a customer-perceived value that the customer recognizes as important. Its monetary effect can be traced from turn around time from the “how-side” of the value map of availability, to the need for owning spare engines and need for rental spares. This is an example of the kind of monetary estimates that are made in practice. It is demonstrated below but first a remark concerning degree of uncertainty.

The assessment is characterized by a high degree of substantiality, as the figures behind the estimate are rather easy to grasp. Stochasticity is present in the computation as mean time between engine shop visits has to be included and this varies of course. However, at a general level, it is possible to make neat presumptions based on available statistics. Thus, the larger the fleet the service provider has, the larger the probability that a general calculation like this will be applicable. Now to the example:

The connection between turn around time and the need for spare engines can be calculated according to the following expression:

108 A deepened discussion about uncertainties – substantiality and stochasticity – will be provided under subheading 6.3.1.
109 Expression used at Volvo Aero (provided by Torgny Almgren, August 2003).
Need for spare engines = safety factor * maintenance turn around time * no. of aircraft * no. of engines per aircraft / mean time between engine shop visits

With a safety factor of 1,0 the real need for spare engines is underestimated. To ensure sufficient availability this can of course be adjusted by an appropriate increase of the factor, but for an easy indication of monetary customer value it is significant also with a factor of 1,0. I can bring some fictitious figures into the formula.

At safety factor 1, 60 days turn around time, 20 aircraft with 2 engines each, and 3 years (1095 days) mean time between shop visits, the need for spare engines will be 2,19. If turn around time is lowered to 40 days the need will be 1,46. This is a difference that will affect tied up capital with 5,84 million Swedish crowns (SEK) at an assumed engine worth of 8 million SEK. With a rate of interest at 7%, the lowered need for spare engines will imply a positive interest effect of 408 800 SEK per year. Thus the customer value of a lowered turn around time is calculated to just about 400 000 SEK.

In figure 5-10 the assumptions above have been used to illustrate the effect of turn around time on tied up capital in company-owned spare engines.

In this example I disregard the fact that it will be rather hard to own 2,19 or 1,46 spare engines, as they usually not are delivered in slices.

This estimate is retrieved from the Volvo Aero project “New customer offering” and regards a fictitious offering. The project group worked with support from the consultancy firm

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110 In this example I disregard the fact that it will be rather hard to own 2,19 or 1,46 spare engines, as they usually not are delivered in slices.

111 This estimate is retrieved from the Volvo Aero project “New customer offering” and regards a fictitious offering. The project group worked with support from the consultancy firm.
tional service, that of membership in the service provider’s pool of spare engines, is made. The example (figure 5-11) is somewhat shortened compared to the original one and the figures are fictitious.

CUSTOMER VALUE OF JOINING SPARE ENGINE POOL

Alt. 1: Operation owned spare engine

| Engine cost | 1 000 000 USD (price) |
| Depreciation | 10 yrs 100 000 USD/year |
| Alternative rent | 10% 100 000 USD/year |
| Maintenance fund | 28 090 USD/year |
| SUM: | 228 090 USD/year |

Alt. 2: Short lease of spare engine

| Lease fee monthly | 10 200 USD/month |
| Lease hour price | 130 USD/Fh |
| Flight hours spare engine | 350 Fh/year |
| Fixed cost | 30 600 USD/year |
| Variable cost | 45 646 USD/year |
| SUM: | 76 246 USD/year |

Alt. 3: Joining spare engine pool

| Member fee | 5 USD/Fh |
| Total flight hours | 8300 Fh/year |
| Flight hour price | 150 USD/Fh |
| Flight hours spare engine | 350 Fh/year |
| "Fixed" cost | 41 500 USD/year |
| Variable cost | 52 500 USD/year |
| SUM: | 94 000 USD/year |

Scenarios:

A) Fixed Variable Standstill Total cost for alt. 3
   Spare engine | 200 000 | 28 090 | 23 920 | 252 010 | 104 190 |
   needed once | 30 600 | 45 646 | 71 760 | 148 006 | 186 |
   a year | 41 500 | 52 500 | 53 820 | 147 820 |

B) Two spares | 230 600 | 73 736 | 95 680 | 400 016 | 145 876 |
   needed a year | 61 200 | 91 292 | 143 520 | 296 012 | 41 872 |
   (concurrently) | 41 500 | 105 000 | 254 140 |

Note: short lease of one engine necessary in addition to owned engine in alt. 1.

Figure 5-11. Monetary assessment of an additional service – spare engine pool.

Teknosell and in accordance with the approach for customer value-based pricing described by Rosvall and Rosvall (2000). The project was finished in the beginning of 2002.
Although the calculation has been limited to fewer alternatives and scenarios, the main idea is illustrated. The customer is faced with three alternative solutions to solve his need for availability by securing spare engine provision. In the first alternative he buys the engine, in the second he uses a short lease when a spare is needed, and in the third he joins the service provider’s pool of spare engines. Engine costs, fixed and variable, and standstill costs are calculated for each alternative. The substantiality of these items is rather high, although a series of assumptions are made – ranging from cost of purchasing an engine, to lease rates, and the imagined use of a spare engine, and hours needed to exchange the engine when necessary.

Uncertainty is present in the above-mentioned item of “imagined use of spare engine”, but mainly in the last part of the estimate – the alternative scenarios. This is a problem to focus on and, perhaps, to take advantage of statistical methods in order to quantify and reduce uncertainty – will there be any need for spare engines at all and, if so, how often? In the example the first scenario covers the need for one spare engine on one occasion per year. The second one concerns a more severe situation, the need for two spare engines and, in addition, that they are required concurrently.

The customer value provided by a spare engine pool is, in the first scenario, 104 190 USD/year as compared to the purchase of an own engine, but only 186 USD/year compared to a short-term lease. In the second scenario, the customer value increases considerably, 145 876 USD/year in alternative one and now 41 872 USD/year in alternative two.

This example points at the difficulties in calculating an exact value for the customer. Uncertainties concerning the real need – a matter that not even the customer himself knows about for sure – prevents provision of an accurate assessment. And this is only one possible service included in a total service offering. When a total customer value of an offering is to be estimated, the computation will have to deal with a multitude of assumptions to reach a total value. A precarious process that will lead to a final outcome of a value that by necessity will be rather vague.

I will conclude this section with an illustration of a monetary customer value calculation that, due to the lower level of substantiality, is probably very seldom carried out in industry. In addition, it regards a service that is hidden in the complexity of the total service offering. Presumably it is rather seen as an administrative task than a service with intrinsic opportunities to deliver value. The customer can make the calculation more easily than the service provider, as the latter most likely has an imperfect knowledge of detailed customer routines and work.

The example concerns the engine condition report, a report of the actions taken during the engine’s shop visit, as well as an account of the state of the
engine in terms of hours left for use for life-limited parts. Normally, this report is sent to the customer four weeks after engine delivery.

During the minor investigation of the monetary translation of value attributes included in the study (section 5.4) information was gathered from the customer about work hour effects by point of time for report delivery. The outcome is illustrated in figure 5-12, where it is recognized that to create additional customer value, the report has to be delivered within two weeks after delivery of the engine. Then approximately 1.5 hours of working time is saved\textsuperscript{112}. If the report is, instead, delayed until six weeks after engine delivery, additional time is required to update memory, gather documents, and so on.

The calculation of monetary customer value will then be as follows. If a man-hour rate of 500 SEK is applied to these figures a monetary worth of 1 500 SEK is connected to each delivered engine if the report is sent within two weeks instead of the current four weeks. On the other hand, a delayed report delivered within six weeks implies a negative customer value, i.e. an indirect relationship cost of 2 500 SEK. Multiply these figures by an assumption of ten engines in shop per year and the former case will imply a customer value of 15 000 SEK per year, while the latter involves additional costs of 25 000 SEK.

\textsuperscript{112} The figures used are built on answers from one person only and should accordingly be treated with great caution. Despite this fact, I choose to account for them simply as an interesting example of how monetary customer value can be derived.
Summarizing

Three examples of monetary estimates of customer value were provided in this section. They demonstrate difficulties of monetary assessment and point to the sort of assumptions that have to be made.

The examples each concern a limited part of the total service offering. An assessment of a total customer-perceived value of an offering would have to involve the addition of value from a multitude of physical products and services, all with connected uncertainties and assumptions, and complexly related to each other. It is presumably impossible to capture the total value, as too much effort would be needed to estimate it. In addition, the value would be rather imprecise as it is connected to an increased degree of uncertainties, difficulties in finding exact figures to build the estimate on, and a multitude of scenarios to consider. Additionally, assessments made by the service provider will inevitably regard customer value. The customer has an exclusive right in the perception part of the concept customer-perceived value.

However, knowledge of monetary value is valuable for the service provider in specific situations when parts of an offering, instead of its totality, are in focus. This practical usefulness ought to be found when new products are developed, in the composition of services, or the analysis of relationship costs. Used for competitor comparisons, it is also an important tool, both from a customer and a service provider perspective.

5.5 Summarizing the investigation

Content of customer-perceived value

Customer-perceived value in the studied relationship can be summarized under three main levels on the benefit side; value derived from the product level, the partnership level, and the psychological level.

The product level was revealed to be built upon three main cornerstones; Availability of engines, Organization efficiency, and Financial benefits. The partnership and psychological level were named Collaborative partnership and Trust respectively to illustrate the fundamental nature of these value features.

The concept of customer-perceived value includes not just what the customer gets – the benefit side – but also what he has to give to utilize the offering – the sacrifice side. In this case all sacrifices were gathered beneath the heading Sacrifices to use offering. Still, if value is not delivered in an optimal way in each of the five value features on the benefit side, this will imply additional sacrifices made by the customer.

Time aspects were found to be highly important in this context. The logistical flow of material and information permeates the maps of Availability of
engines and Organization efficiency. To create customer-perceived value in the maintenance business, the time aspects have to be mastered.

The maps of customer-perceived value include a “how-side” and an “effect-side”. The first side illustrates how the service provider could act to deliver customer-perceived value, while the latter shows what effects these efforts will imply in the customer’s business.

It was observed that the opportunity to achieve cost benefits, i.e. decrease the costs for the customer, dominated as a dimension for the value attributes in the case. This, presumably, is a consequence of the nature of the business.

To conduct a monetary translation of the customer-perceived value, the paths from the “how-side” to the “effect-side” of the value maps have to be established. Actions from the service provider on the “how-side” end up in actual effects inside the customer’s organization, some of them traceable directly to the income statement. By exploring the content of these paths, preferably by asking the customer, a value can eventually be computed.

It should, however, be noted that not all attributes are transferable into monetary terms and this degree of calculability has to be considered. In addition, the attribute has to be placed within an appropriate time frame where aspects of uncertainty can be managed.

Method used to investigate customer-perceived value

The method used for exploring customer-perceived value in this case was a qualitative investigation consisting of the following main steps:

- Semi-structured interviews with customer and service provider personnel.
- Analysis of interviews – finding and categorizing the value attributes. This step included the determination of the value dimension and value type for each of the attributes.
- Mapping and illustrating customer-perceived value. In this phase the value attributes were grouped to drivers and connected to the all-embracing value features illustrating the essence of “what” the customer gets. When appropriate, the maps were divided into a “how-side” and an “effect-side”, demonstrating how the service provider could act to provide value and the connected effects inside the customer’s organization.
- Validation of the value maps by bringing them back to the interviewees for confirmation.
- Translation into monetary terms by delineating the paths from the “how-side” to the “effect-side” and then exploring the content of these.
second exploratory phase, customer personnel provided information gathered by interviews with response alternatives.

Prerequisites for the industry – in forms of laws, regulations, and standards – were left outside the investigation as these form a base that all actors have to comply with and from which no one can escape.

The findings from this first analysis, describing customer-perceived value, will in the next chapter be taken one step further. The aim is to form an explanation of the sources of customer-perceived value.
6. **DEEPPING THE EMPIRICAL ANALYSIS**

In this chapter I will deepen the analysis of the findings from the empirical case. The purpose is to propose substantive theory with explanatory power concerning the origin and effects of customer-perceived value, appropriate for the specific case and for similar business-to-business relationships. First the “how-sides” of the value maps are examined followed by a similar examination of the “effect-sides”. The chapter is rounded off by a discussion of the implications for assessments of customer-perceived value that are implied by the proposed model.

6.1 A substantive theory explaining customer-perceived value

The last phase of the study intends to lift the level of abstraction based on the findings in the case study.

I will, in this chapter, try to develop the description of customer-perceived value found in the specific relationship (figure 5-3, page 99) into an explanatory substantive theory (Strauss & Corbin, 1998), applicable to the explored relationship as well as to similar relationships and settings. The actual procedures used in this phase were described in section 5.1.3. The outcome of the work is an explanatory model, considering the origin and effect of customer-perceived value.

The complete explanatory model is introduced in figure 6-1 below\(^1\). The following sections in this chapter are devoted to arguing for the content of the model. First, the left-hand part of the model, dealing with the origin of customer-perceived value, is in focus. Then the right-hand part, considering the effect of customer-perceived value, is discussed. Thus, when the chapter is finished, all components of the model will have been explained and justified.

Later, in the next chapter, I will deal with the issue of relating the empirical findings to theory and refining the tentative conceptual model of customer-perceived value presented in chapter 2.

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\(^1\) Note that the right-hand side and the left-hand side of the model illustrate two different ways of reaching the same customer-perceived value. Accordingly, adding/subtracting components from the left part or from the right part achieves a customer-perceived value.
Figure 6-1. The origin and effect of customer-perceived value in the commercial aircraft engine maintenance industry – an explanatory model.
6.2 Investigating the “how-side” of the value maps

Integrating theory is about discovering the central concept that links together all the other ones with the aim of presenting a theory with explanatory power (Strauss & Corbin, 1998). Often this concept can be found among the previously located categories, but in this case it was not a successful way to bring the description further to explanation. It was, rather, a process of trying to locate a missing piece of a jigsaw puzzle. Eventually, the missing piece was found by rereading a case study report (the base for chapter 5) to Volvo Aero. The discovery of “flow” led to a repeated and careful examination of the “how-side” of the value maps and the accompanying explanation list in order to test and check if this was the missing piece. It was.

6.2.1 “Flow” – the central explanatory notion

When exploring the text written in the case study report it struck me that the unifying and central notion to answer the question “what is going on here to create customer-perceived value?” was “flow”. I had in fact already written that in the report, but then without developing the trains of thought any further, e.g. the text from the heading “Time aspects” (5.2.5):

“The maps of Availability of engines and Organization efficiency are permeated by time aspects under a guise of material and information flow. To provide value, the flow of material and of information has to run effectively.”

The idea of a flow is here used as an image, i.e. a mental picture of what something is like, to facilitate the understanding of the characteristics of customer-perceived value. This notion points out the sources of different flows and then connects them to affected value features. Thus, I suggest that the notion of flow can be a used metaphorically to capture the – sometimes more and in some cases less – continuous movement of tangible and intangible exchanges within a relationship144.

144 The use of the word “flow” to denote the exchange of goods, and information – and often also finances – between parties seems to be commonly established (e.g. Keebler et al., 1999). I suggest that “flow” in addition can be used metaphorically to depict how risk and involvement (on the left-hand side of figure 6-1) are transferred and how the effects of customer-perceived value (the right-hand side of figure 6-1) eventually influence the customer’s accountings and income statement. I will discuss the nature of each type of flow in this chapter. In order to underline the metaphorical nature of flow, I considered to insert flow in the explanatory model (figure 6-1) with quotation marks. Due to reasons of clarity – and also with regard to the forthcoming figure in the next chapter – I eventually decided to omit the quotation marks.
The matrix in table 6-1 was developed during the investigation. Before moving on to a closer examination of flow, I will make a general comment about the matrix. The “number of statements”-column shows how many statements that were made about each value driver, i.e. how many of the interviewed persons mentioned something connected to the value driver. It is a simple counting of statements registered per value attribute and a summing of all attributes connected to the actual value driver.

Table 6-1. Matrix of flows, the "how-side" of the value maps.

<table>
<thead>
<tr>
<th>Central category</th>
<th>FLOW OF</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Value feature/Value driver</strong></td>
<td>No of statements</td>
</tr>
<tr>
<td><strong>Availability of engines</strong></td>
<td></td>
</tr>
<tr>
<td>Turn around time</td>
<td>46</td>
</tr>
<tr>
<td>Engine change on schedule</td>
<td>24</td>
</tr>
<tr>
<td>Long time on wing</td>
<td>37</td>
</tr>
<tr>
<td>Fleet optimization</td>
<td>6</td>
</tr>
<tr>
<td>Backup service</td>
<td>13</td>
</tr>
<tr>
<td><strong>Organization efficiency</strong></td>
<td></td>
</tr>
<tr>
<td>Quality delivered engines (c)</td>
<td>1</td>
</tr>
<tr>
<td>Supportive actions (s)</td>
<td>3</td>
</tr>
<tr>
<td>Delivery accuracy</td>
<td>62</td>
</tr>
<tr>
<td>Simplicity in contacts</td>
<td>40</td>
</tr>
<tr>
<td>Knowledge transfer</td>
<td>38</td>
</tr>
<tr>
<td>Simplicity in routines</td>
<td>90</td>
</tr>
<tr>
<td>Geographical closeness</td>
<td>3</td>
</tr>
<tr>
<td><strong>Financial benefits</strong></td>
<td></td>
</tr>
<tr>
<td>Risk reduction</td>
<td>12</td>
</tr>
<tr>
<td>Simplicity in routines</td>
<td>10</td>
</tr>
<tr>
<td>Maintenance practice (s)</td>
<td>1</td>
</tr>
<tr>
<td><strong>Collaborative partnership</strong></td>
<td></td>
</tr>
<tr>
<td>Cooperation</td>
<td>12</td>
</tr>
<tr>
<td>Contacts</td>
<td>18</td>
</tr>
<tr>
<td>Engagement in customer’s daily operations (general picture of fleet and operations (c))</td>
<td>14</td>
</tr>
<tr>
<td>Social activities</td>
<td>3</td>
</tr>
<tr>
<td><strong>Sacrifices to use offering</strong></td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>29</td>
</tr>
<tr>
<td>Other related costs</td>
<td>6</td>
</tr>
<tr>
<td>Customer administration</td>
<td>16</td>
</tr>
<tr>
<td>Bonds</td>
<td>7</td>
</tr>
<tr>
<td>Indirect sacrifices (c)</td>
<td>1</td>
</tr>
</tbody>
</table>
It can be noted that a few of the value drivers account for only one statement each. These are also drivers only mentioned by either the customer or the service provider. These are the value drivers “quality of delivered engines (c)” connected to Organization efficiency, “maintenance practice (s)” under Financial benefits, and “indirect sacrifices (c)” under Sacrifices to use offering. Also “general picture of fleet and operations (c)” had only one rating, but as it was mapped as a driver mainly affected by “engagement in customer’s daily operations” I decided to unite the two into one value driver.

The question is whether the three poorly developed value drivers have justified their place in the framework. In the previous chapter, addressing the issue of describing customer-perceived value in the specific setting, I regarded it as important to retain every voice, as all interviewees represented different categories of staff. But would they still be included in this deepened analysis?

I have made the decision to retain them with the argument that it should be wrong to omit them at this stage, just with data from one exploratory study available. My personal judgment, based on my preunderstanding of the setting, is that it makes sense to keep them. In addition, none of these drivers alone imply that a new type of flow is connected to the all-embracing value features. In that sense no difference is made by keeping them.

**Investigating the nature of flow**

Flow\(^{115}\) suggests movement, both as a noun and a verb. A flow is an act of flowing, such as when water streams down a creek. Consequently, flow is often used analogously to streaming water, as with the flow of thoughts, information, or people moving in the same direction. Flow has a built-in meaning of continuousness, uninterruptedness, and smoothness, but also a connection to progress and direction. And just as a creek has its roots in a well, a flow is also derived from a source.

Five sources of flow were identified in this case – goods, information, risk, involvement, and money (table 6-1). These flows run parallel to each other, are connected to each other, and even of necessity are interlinked to each other. These linkages emphasize the need for smoothness and continuousness. Interruptions in one flow might be fatal for the others. The lack of information might stop the flow of goods, implying a failure to keep to turn around time and consequently delivery date. This is a chain of events that can be continued into the customer’s operations in a very serious manner, accentuated when the lean use of assets might necessitate an immediate engine change on a specific aircraft.

\(^{115}\) Definitions were gathered from the OneLook Dictionary search (www.onelook.com) and the Merriam-Webster’s Online Dictionary, 10th Ed. (www.m-w.com), 16th Oct. 2003.
Flow and time are linked to each other. Time has already, in the previous chapter, been revealed to be connected to most of the value attributes. The engine maintenance business is a context of time, driven by immense costs. Accordingly, time was emphasized when the interviewees described what affected customer-perceived value. The following text is taken from the summarizing paragraph in the case study report (also included in section 5.5):

“Time aspects were found to be highly important in this context. The logistical flow of material and information permeates the maps of Availability of engines and Organization efficiency. To create customer-perceived value in the maintenance business, the time aspects have to be mastered.”

The quotation does not only highlight the significance of time, but also involves flow. The flow has a built-in sense of time, as shown by the definition “the quantity that flows in a certain time” (footnote 115); a definition that also points to the need of applying frames of time to evaluate a flow. By necessity such assessments can sometimes involve a number of assumptions in order to put artificial points of start and stop into a continuous flow.

Time surrounds flow, as when a specific little drop of water at a certain time flows out of the well and reaches the sea at another point in time. Similarly, time surrounds flow in a situation when an individual joins a crowd of people at a definite time, moves along with it as the clock counts the minutes, and then breaks loose to continue in another direction. But time does not pay regard to interruptions in the stream. When the smooth, continuous flow is broken or delayed, time proceeds and is essentially lost in relation to the flow. It is wasted, thrown away, worthless – just waiting for the flow to start off again, to regain its tempo, and again becoming valuable. Basically, this is the same way that the characteristics of flow – with its association to time – relate to the empirical findings. Remember the quotation from 5.2.1.1, “Availability of engines”, pointing at the loss of value when the time of departure is inevitably overdue as the flow of flights is interrupted by a cancellation.

“... a cancelled flight is a cancelled flight. There is no value left in it. A departure which is cancelled is gone, it’s never to come back again. [...] A lost flight you can’t sell, there is no such thing as a second selection flight.” (Customer IP1)

Examining the flows

The five flows of goods, information, risk, involvement, and money will be examined in the following paragraphs, one by one.

Even within a service activity, physical products play an important part. Tangibles have long been recognized as important in services, but then often as physical facilities or means for delivery of the service (e.g. Berry et al., 1985).
Maintenance includes those sorts of tangibles too, but hardware is even more intimately linked to the service.

Physical products are, in this industry, at the heart of the core service. Overhaul and repairs are made on physical products. Parts of the engine are dismantled, inspected, repaired or replaced by new ones, and then reinstalled. The quality of an engine is dependent on the quality of its hardware components as well as on the service provider’s technical skills.

Maintenance implies working with hardware belonging to a customer. Increasingly, aircraft operators aim for a lean use of assets due to the high capital investments that every engine and component implies. They need to get the hardware back again as soon as possible to put it into service again, to regain it to the valuable flow in use.

The flow of goods between the customer and service provider has to be smooth and to an agreed time. This is a prerequisite that makes the lean use of assets possible. Its importance was highlighted in a disappointing way in the “Airline maintenance market study”, as the top area for the airlines’ dissatisfaction was engine maintenance turn around time and on-time delivery\(^{116}\) (Air Transport World, 2002). The study points to a problem area that apparently is common in the engine maintenance industry. The underlying difficulties of keeping a smooth flow between the two parties ought to be found in the complexity of the maintenance system and, again, the high levels of capital tied up in the business. The latter implies that the service provider has to keep his stock of inventory down, and as a consequence, is not always able to replace a part immediately. These are facts that place stress on the internal practices within the service provider’s organization.

The flow of goods inside the service provider’s workshop and between him and his suppliers has to be efficient and on time. Processes and routines have to support the flow. Apart from the technical skills necessary in providing high quality maintenance, logistical skills are necessary to plan and execute the flow of engine parts efficiently.

The flow of goods is tied to and dependent on a flow of information. Without the flow of information, the flow of goods would inevitably be disturbed and interrupted. Information is, in a large maintenance deal such as this, exchanged daily between the service provider and the customer. Information exchange is a main part of the interaction in a maintenance relationship.

The direction of the information flow is circular, moving continuously between the parties. Information interactions concern engine work scope, solving technical problems, planning for fleet optimization, notification about ex-

\(^{116}\) This area was mentioned 28 times as the one that the respondents’ were most frequently disappointed with. The second most mentioned area was cost with 11 mentions.
pected delivery dates and so on. These questions and answers are necessary for further activities – to keep the flow of information and goods running. The aim for efficiency in information flow points at the modes of communication and time effective routines between the parties.

Communication issues are emphasized, since it is about giving and taking information between people in two organizations. Information flow is not least about individuals’ abilities to interact smoothly with each other. Thus communication is about the employees’ soft skills, i.e. the non-technical skills such as the ability to communicate and solve problems with empathy, helpfulness, and courtesy.

Eventually, the smooth internal flow of information within the service provider’s organization is emphasized as a prerequisite for efficient external information flow and, not least, the efficient flow of goods. Internal processes and routines are again highlighted to provide value to the customer.

Risk reduction is an important feature of the engine flight hour agreement. The customer reduces his risk over time by paying a contract-prescribed amount per flight hour. He insures himself from unpleasant surprises in engine work scope at scheduled overhaul events, and – depending on which services are included in the agreement – often also against unscheduled repairs. If the ultimate scope of agreement was provided, i.e. the functional product thrust per hour, the transfer of risk would be practically total from an engine maintenance cost perspective.

The risk is shifted to the service provider, implying a flow of risk from the customer to the service provider. In the same way, the use of warranties in a time and material deal provides a flow of risk during a limited period of time. The flow of risk is, however, not unlimited as it, to a large extent, is restricted by the terms of agreement. It could thus be argued that the risk is transferred from the customer to the service provider at the start of the contract period. However, the agreements are not totally comprehensive. In the studied case, for example, the service provider is obliged to conduct modifications of the engines in accordance with directives issued by aviation authorities and the OEM – irrespective of when the directive is issued during the contract period.

117 Oliva and Kallenberg (2003), in their study of service infusion in the machine manufacturing industry, observe the role of risk when pricing of relationship-based services is undertaken related to availability. From a service provider perspective, they point to the importance of developing capabilities for risk determination, e.g. skills and information gathering routines, in order to achieve profitability for this type of offerings.
118 The word thrust meaning ‘thrust by a propeller’.
119 Defined from a customer perspective, as the total service offering providing authority approved engines in working order, always available on wing of aircraft at a fixed price per flight hour.
and irrespective of cost. The scope of these future actions are not known at
the start of the contract – the flow of risk can accordingly occur continuously
during the contract period.

Involvement (footnote 115, p. 144) means to be involved, the obliging partici-
pation in the activities of a group or an organization, sometimes emotionally
absorbingly with regard to commitment and dedication.

Business relationships are said to be more or less of an attitude, a tie be-
tween two parties that is not easily broken, and something that has to be
earned by the service provider in interaction and communication processes
(Grönroos, 2000). To earn that relationship, involvement is required by the
service provider and his staff.

The flow of involvement is of an intangible nature. It consists of commitm-
ent, involvement, and a caring attitude for the customer’s “well-being”, demon-
strated by the service provider’s employees in interactions with the customer’s
personnel and in other actions taken to accomplish the intended outcome of
the business agreement. Thus, the involvement has to start in a place that is as
obvious as its direction. It has to be based in the service provider’s organiza-
tion and be directed to the customer’s. However, when the relationship has
been earned, the flow becomes mutual.

“A relationship has developed when a customer perceives that a mutual way of
thinking exists between customer and supplier or service provider.” (Grönroos,
2000, p. 33)

Involvement is a perishable commodity in need of constant replenishment
and progress. Individual persons come and go in different positions in respec-
tive organizations and time might erode memories. Consequently, involve-
ment has to be continuously maintained over time by closeness to the cus-
tomer. Again the need for soft skills is emphasized.

“Over-involvement” is the dark side of the involvement flow. When partici-
ipation in activities and interactions with the other party go beyond the op-
timal, i.e. that which is necessary for efficiency, involvement starts to cost.
Over-involvement draws on the mutual gaining of an efficient relationship;
the well-balanced win-win situation is replaced by a state of win-loose or a
loose-win. Even a loose-loose situation would be possible in severe situations.

Over-involvement in the service provider’s organization may be due to
poor processes and routines. It occurs when dedicated employees cover up for
the defective infrastructure of the organization, when they do “everything” to
solve internal problems by additional personal investments in time and com-
mitment to keep the customer flying. This is not only ineffective for the or-
ganization, but also very dependent on individual human beings. A dedication
to customer operations should be supported by well functioning internal
processes. Then the prerequisites are in place for the service provider’s share of the win-win mutuality.

Over-involvement from the customer’s organization is necessary when the interaction with the service provider does not work out as it should. The staff needs to put in extra resources of time, e.g. for re-planning due to delivery delays or additional efforts due to defective hardware quality. These are situations that, in the long run, lead to a mistrust and insecurity about the service provider’s reliability. Indirect and/or psychological relationship costs (Grönroos, 2000) will occur in the long-term, as extra hours can be translated to man-hours of work and negative emotions add to the sacrifice part of perceived value.

The monetary stream is the last flow that is identified. The flow of money is normally from the customer to the service provider, as the customer pays for the services he benefits from. A flow that is dependent on the contractual price and, when coming to engine flight hour agreements, to the actual hours of engine operation.

Connecting flows and value features

The flows of goods, information, risk, involvement, and money will next be linked to five of the value features identified in chapter 5. Table 6-1 on page 143 is the basis for this identification of connections. Trust is, due to its particular characteristics, omitted and will be treated separately under the next subheading.

Flow of goods and information are the sources of value for Availability of engines and its value drivers of “turn around time”, “engine change on schedule”, “long time on wing”, and “fleet optimization”. “Back up services” is, on the other hand, mainly tied to the flow of goods.

Availability is dependent on actions and interactions directed to keep the flow of goods and information smooth. A service provider can achieve this by working for a stable and flexible maintenance process, to proactively prepare actions as transportation, to act and react swiftly, and to maintain communication and thereby the information flow. Interruptions in these flows might be very costly, e.g. when turn around times for engines are running over time. So, as time flows by, the value of engine availability is affected as is organization efficiency.

Organization efficiency is mainly about the flow of information; a flow that is necessary in order to bring valuable time savings to the customer’s organization. This involves not only the preparation of routines within the service pro-
vider’s organization to facilitate information exchange but also coordination of information exchange across the organizational borders. It is also about the service provider supporting the development of his employees’ soft skills. This holds for “supportive actions”, “delivery accuracy”, “simplicity in contacts”, “knowledge transfer”, and “simplicity in routines”. Even “geographical closeness” is, in this context, about information flow as it was identified as an attribute connected to the need for travel to the service provider. Travel relates to journeys that have to be made if information interchange cannot be achieved without meeting face to face.

“Quality of delivered engine” is connected to the flow of goods as it affects organization efficiency if the delivered goods do not meet the necessary quality. “Supportive actions” is not only about information flow, but also the flow of goods, when the value attribute “receiving/acceptance assistance” involves inspection of the physical goods as well as information in documents.

Financial benefits are mainly connected to the flow of risk as illustrated by the value driver “risk reduction”. The very large part of this value originates in the transfer of risk from the customer to the service provider when engine flight hour agreements are used. Still, the use of warranties and the service provider’s liability for the engine during shop visits are expressions of this flow of risk. “Maintenance practice”, the need to keep to value preserving routines when maintaining the engines, also implies a flow of risk from the customer since the routines should guarantee a secured value of the engine.

The engine flight hour agreement also provides the other type of flow connected to financial benefits since “simplicity in routines” is about the flow of information.

When reaching Collaborative partnership we are talking about another type of flow, the more intangible flow of involvement involving an obliging attitude from the service provider. As remembered from the preceding chapter, Collaborative partnership is a value feature on a more general level than the three previous ones that are closely connected to the specific offering. Collaborative partnership is about the approach in contacts connected to the specific business agreements and cooperation for mutual development of the business and relationship.

“Cooperation”, “contacts”, “engagement in customer’s daily operations”, and “social activities” are all expressions of the commitment made to the partnership by the service provider. The service provider achieves Collaborative partnership by acting and reacting to the customer’s activities within a time frame. To enhance the flow of involvement, the service provider has to work proactively, with a dedicated presence close to the customer. He has to let the involvement flow.
However, as discussed above, the issues of “over-involvement” have to be addressed – both from the service provider’s and the customer’s side – to reach the mutual gains from a win-win relationship. If over-involvement is present in the customer’s organization it will most surely slide over into sacrifices, when too much time is spent on getting things working. It is an indirect relationship cost (Grönroos, 2000) manifesting itself.

_Sacrifices to use offering_ – what the customer has to give to use the offering – is the value feature left to examine. Some of the value drivers under this heading feel a bit trickier to connect to specific flows, but this is not the case for “price” and “other related costs” that definitively deal with the _flow of money_.

“Customer administration” is almost entirely about the _flow of information_, though I would argue that there has to be a _flow of involvement_ too – from the customer to the service provider. This is necessary due to the long and established relationship and large scope and nature of the business deals, e.g. the many contacts between the parties concerning different aspects of the deals. There has to be a certain element of involvement from the customer; the issue is to balance the involvement against the service provider’s, and not to fall into over-involvement and rising indirect relationship costs.

“Bonds”, the tie between customer and service provider that arise during long-term agreements, is rather indirectly connected to the flow of involvement as the tie has been realized by the customer’s own free choice and intention to engage with the service provider. It is also an indirect flow of money as the long-term agreements stop the customer shopping around for the cheapest maintenance deal at each maintenance occasion. In addition, there might be an outflow of information as the customer’s staff loses knowledge of market conditions as time goes by. “Indirect sacrifices” is the last value driver, illustrated by a possible quality risk when using rental spare engines. Only one interviewee mentioned this driver. It is tricky to connect to a specific flow, but I have decided on involvement as it occurs as a result of the customer’s free will.

_Summarizing_

In the preceding pages, I have examined the characteristics of flow, its connection to time, and the nature of the different types of flow found in the set-

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120 The value attributes under the heading of “other influencing factors” were, in the descriptive framework, left to one side as just other influencing factors. However, after a close examination I have decided that, in this deepened analysis, they can be fitted into Price (value attributes $S91-C$, $S97-C$, $S101$, and $S92$) and Other related costs ($S203-S$, $S89$, $S205-S$ – where they become ways of positively affect other related costs, while the only attribute previously connected, $S93-C$, negatively affected the costs).
ting, i.e. the flows of goods, information, risk, involvement, and money. The value features of Availability of engines, Organization efficiency, Financial benefits, Collaborative partnership, and Sacrifices to use offering, have been connected to their respective sources of flow (figure 6-2). Now, before completing the left-hand side of the explanatory model, there is one important issue to get into order. That is the value feature Trust, found at the psychological level of the descriptive framework in chapter 5.

6.2.2 The double identity of Trust: an effect and a filter

Trust is the label that I have given to the value perception’s psychological level, a value feature that in a working win-win relationship ought to be found on the benefit side of the pair of scales. On the other hand, if the relationship does not run smoothly, Trust will inevitably crawl over to the sacrifice side and imply more or less distrust. Distrust involves psychological relationship costs (Grönroos, 2000) for the customer when he needs to worry or become irritated over things not working out as they should.

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121 The concept Trust is, in this study, a value feature that emerged from the analysis. It is defined (section 5.2.3, page 118) as the customer’s feelings of confidence for the relationship, the service provider, and the product, giving him peace of mind. The value map of Trust brings further substance to the value feature by illustrating the value drivers and attributes bringing about Trust. In this chapter the wider implications of Trust are discussed.
Trust is an interesting concept with several implications that exceed the above-mentioned direct impact on customer-perceived value. I will in the following paragraphs discuss its origin as well as its double function as a perception filter, thereby touching upon issues such as tolerance zones and expectations.

Table 6-2 accounts for the value drivers building up Trust, of which reliability is the most frequently mentioned. The importance of reliability is not surprising. Comparing with outcomes from consumer research on service quality, reliability is the overall most important issue (Berry & Parasuraman, 1993). Reliability is about getting the basics of the service to work as expected, as customers seldom overlook failures in basic performance. Accordingly, reliability is a hygiene factor. In this study reliability is exemplified by quality of maintenance, credibility of delivery dates, accessibility to the services included, document correctness, technical expertise, and the like. These are all elements that are tightly connected to the essence of the service: preventive and rectifying engine maintenance in agreed time. When reliability is achieved, this will imply feelings of security for the customer's employees – everything will work out as it should; they do not have to worry.

<table>
<thead>
<tr>
<th>Value feature/ Value driver</th>
<th>No of statements</th>
</tr>
</thead>
<tbody>
<tr>
<td>Trust</td>
<td></td>
</tr>
<tr>
<td>Reliability</td>
<td>36</td>
</tr>
<tr>
<td>Responsiveness</td>
<td>22</td>
</tr>
<tr>
<td>Understanding</td>
<td>7</td>
</tr>
<tr>
<td>Long term commitment</td>
<td>14</td>
</tr>
<tr>
<td>Geographical closeness</td>
<td>9</td>
</tr>
<tr>
<td>Image</td>
<td>4</td>
</tr>
</tbody>
</table>

Responsiveness is both in this study and in the findings by Berry and Parasuraman (1993) the second most important topic. Here for example illustrated by value attributes of swiftness in action, flexibility, and helpfulness. The other value drivers found in this study are understanding, long-term commitment, geographical closeness, and image.

However, according to consumer research (Berry & Parasuraman, 1993), none of these dimensions can outweigh the importance of reliability. The customer expects reliability and, in the long run, no amount of high performance on responsiveness can compensate for defective reliability. The studied case is a good example of such circumstances. Although individual service provider employees’ performance on responsiveness and understanding was highly
praised, a long term inability to keep to promised turn around times gave a bitter taste of flawed overall performance and hollowed the perception of Trust.

It seems that expectations are a part of these judgments of Trust. What, then, does the customer expect? It is rather obvious. He expects that the turn around time negotiated about, and promised by the service provider, is adhered to. Smaller deviations, that also are common due to the nature of the service, i.e. not knowing exactly what to repair before dismantling the engine into pieces, are accepted but not larger ones and especially not if they occur frequently.

The zone of tolerance concept – retrieved from consumer research and again the works of Berry and Parasuraman (1993) – is apparently appropriate also within business-to-business relationships and then in relation to the judgments of performance that are manifested in Trust. The zone of tolerance is demarcated by the lower level of adequacy, i.e. expectations of acceptable performance sufficient to be satisfied, and the upper desired level, i.e. what the customer rather hopes to get. As long as the performance is kept within these limits, the customer is quite happy with the outcome. Exceeding the desired level will positively surprise the customer and add extra weight to perceived Trust. However, to fall short of the adequate level will tear hard on Trust and thereby the total perception of customer value.

The zone of tolerance is probably of differing ranges with different customers and individuals within a customer organization as it varies according to expectation level and type of service. Additionally, within a total service offering, with its many parts, there ought to be different widths of tolerance zones connected to the different services. This would be in line with Strandvik’s (1994) investigation concerning restaurant guests, where it was shown that the width of tolerance zones differed between attributes of the service (food, menu, servicescape, and interaction) as well as between guests.

In this case, the core service and the need for reliability in performance – as with the turn around times for engine maintenance – ought then to be connected to a narrower zone of tolerance than additional services. However, these thoughts are only speculations based on my general knowledge of the setting, as the study did not investigate this phenomenon in particular. It would, however, be an interesting subject for further studies.

We have seen that the value attributes found on the value map of Trust are not unique. Most of them are also found on the other maps. The difference compared to the other value maps, is the reason why they were placed on the map of Trust. That was because the interviewees mentioned them with a connection to psychological benefits or sacrifices, i.e. a psychological level of value, affectively influenced. The other value maps reflect, on the contrary,
cognitive evaluations of contributions to customer-perceived value. That is the “hard” bit of the assessment, essentially the actual performance that is more or less translatable and measurable in financial terms; an evaluation that in principle ought to be achieved purely technically. The same actions and circumstances that provide these financially quantifiable foundations for a customer-perceived value can, in addition, supply material for an evaluation on a psychological level. The latter is an evaluation that is inevitably subjective — interpreted by the individual.

Trust is grown out of the five flows of goods, information, risk, involvement, and money. Consequently, all circumstances, actions, and interactions within these flows create the psychological level and thereby the perception of Trust. Trust is formed accordingly at the product and partnership levels of the relationship — the value features of Availability of engines, Organization efficiency, and Financial benefits together with Collaborative partnership — and related to the Sacrifices of using the offering.122

Trust is constantly present in the relationship, colored by all activities within it and at the same time affecting them. The customer staff’s evaluations of performance and individual activities are in this way always influenced by the state of Trust. Distrust might involve additional activities from the customer to secure the outcome, but with Trust, no such actions are necessary as the flow moves smoothly. In this way Trust is strengthened by performance within or above the zone of tolerance, but weakened by the reverse.

**Summarizing**

*Trust* is an effect of the circumstances within the relationship, but acts concurrently as a filter when judgments of value acquired from the relationship are made. Expectations are incorporated in Trust, as Trust is moderated by the level of expectations, illustrated by the zone of tolerance-concept.

Essentially, Trust is the “perception-part” of the customer-perceived value-concept. Trust is what makes assessments of value subjective and as Trust always is present, no purely neutral evaluations of customer value ought to be possible. Customer-perceived value — the net-value received from a relation-

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122 My interpretation can be compared to the outcome of the quantitative study by Walter et al. (2002). (In their study trust is defined (p. 7) according to Moorman et al. “[…] a willingness to rely on an exchange partner in whom one has confidence.”) Walter et al. conclude that a supplier’s fulfillment of relationship functions for a customer builds trust — and the more trust, the higher the relationship is valued. Furthermore, their framework contains hypotheses of a direct influence of relationship functions on perceived value, hypotheses that are supported by the study. However, in this study I argue that all actions within a relationship should be considered to build evaluations and feelings forming a psychological level of Trust. Trust will in turn color all interpretations of perceived value as it ought to be very hard to liberate oneself from these feelings.
ship, or parts of it— is inevitably an outcome of the customer’s subjective judgment as it is colored by Trust.

6.2.3 Integrating for an explanatory substantive theory: the origin of customer-perceived value

It is time to summarize the discussion so far into the left-hand side of the explanatory model of customer-perceived value. It is a model that is proposed as a substantive theory (Strauss & Corbin, 1998). Due to the origin of these kinds of theories—originating in a specific population within a small area of investigation—they are characterized by a lower level of explanatory power than the more general ones. Still, they have a meritorious ability to account for the specifics of the investigated setting and to give explanations applicable back to both the specific practice and comparable ones.

This is a model regarding the practice within the commercial aircraft engine maintenance industry, applicable for long dyadic relationships when evaluation of customer-perceived value is made during on-going businesses. Still, it ought to be appropriate in similar settings, i.e. industries characterized by expensive goods that have to be taken care of repeatedly for maintenance and where this is undertaken by an external service provider connected to the customer by a long term agreement.

The left-hand part of the explanatory model (figure 6-3) focuses on the origin of customer-perceived value and is the subject for this discussion. It is developed out of the reasoning this far and illustrates how flows of different character are the common denominator of what the customer gets and gives in the relationship. However, before reaching the customer-perceived value of the relationship the flows influence Trust. Trust acts at the same time as a filter of the value perception, implying that the customer makes a subjective evaluation of value received. The benefit side of customer-perceived value is illustrated by the first two horizontal thirds of the model and the sacrifice side is represented by the last one.

The first third of the origin part of the model consists of the product level of the relationship, i.e. what the benefits acquired from the total service offering imply in value. Here the sources of value can be traced to the flows of goods, information, and risk that stream into the value features of Availability of engines, Organization efficiency, and Financial benefits. These three value features can, due to their connection to the specific product level and in accordance with the theoretically developed framework in chapter 2, be categorized under the concept “product features” of the total service offering. The product features of the offering summarize what the customer receives when all parts of the total service offering are combined. Here the flows of goods
and information provide Availability of engines and Organization efficiency, and the flows of information and risk imply Financial benefits.

The next third illustrates the more general aspects of the connection between the customer and the service provider: the partnership level. Here the source of value is found in the flow of involvement implying an addition of benefits to the value judgment.

The last third is the sacrifice part of the relationship, where an outflow of money, information, and involvement from the customer to the service provider balances the net-weight of value.

All flows are influencing the psychological level of Trust, thereby building a picture – an impression – of each circumstance, action, and interaction connected to the specific value features and eventually the concise relationship. Concurrently, this impression of Trust filters the flows of acquired value so that the complete value perception is shaped by the customer. Expectations are an inherent part of the Trust concept, implying a constant comparison between expected and perceived value, thus involving the zone of tolerance as a yardstick. Benefits obtained and sacrifices given are, in this way, bent to imply a positive, negative, or neutral impact on the customer-perceived value. Obtained value will thus be transformed from a technically neutral assessment into a subjective judgment – the customer-perceived value.

Figure 6-3. Focusing the origin of value in the explanatory model of customer-perceived value in the commercial aircraft engine maintenance industry.
In Grönroos’ well-known model of service quality (1984, 1990), corporate image is the filter by which assessments of perceived service quality are influenced when a customer compares expectancies of the service with the actual performance. Figure 6-4 holds an interesting comparison between Grönroos’ model (1990) and the proposed explanatory model of customer-perceived value. The white objects contain the components of Grönroos’ model, while the grey-shaded areas are incorporated to illustrate components from the model of customer-perceived value. I will, below, dwell upon how the two conceptual models relate to each other, especially noting the similarity concerning the inclusion of a filter filtrating a customer’s perceptions.

The functional quality in Grönroos’ model, i.e. how the customer receives the service and experiences the interaction, is comparable with the origin of value in the customer-perceived value model. The flows express how the service provider delivers value to the customer and involve all types of interaction. The “how-part” is preferably measured in qualitative terms.

The technical quality, i.e. what the customer is left with from the service, can be compared with the value features illuminating the essence of the value creation. The value features state what customer-perceived value the customer receives as an outcome of the relationship. In addition, however not shown in figure 6-4, it should be noted that the “what-part” is further developed by the explanatory customer-perceived value model. It distinguishes the effects of

![Figure 6-4. Comparing Grönroos’ (1990) model of total perceived service quality with the proposed explanatory model of customer-perceived value.](image-url)
value inside the customer’s organization, which, preferably, should be a quantitative value. Thus, even more substance is added to the technical quality. The effects of value were recognized previously from the value maps in chapter 5 and will be discussed further in section 6.3.

Now to the filtering part incorporated in the two conceptual models. Grönroos (1990) emphasizes that the corporate and/or local image of a company operates as a filter between the technical and functional quality and the experienced quality. Thereby the customer’s perceptions are filtrated and influenced before reaching the state for evaluation of total perceived quality, i.e. when experiences are put against expectations. A good image in the customer’s mind would imply that minor mistakes by the service provider are forgiven, but a frequent occurrence of faults will imply damage to the image. A negative image implies that the forgiving shelter of a good image does not exist. Thus, the damage of mistakes will be considerably greater. I argue, by presenting the model in figure 6-3, that it is the concept of Trust that acts as the filter. A filter that concurrently gathers impressions of all dealings within the relationship, evaluates them against expectations, and then filtrates out customer-perceived value. Corporate image is then only one of the attributes included in Trust. Although not explicitly illustrated, and neither in the focus of my investigation, I include the evaluation process – experiences against expectations – inside the filtrating Trust before reaching the outcome of customer-perceived value.

A comment on the content of expected quality should be made: Grönroos (1990) recognizes that expected quality is a function of market communication, image, word-of-mouth communication, and customer needs. I agree with that, but acknowledge previous experiences of the relationship as important. Although previous experiences influence the total image of the company, my experiences from the case study additionally points to a more direct influence on expectations. This would be the other side of the filtrating Trust – Trust as an effect of all dealings within the relationship. The importance of calibrating expectations by a balanced market communication and brand identity building is emphasized in both conceptual models.

The origin of customer-perceived value and the effects of Trust can be further explored by transforming the model into algebraic denotation. Thus, customer-perceived value of a relationship, i.e. how the service provider offers value in the commercial aircraft engine maintenance industry, can be expressed as follows:
The first expression implies that the total customer-perceived value of the relationship can be seen as a flow. This flow originates in the service provider’s efforts to bring value out of the total service offering and the relationship.

The second expression includes a disentanglement of the content of flow. First the benefits of the product offering – the product features – are added to each other: The flow of goods (G) providing Availability of engines (a) and Organization efficiency (o); the flow of information (In) providing Availability of engines (a), Organization efficiency (o), and Financial benefits (f); and last, the flow of risk (R) supplying Financial benefits. Then the benefits from the flow of involvement (Iv) providing Collaborative partnership (cp) are added. Eventually, Sacrifices to use offering (s) are subtracted, i.e. the flows of money (M), of information (In), and of involvement (Iv).

However, these efforts do not reach the customer unaffected, since Trust filtrates the perception, which is apparent finally in the second expression. Trust is a function of all flows mentioned above and in addition affected by the customers’ expectations (E). A neutral perception of Trust will adopt the value of 1; a positive influence implies a figure exceeding 1 and a negative fall below 1.

The function of customer-perceived value is probably not linear. Research within service quality has paid attention to complicating factors connected to the perceived quality function. Strandvik (1994) proposes an asymmetric quality function, implying that at the level of normal performance the curve bends and continues at a lower pace than before. Presumably the customer-

<table>
<thead>
<tr>
<th>Flows:</th>
<th>Value features:</th>
</tr>
</thead>
<tbody>
<tr>
<td>G</td>
<td>a availability of engines</td>
</tr>
<tr>
<td>In</td>
<td>o organization efficiency</td>
</tr>
<tr>
<td>R</td>
<td>f financial benefits</td>
</tr>
<tr>
<td>Iv</td>
<td>cp collaborative partnership</td>
</tr>
<tr>
<td>M</td>
<td>s sacrifices to use offering</td>
</tr>
</tbody>
</table>

\[
\text{CPV}_{rel} = \text{Flow}_{or}
\]

where

\[
\text{Flow}_{or} = \left( (G_{a,o} + \ln_{a,o,f} + R_f) + \ln_{cp} - (M_s + \ln_s + Iv_s) \right) \text{Trust}
\]
perceived value function is also asymmetric\textsuperscript{123}, implying that the value perception decreases in acceleration above a certain level of Trust. Further research has to be done to designate the slope and shape of the customer-perceived value function.

The implication of Trust for the service provider is its great importance as regulator of the value received by the customer – turning a rather neutral value into a subjective perception. By trying to control the flows, a service provider in this industry can optimize the value delivered to a customer, but according to the preceding reasoning, this is not enough.

A successful maintenance provider does not only have to excel in superior processes and routines, thereby achieving efficient flows, providing first-class value, and reducing all sorts of relationship costs for the customer. He also has to excel in managing customer experiences, as it is the experiences that build Trust. Included in the “experience administration” are, of course, the manner in which all customer contacts are handled and, accordingly, the attitude with which the service provider’s employees treat the customer’s staff members. In addition, there is a clear communication part involved as it is necessary to calibrate the customer’s expectations, informing the customer in specific terms as to what he should expect from the relationship – what value will be delivered. In this way the customer’s zone of tolerance is tuned in to an adequate range. Then, there is “nothing more” to it than to perform in a way that the expectations are met or even exceeded.

However, it should not be forgotten that organizational customers consist of many individuals and it is the combined perceptions that form the total value perception of the company. Expectations and experiences have to be tuned in for all contacts, at all affected managerial levels.

Berry et al. (2002) have proposed the identification and orchestrating of “clues” to achieve a high level of total experience in consumer businesses; clues that inherently reflect the organization’s core values and branding strategy. The composite of clues should cover the total experience of all interactions with the service provider and of course, the actual product performance. This method ought to be applicable also in business-to-business relationships and a good start in identifying the clues is already achieved, as they are to be found on the value map of Trust.

\textsuperscript{123} The recent study of value by Heinonen (2004) indicates also an asymmetric function. However, Heinonen’s study does not investigate customer-perceived value using the dimensions of benefits and sacrifices, but instead only net-benefits operationalized according to service quality dimensions – “what”, “how”, “when”, and “where”.

161
Summarizing

The left-hand part of the model provided in figure 6-3 on page 157 is the outcome of the discussion of the origin of customer-perceived value in the specific setting. The figure explains how the service provider delivers value and how this value delivery turns into a customer-perceived value.

Now I choose to use an easy form of summing up by providing the familiar scales image (figure 6-5), illustrating the concepts that explain the origin of customer-perceived value. The pans are hanging from chains of flow from a lever on which Trust acts as a fine adjusting weight.

![Figure 6-5. Weighing the origin of customer-perceived value on a pair of scales.](image)

In the upper left pan the product features of the total service offering are found with their content of goods, information, and risk, and in the lower left pan is the partnership with its flow of involvement. In the right pan all sacrifices are collected, expressed by the flows of money, information, and in-
volvement. The way the pair of scales is drawn in the figure above, the left-hand pan is weighed down and consequently expresses a surplus value for the customer.

All actions and interactions within the relationship build the psychological Trust, i.e. influencing how the fine adjusting weight is moved along the lever, and in that way affect how the customer’s perceptions of value are filtrated. In conclusion to the discussion under the previous subheading, it is important for the service provider to calibrate the balance by fine-tuning the fine adjusting weight, i.e. to try to calibrate the customer’s expectations.

6.3 Investigating the “effect-side” of the value maps

On the “effect-side” of the value maps we find value drivers that deal with how the offering affects the customer's income statement, either directly or indirectly. In this way, the “effect-side” actually describes customer-perceived value as converted into monetary terms.

Translated to revenues and costs, I see a connection to flow once again – now the flow through the accountings, sometimes passing the balance sheet, but eventually ending up on the income statement.

The table below (table 6-3) investigates the different flows. The more detailed types of flows have been summarized into three overriding groups – revenue benefits, cost benefits, and interest effects – in order to reduce the number of concepts brought forward into the forthcoming model. Cost benefits include costs for maintenance, personnel, and other costs. Interest effects are derived from capital tied up in assets and cash flow. However, as a practical tool, the more detailed level ought to be helpful when exploring the monetary paths.

The sacrifice side of customer-perceived value has been included in the effect side too, now being analyzed from an income statement perspective. The flow type cost benefits has from this point in the table been replaced by costs to use.

It should be pointed out that this classification of flows is really about the “value dimensions” used in the initial analysis of the case to classify the value attributes in profit and loss terms. This reasoning is not meant to contradict what I have said about the value dimensions earlier, but to develop them and focus on their place in the framework. The overriding groups of flows are the same as the value dimension, with the exception of “interest effects” that has been added here. The reason for adding this group is that interest effects can go in two directions. They can sometimes be expenditures, as when a flight hour agreement implies advance payments for overhaul. However, normally
they ought to be cost benefits\textsuperscript{124}, as when capital tied up in assets is released. The non-monetary, psychological, dimensions have for obvious reasons no place in this framework.

\textit{Connecting the value features with the monetary flows}

I now turn to table 6-3 below for a brief description of the connections between the value features and the different types of monetary flows.

\textit{Availability of engines implies flows of cost and revenue benefits.} The revenue benefits do not come from opportunities to increase the turn over, but rather securing available revenue by reducing the number of cancelled and delayed flights to a minimum. Cost benefits are achieved by actions to minimize the total cost of maintenance, e.g. the need for rental spare engines, activities that if they are necessary to perform, involve personnel costs as well. The flow of interest effects is achieved by the need for spare material. Positive effects regarding this item are realized when low turn around times imply a low need for spares.

\textit{Organization efficiency} is connected to the flow of cost benefits, namely personnel costs. The customer can achieve time savings by adopting efficient routines and processes in collaboration between the parties.

The value feature \textit{Financial benefits} is connected to the flows of cost benefits and interest effects. Engine flight hour agreements, but also warranties and other forms of liabilities, always involve some form of security level for maintenance costs that not can be exceeded, irrespective of the scope of risk reduction. In addition, engine flight hour agreements imply effects on the customer's cash flow as the contract type implies a smooth stream of payments every month. The value driver “asset protection” means that the value of the engine is preserved by an optimized scope of maintenance. When discussing lease engines this is an important subject as an evaluation of engine value is made on its return to the lease company. A low value, e.g. caused by low scope overhauls, will imply an extra fee to cover “neglected” maintenance. Finally, personnel costs are affected here, as these types of agreements involve an easier administration.

\textit{Collaborative partnership} was recognized as the value feature illustrating a more general level of the relationship, including approach and cooperation for mutual development of the business agreement and the relationship. At the “effect-side” of the value maps these efforts result in “development of interaction and communications”, i.e. processes and routines between the parties with effects inside the customer's organization. There is also the general “development of customer organization” connected to value drivers describing a

\footnote{124 Interest effects was in the initial analysis, appendix G, classified as cost benefits.}
constant improvement of experiences and knowledge. The third driver “relationship cognizance” was described by the interviewees as the value of knowing what the other party stands for and what to expect, and to ease contacts by knowing the service provider’s staff members in person.

Table 6-3. Matrix of monetary flows, the "effect-side" of the value maps.

<table>
<thead>
<tr>
<th>Central value feature</th>
<th>FLOW OF</th>
<th>Revenue benefits</th>
<th>Cost benefits</th>
<th>Interest effects</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Summarized monetary flow type</strong></td>
<td><strong>No of statements.</strong></td>
<td><strong>Revenue security</strong></td>
<td><strong>Maintenance costs</strong></td>
<td><strong>Personnel costs</strong></td>
</tr>
<tr>
<td>Availability</td>
<td>Tied up capital – Minimization</td>
<td>10</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>Organization efficiency</td>
<td>Employee efficiency</td>
<td>43</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Organization minimization</td>
<td>4</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Travel expenditure savings</td>
<td>3</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td>Financial benefits</td>
<td>Budget simplicity</td>
<td>4</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Budget security</td>
<td>6</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Cash flow balance</td>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Asset protection (S)</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Collaborative partnership</td>
<td>Development of relation – interactions &amp; communications</td>
<td>5</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Development of customer organization (C)</td>
<td>4</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td></td>
<td>Relationship cognizance</td>
<td>3</td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Sacrifices to use offering</td>
<td>Revenue benefits</td>
<td>Costs to use</td>
<td>Interest effects</td>
<td></td>
</tr>
<tr>
<td>Price</td>
<td>29</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other related costs</td>
<td>6</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Customer administration</td>
<td>16</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bonds</td>
<td>7</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Indirect sacrifices (C)</td>
<td>1</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Even if it is hard to put a correct and exact monetary value on effects like these because they are very difficult to assess, a general reasoning about possible effects is possible. A long-term development of the interactions between the parties and the development of knowledge have to affect the total cost of maintenance and also personnel costs in the long run. Other costs might be involved if the development, for example, affects information technology costs. In essence, Collaborative partnership ought to have an effect of long-term flow of cost benefits for the customer.

The flow of costs to use is connected to the final value feature, Sacrifices to use offering, “Price”, “other related costs”, and “bonds” are all connected to maintenance costs, while “customer administration” logically involves personnel costs. “Indirect sacrifices”, i.e. the quality risk of rented material, is connected to personnel costs. If problems occur, personnel resources will be needed to correct these.

**Summarizing**

The “effect-side” of the value maps describes the monetary effects on the customer’s income statement. The origin of value, provided by the service provider’s total service offering and created by the interactions in the relationship, is transformed here into items with financial consequences.

Four main groups of flows were identified on the “effect-side”. These financial streams were illustrated by the flows of revenue benefits, cost benefits, interest effects, and costs to use. The relative ease with which these flows can be assessed is dependent upon the circumstances for their occurrence. This matter of degree of calculability will be discussed next when stochasticity and substantiality are introduced into the model. (Figure 6-6)

**Figure 6-6.** “Effects” – the first part of the explanatory model’s right-hand side – flows and value features influenced by stochasticity and substantiality.
6.3.1 Introducing “stochasticity” and “substantiality”

In chapter 5, in section 5.4 “Translation into monetary terms”, the degree of calculability of individual value attributes was discussed. The classification of value attributes involved four categories ranging from possible to calculate to non-monetary.

This is important to emphasize: every type of value is not possible to calculate. In addition, many value attributes have to be enclosed by a range of assumptions to achieve a translation into a monetary worth. By introducing the concepts stochasticity and substantiality into the framework I intend to capture these circumstances.

Distinctive for the investigated context is the high degree of stochasticity. When signing a long-term business agreement for engine maintenance, the parties do not know with certainty, for example, how many times an engine will be due for maintenance during the contract period. They do not know the exact scope of each overhaul and they do not know if any unplanned repairs will occur. In addition, such uncertainties do not only affect the core service but will also enclose additional services included in the total service offering. Of course, this is not a totally blank page for the involved parties.

Assumptions are made to deal with uncertainties. These assumptions involve, for example, engine condition when entering the contract and expected flight operations during the contract time. This knowledge, together with experience and qualified guess-work, forms the basis for assumptions made to handle the issue of stochasticity.

Substantiality addresses the problem of how tangible the monetary worth of a value attribute is. Can facts concerning time, quantity, price, interest rate etc. be accurately gathered? A calculation of turn around time value in terms of capital tied up in spare engines can be computed rather easily, as the information needed is possible to capture – days of turn around time, number of engines in fleet, and worth of engine. Translation into income terms can be made by applying an appropriate interest rate to the calculated sum.

On the other side of the range of calculability there is the question of how to put a monetary worth on the long-term development of the business relationship in terms of mutually improved processes and routines; a value attribute that can be found on the map of Collaborative partnership. This will not be as easy as the example above. Assumptions have to be made regarding implications of improvements, who is affected, what will it imply in time savings, and so on. From the same value map, effects in terms of increased experience and knowledge within the customer organization can be retrieved. How can a
monetary worth of this effect be estimated? This will probably be even more difficult.

**Summarizing**

Investigations of a monetary value of a total service offering involve special considerations as the maintenance industry works under circumstances of uncertainty. Assumptions have to be made. First, a decision regarding the probability of a certain incident to occur must be made and, if that is the case, how often it will happen. When the issue of stochasticity is settled, the matter of substantiality has to be handled. Substantiality regards the degree of exactness when putting figures to a value attribute. Some attributes may be valued with a high degree of accuracy; others can only be assessed with great difficulty. Thus, discussions about degree of monetary calculability of value will have to involve both issues – stochasticity and substantiality.

### 6.3.2 The perception part of monetary customer-perceived value

A monetary value is a value expressed in figures. It is derived from countable measures such as quantity of goods, man-hours, and prices. All of them can be converted into a monetary worth in a suitable currency by the use of simple mathematics. If a net present value calculation is made with the help of an appropriate interest rate, long-term offerings with different features occurring over years can also be compared to each other. But it will still be a quantitative monetary value.

All of this seems rather objective, so what have perceptions to do with monetary calculations? A great deal, I would argue.

It is perceptions by individuals in the customer’s organization that influence what items are included in a monetary evaluation of value, e.g. when comparing offerings from different service providers. It is perceptions that influence the judgment of whether these items are realistically represented. It is perceptions that affect if an offering is treated seriously at all\(^\text{125}\).

This filtrating perception probably consists of Trust, exactly as is done in evaluations of a service provider’s efforts to give value. However, it should be remembered that Trust was built from all actions and interactions within the relationship and in that way became an effect of the relationship at the same time as perceptions were filtrated through it. On the monetary side, the iden-

\(^{125}\) This line of argument is perhaps applicable mainly with regard to commercial companies. Organizations constrained by public procurement regulations have another situation, although perceptions probably have an influencing power there too; then, however, disclosed at an earlier stage, when terms to be included in request for quotation are worked out.
tity of Trust is probably not double as in the origin side of value, but only a filter influencing assessments of customer value.

I propose that the less substantiality there is in a value attribute, the more it is influenced by perceptions. The filtrating effect of Trust is most likely to differ between the items to be evaluated. Easily obtained information that is accurate and countable, such as assessments of monetary value of turn around times, are probably affected very little. At the other end of the substantiality scale, vague writings on long-term collaboration for improved routines and thereby personnel time savings will involve several assumptions. Assumptions are subjective and accordingly are possibly influenced by Trust perceptions when figures are connected to supposed outcome. If Trust is low or immature due to an undeveloped relationship, as with new business contacts, such a calculation might not even be done at all.

A company’s image is included in the Trust concept. This implies that Trust will influence perceptions of value even if two companies have not had any previous relationship with each other. A brand image influences perceptions and might act as a door opener to new relationships, as illustrated by the following quotation.

“So the Volvo name to us is very important, because it opens doors that maybe were not open before. It allows us to talk to people that had looked at us differently before and from a long term perspective it basically gives them the perception that we have staying power.”

Accordingly, with a high brand image, Trust can affect perceptions positively. Even items with a lower level of substantiality can then be treated seriously in terms of effort for evaluation by a presumptive customer. The more positive Trust a customer possesses regarding a service provider, the more open will he be to communication; the more seriously will he regard proposed offerings and the more effort will he put into evaluations. When distrust is present – or where there is a lower level of Trust – the customer will put greater levels of doubt into the filter that assesses communication and evaluations, doubt to non-monetary arguments as well as translations of those into figures and calculations.

Perceptions are the difference between the customer’s and the service provider’s perspectives. A service provider can, regardless of scope of efforts, only provide customer value. The perception of what value is delivered is in the eyes of the customer, resulting in a customer-perceived value. Furthermore, this is a

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126 Quotation from a telephone interview concerning Volvo Aero brand platform, made with an executive staff member at Volvo Aero Services, Florida, the 13th Nov. 2002.
reasoning that holds for quantitative worth as well as the previously (section 6.2.2) discussed qualitative evaluation of value.

By these arguments, the inclusion of Trust into the model of monetary customer-perceived value has been warranted. Still, in this model it functions only as a filter. The inclusion of a perception part into the monetary customer-perceived value model is, in addition, in line with the monetary definition of value provided by Anderson et al. (1993) who state that value is the perceived worth in monetary units received by a customer firm.

6.3.3 Integrating for an explanatory substantive theory: monetary effects building customer-perceived value

Summarizing this reasoning about effects building customer-perceived value, an explanatory substantive theory can be constructed in analogy to the one dealing with the origin of value. The right-hand part of model in figure 6-7 explains the monetary customer-perceived value of a total service offering in the commercial aircraft engine maintenance industry by illustrating the involved concepts and their relation to each other. In other words, how the origin of customer-perceived value, illustrated on the “how-side” of the value maps – created by the service provider’s efforts and interaction in the relationship – can be translated and explained in monetary terms.

Customer-perceived value of a relationship can consequently be evaluated in two ways. Assessments can be made either in qualitative terms, as was the case in the first model of customer-perceived value’s origin, the “how-side” of the value maps, or in monetary terms as in the “effect-side” of the maps. The qualitative and monetary value thus appears on either side of the customer-perceived value-coin.

The complete right-hand “effect-side” in figure 6-7 illustrates how value appears through the value feature Availability of engines from its sources of flow of revenue benefits, cost benefits and interest effects. Organization efficiency has its value source in cost benefits, while Financial benefits are derived from the flows of cost benefits and interest effects. All these concern the product level of the relationship.
The more general partnership level, Collaborative partnership, is provided with value through the flow of cost benefits. Finally, the flow of costs to use provides the source of Sacrifices to use offering.

As the degree of monetary calculability differs among the items building up the flows, assumptions dealing with uncertainty have to be made. This is a two-step process where stochasticity and substantiality are assessed. The first concept deals with the probability of a certain incident occurring within a settled time frame and if the occurrence is warranted, then how often this is likely to happen. The second concept illustrates difficulties of designating exact figures for the item to be calculated. Substantiality depends on how tangible an item or incident is, how easy or hard it is to put it into figures.

Eventually, the flows reach customer-perceived value for a total summing up, but before then they pass through the perception filter built by Trust. Trust does not filter figures and convert them into totally new, imaginary ones. No, it is a much more sophisticated process. Perception filtrates to the extent of how assessments are made. What items will be brought into the calculation? How are figures provided by a service provider treated? The lesser substantiality of an item, the higher the odds that it will be affected by perception filtration. Furthermore, as total service offerings involve many services, including hidden ones, the complexity in construction invites perception filtration and adds focus to the service provider’s communicative ability to visualize all facets of customer value.

Figure 6-7. Focusing the effect of value in the explanatory model of customer-perceived value – a monetary assessment.
In algebraic denotation, the monetary customer-perceived value of a relationship can be expressed as analogous to the value derived from the model of customer-perceived value’s origin:

\[ \text{CPV}_{\text{rel}} = \text{Flow}_e \]

where

\[
\text{Flow}_e = \left( (\text{R}_{\text{a}} + \text{Cb}_{\text{b,c,f}} + \text{Ie}_{\text{a,f}}) + \text{Cb}_{\text{cp}} - \text{Cu}_{\text{s}} \right) \cdot \text{S} \cdot \text{Trust}
\]

<table>
<thead>
<tr>
<th>Flows:</th>
<th>Value features:</th>
</tr>
</thead>
<tbody>
<tr>
<td>R</td>
<td>a availability of engines</td>
</tr>
<tr>
<td>Cb</td>
<td>o organization efficiency</td>
</tr>
<tr>
<td>Ie</td>
<td>f financial benefits</td>
</tr>
<tr>
<td>Cu</td>
<td>cp collaborative partnership</td>
</tr>
<tr>
<td>S</td>
<td>s sacrifices to use offering</td>
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The first expression implies that the customer-perceived value of a relationship is equalized to the flow of monetary effects. The second one explains the content of flow. The different types of flows are specified within parenthesis. First, on product level, the product features provide value. The flow of revenue benefits (R), provided by Availability of engines (a), is first added to cost benefits (Cb) and then to Interest effects (Ie). The latter two are derived from Availability of engines (a), Organization efficiency (o), and Financial benefits (f) and from Availability of engines (a) and Financial benefits (f) respectively. From the Collaborative partnership (cp) cost benefits (Cb) is supplied and added to the first three. Finally, costs to use (Cu) originated in Sacrifices to use offering (s) is subtracted. However, stochasticity and substantiality influence the result and the factor “S” is added to represent this unknown effect. Eventually, the filtrating effect of Trust is recognized.

**Summarizing**

The right-hand part of the model in figure 6-7 summarizes the concepts explaining customer-perceived value in terms of monetary effects. Four types of flows – revenue benefits, cost benefits, interest effects, and costs to use – are
connected to the five value features – Availability of engines, Organization efficiency, Financial benefits, Collaborative partnership, and Sacrifices to use offering. However, the degree of calculability of included value attributes varies. A high degree of uncertainty is characteristic for the industry and assumptions have to be made in order to reach a monetary value. These assumptions involve assessments of stochasticity and substantiability. Trust was also recognized as a filter – but not an effect – in connection to monetary assessments. Its influence was not on the absolute figures, but on the value assessment process.

6.4 Two sides of the same coin: approaches for assessing customer-perceived value

This chapter disentangled the sources of value and suggested an explanation of the customer-perceived value concept in the specific – and similar – settings. A model, consisting of two parts, explaining customer-perceived value in terms of origin and effects respectively was developed. Flow was recognized to be the shared concept uniting the identified value features. It was, in addition, recognized that the two parts of the model illustrate two sides of the same coin, as assessments and evaluations of customer-perceived value can be made from a qualitative – origin – perspective and from a monetary – effect – perspective.

In algebraic denotation the origin of flow (Flow\text{or}) is equalized to the effect of flow (Flow\text{e}), which both carry the total customer-perceived value of the relationship (CPV\text{rel}):

\[
\text{Flow}_{\text{or}} = \text{CPV}_{\text{rel}} - \text{Flow}_{\text{e}}
\]

Figure 6-8 below contains the complete model explaining customer-perceived value, now with an added illustration of the two different ways to assess customer-perceived value – in qualitative or in monetary terms.

An assessment, in qualitative terms, of customer-perceived value is based on the origin of value, i.e. the “how-side” of the value maps, and the customer's opinions of service provider performance. This approach implies that value creating actions and circumstances are evaluated. Consequently, the assessment should be focused on value features and the flows intersecting them. Questions posed to perform such evaluations address the specific value attributes and temporal factors of flows. In addition, the content of Trust ought to be possible to capture by posing questions concerning what causes psychological benefits and sacrifices, e.g. feelings connected to the relationship.
Figure 6-8. Approaches to assess customer-perceived value.
It is also recognized that a quantitative assessment in *monetary* terms can be made by finding and exploring the paths from the “origin-side” to the “effect-side”. The delineation of paths from the first side of the model to the second one will end up in items connected to the customer’s income statement, i.e. revenue and costs. Thus, it becomes a monetary assessment of customer-perceived value.

However, by focusing Trust on the “effect-side” of the model a qualitative evaluation of monetary customer-perceived value is achievable. This is simply what is done when customers are asked to evaluate the perceived received value in words.

As a further development of the above mentioned qualitative assessments, it would be possible to develop tools for the assessment of customer-perceived value by measurement scales. Thus, this would provide opportunities to survey and evaluate value creation as perceived by larger groups of customers. Such assessments could also incorporate comparisons to alternative offerings provided by competitors.
7. BRINGING THE EMPIRICAL FINDINGS BACK TO THEORY

This chapter concerns the building of a second substantive theory, now describing customer-perceived value in business-to-business relationships. The proposed conceptual model is abductively developed when theory and empirical findings from the case study are used together in order to elucidate the concept. The chapter accounts for the different components of the conceptual model and is summarized by the proposal of a definition of customer-perceived value.

The second step of the deepened analysis in my work aims to provide a description of customer-perceived value of a total service offering when embedded in a dyadic business-to-business relationship. The empirical findings are brought back to theory and to the tentative conceptual model, developed as a part of the conceptual framework in chapter 2. The tentative conceptual model is refined and an advanced conceptual model of customer-perceived value proposed.

The conceptual model contains concepts necessary to describe aspects of value creation and evaluation. It is put forward as the second substantive theory (Strauss & Corbin, 1998) originating in the study, although this one only has descriptive purposes. This proposal is, however, presumably applicable to a wider range of business-to-business relationships.

7.1 Recapitulating the tentative conceptual model

The tentative conceptual model of customer-perceived value is a summary of literature findings accounted for in the theoretical platform, chapter 2. The tentative conceptual model is in fact holding two displays (figure 7-1) illustrating:

I. concepts necessary for a monetary evaluation (left) and
II. concepts building a qualitative evaluation (right).

The left-hand parts of the two displays are identical. They contain actors, interaction levels, and time for assessment and creation of value. The right-hand parts illustrate the specific factors to be evaluated in connection to type of value assessment. They hold the total service offering and the relationship aspects of building customer-perceived value from a monetary and a qualitative perspective respectively. Thus, only the right-hand parts divide the two displays.
It is the right-hand parts of the tentative conceptual model (the content in the ellipses under the heading “value assessment of”) that will be further developed in this chapter, as I integrate the findings that emerged from the empirical study into the conceptual model. The reason for not adjusting the other parts of the model is simply that – although not investigating them in particular – I have not received any hints from my empirical material that it ought to be done. Additionally, it is my aim to gather all aspects into one model, as I was never pleased with the unnecessary complication implied by illustrating the tentative conceptual model in two displays.

Next I will argue for the proposed conceptual model of customer-perceived value by describing the included concepts and positioning them into the studied setting.

### 7.2 Building the conceptual model of customer-perceived value

Figure 7-2 holds the proposed conceptual model of customer-perceived value. The formation and assessment of customer-perceived value is illustrated in the specific situation when a total service offering is provided within a business-to-business relationship. The model holds concepts summarizing different aspects of customer-perceived value and the assessment of it. It is in other words not feasible to “read” this model from left to right in search for answers to questions like “how much customer-perceived value do we have?”.
Figure 7-2. A conceptual model: customer-perceived value of a total service offering embedded in a business-to-business relationship.
The model is divided into two pieces according to the basis from where the concepts emerged. The left-hand part – unaltered compared to the tentative conceptual model – is founded upon theory, whereas the right-hand part is built from the empirical findings of this study. Together the model’s two parts form a unity summarizing important aspects of customer-perceived value.

Central in the empirically founded, right-hand part of the conceptual model is the value assessment of the relationship. The concept flow is important for this part. Flows permeate the total service offering, the partnership, and the sacrifices given to keep the relationship going. Different types of flows capture created and perceived value within the relationship by explaining the sources and effects of value.

Other researchers have concluded that the customer-perceived value concept is dynamic (Parasuraman & Grewal, 2000). I will argue for the opportunities to capture the dynamism by the proposed model as the theoretically based part of the model contains concepts that can position customer-perceived value in time and in relation to different actors (see further 7.2.1 and 7.2.2).

The subsequent sections describe the conceptual model of customer-perceived value. The text follows the model from left to right, hence starting with the theoretically based concepts and later dealing with the empirically founded components. All concepts are related to the studied setting, whereby their appropriateness for elucidating aspects of customer-perceived value are illustrated.

### 7.2.1 Theoretical foundation

The theoretically based part of the conceptual model, i.e. the left-hand side, contains the relationship wherein the total service offering, the creation of value, and the value judgments are embedded. This is the part of the model (marked in figure 7.3 below) that focuses the dynamic aspects of customer-perceived value. The dynamic nature implies that the relative importance of each component of the concept may differ over time (Parasuraman & Grewal, 2000). In addition, located in a business-to-business setting, emphasis of a certain component’s value may differ between individual employees in an organization.

First, the involved actors are identified. Next, the interaction levels within the relationship are recognized. These components are retrieved from Holmlund (1997, 2004). Although she is investigating relationship quality, I argue that it is possible to transfer the reasoning directly to a customer-perceived value perspective.\(^\text{127}\) Furthermore, point of time for value assessment and time for value crea-

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\(^{127}\) As Holmlund (2004) herself proposes, when suggesting that other relationship concepts than relationship quality, such as value, can be studied related to the interaction levels.
tion are located in the conceptual model. The time related issues are mainly gathered from previous scholarly work by Holmlund (1997, 2004), Lapierre (1997), Parasuraman and Grewal (2000), and Woodruff (1997). “Interaction levels” and “time for value creation” are in fact overlapping concepts, describing two complementary perspectives of unit of analysis for value creation and perception. All four theoretically based components of the model will be further discussed below.

7.2.1.1 Actors

The actors involved in the relationship are of course the two parties of the dyad – the customer and the service provider. In addition, it is recognized that in a business-to-business context, these two actors consist of many individuals. Normally, there are several employees within each organization that are involved in the relationship. In addition to the dyadic relationship, other actors in the external environment exercise an effect on perceptions. (Holmlund, 1997)

Service provider

In a service provider’s organization there are employees that directly or indirectly influence the value creation. Some employees, presumably management, affect it indirectly, as when rules for the value creation are set. Such types of

Figure 7-3. Focusing the theoretically based part of the customer-perceived value model.
important prerequisites are recognized as the platform from which the process and the outcome of a service are created (Edvardsson, 1998). Examples of indirect influence are when the organization is designed, when processes and routines are determined, and when resources are allocated to the business. Thus, even if the influence of some employees is indirect, the importance is substantial as this is the way that the prerequisites for the services are established.

Direct influence on the value creation is achieved by staff interacting with the customer’s personnel, for example the engineers coordinating the engine maintenance and providing technical support in the studied relationship. The way these interactions are carried out and the employees’ attitude when interacting go straight into the perception experienced by the individuals in the customer’s organization. However, other employees within the service provider’s organization are also directly involved in the value creation. These staff are found behind a line of visibility, working “in the back-office” to provide value for the customer. This category of staff can be exemplified by the engineers and mechanics disassembling the engine, deciding necessary actions and, after engine components have been changed or repaired, re-assembling the engine. These are actions that affect the hardware quality of the engine and thereby have a direct impact on the value creation.

**Customer**

In the customer’s organization, there are also several employees involved in the relationship with the service provider and who consequently contribute to the organization’s total value perception. However, the scope of perception differs between individuals in accordance with their roles and position in the organization (Holmlund, 1997). There can be staff members who almost daily have direct communication with the service provider’s personnel. Other persons have more or less sporadic contact. There are also people directly experiencing the value delivered, although not by interaction but instead by the contact with tangibles from the service provider. In the studied relationship these three categories of personnel can be exemplified by the system engineer, the engineering manager, and aircraft mechanics respectively.

However, employees not having direct contact with the service provider’s product and personnel may also have formed an opinion of value. These opinions are received from individuals experiencing direct contact, when the direct perceptions are forwarded into the organization – a company internal word-of-mouth.
Influence from external environment

The importance of impact from the external environment is recognized by Holmlund (1997). The customer has relationships with other companies in the supply network, and in this way the supply network is incorporated in her model of relationship quality. Holmlund exemplifies the network’s influence on the customer staff, e.g. by acting as a comparison standard against which the service provider in focus is evaluated. She adds size of firms and position in the network as other factors that may influence individual employees’ quality perceptions. These aspects are directly transferable to a customer-perceived value perspective, as quality – recognized in the theoretical platform for the study – is a component of value.

Other organizations and the public environment may also contribute to the shaping of value perceptions. In the investigated setting for example, flight aviation authorities can be recognized as one such organization. The authorities issue regulations and quality standards that can be used directly by a customer to evaluate received value from a service provider. Demands for environmental care, e.g. lowered pollution rates, are an example of influence from the public environment.

7.2.1.2 Interaction levels

The categorization of interactions within consumer relationships into different hierarchical levels was proposed by Liljander and Strandvik (1995), in line with work within business-to-business contexts – the IMP interaction approach. They identified separate acts that were built into episodes. Several episodes finally formed the total relationship. Each level implies an extension in time. The act is over in just a short time frame, while the relationship may last for decades.

Holmlund (1997, 2004) further developed Liljander and Strandvik’s work by bringing the framework into a business-to-business relationship. She identified two additional interaction levels: the sequence and the partner base. All together five interaction levels that will be discussed below according to Holmlund’s definitions and exemplified from the studied case.

Figure 7-4 illustrates this reasoning with the aim of positioning the interaction levels related to specific value creating dealings between the parties. The figure is an extract of the conceptual model (altered into an horizontal position) involving the first two components – actors and interaction levels – and exemplified from the studied setting.

\[128\] Acts are labeled actions by Holmlund (1997, 2004).
Partner base

Four of the interaction levels are explicitly incorporated in the customer-perceived value model (figure 7-2). The fifth, the partner base, consists of all relationships that a firm has direct links to at a specific point in time. The partner base level is omitted from the customer-perceived value model as the model's focus is the dyadic relationship between customer and service provider.

However, the partner base level can be traced to the actors exercising external influence to the focal parties, discussed under the previous subheading. In figure 7-4, the partner base is visible on top of the drawing—the supply network and other organizations that the customer and/or service provider have direct links to.

Example from Volvo Aero, Engine Services (VAC ES):

- Relationship: The long-term relationship, e.g. between VAC ES and Skyways.
- Sequence: A business agreement for maintenance of one or many engines during a shorter or longer period of time.
- Episode: A service occasion, e.g. an engine overhaul, a hot section inspection, or an on wing service.
- Actions: Specific contacts between staff in customer’s and service provider’s organization, e.g. a contact regarding work scope definition.

Figure 7-4. Interaction levels in a relationship exemplified from the case study (adapted from Holmlund, 1997).

Actions

Actions (with Holmlund’s [1997, 2004] terminology, acts by Liljander & Strandvik, 1995), marked “A” in figure 7-2 and figure 7-4, are the lowest level of interaction. All sorts of individual activities are included, for example an e-mail contact, a social visit, or a transfer of money.

Transferred to the studied setting, actions are exemplified with a contact concerning engine work scope. The way this communication is carried out by
the service provider’s staff – e.g. fast or slow, with correct and complete in-
formation or the opposite, with helpfulness or with irritation – implies percep-
tions of value. Every single action contributes to the customer’s total value
perception.

**Episodes**

A number of actions are aggregated into episodes, exemplified by Holmlund
(1997) as a negotiation process or a delivery of goods. Translated to the en-
gine maintenance sector an episode can be illustrated by the overhaul of an
engine, or maintenance of lesser scope such as a hot section inspection or an
on-wing service. The value perceptions of the single actions are here accumu-
lated and formed into a customer-perceived value of the episode.

**Sequences**

The sequence consists of several episodes connected to each other. The se-
quence can, according to Holmlund (1997, 2004), consist of a time period, a
product, or a project. In the aircraft engine maintenance industry I can associ-
ate the sequence with a business agreement, i.e. a contract concerning mainte-
nance of one or many engines during a shorter or longer period of time.

Just as Holmlund concludes that several sequences can be parallel to each
other, so can separate maintenance contracts between a customer and a ser-
vice provider run concurrently. This was the fact in the studied case. Each
sequence, i.e. contract, can accordingly be a unit of analysis when investigating
customer-perceived value.

The value of several episodes ought, in this higher aggregation level, not
just be added to each other, but also to be moderated by each other. A per-
formance below normal in one episode should, according to this reasoning, be
balanced by normal performance or performance above normal in other epi-
sodes. The value of having an agreement would thereby influence the se-
quence value.

**Relationship**

The final interaction level, the *relationship*, consists of all actions, episodes, and
sequences occurring within the customer and service provider dyad. And as
Holmlund (1997) concludes, the nature of the relationship in itself – and the
relationship between individual employees in each organization – influences
the perception of specific actions, episodes, and sequences.

Ravald and Grönroos (1996), although focusing consumer markets, came
to the same conclusion as Holmlund, when they stated that the effect of hav-
ing a relationship in itself has to influence the value of a single episode. They describe the total episode value in a function consisting of both episode and relationship value (p. 23):

\[
\text{Total episode value} = \frac{\text{Episode benefits} + \text{relationship benefits}}{\text{Episode sacrifices} + \text{relationship sacrifices}}
\]

In consequence with Holmlund’s introduction of the sequence interaction level, Ravald and Grönroos’ value function above may be developed too. Below is the total sequence value constituted by sequence and relationship value:

\[
\text{Total sequence value} = \frac{\text{Sequence benefits} + \text{relationship benefits}}{\text{Sequence sacrifices} + \text{relationship sacrifices}}
\]

Each sequence would then be recognized to contain a number of episodes with connected benefits and sacrifices.

However, I would argue that the functions above have to be filled with specific substance captured by content from the total service offering. The interaction levels form units of analysis for value delivery and assessment, pointing to activities and groups of activities that are interconnected and thus aggregate interpretations of created and perceived value. This implies that the content to fill the interaction levels with has to be gathered from the total service offering and the concepts included in the empirically based part of the customer-perceived value model in figure 7-2.

### 7.2.1.3 Time for value creation

This subheading could perhaps be a bit confusing after the discussion about the interaction levels. It was concluded that value was created and perceived at the interaction levels, from the lowest level of actions and accumulated to the higher levels of episodes, sequences, and finally to the relationship level. Holmlund (1997) has however concluded that relationship quality is created partly during process and partly as an outcome of interactions – at all interac-

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129 According to Ravald and Grönroos (1996), the benefits from a long-term relationship are of a deeper meaning than the hardware and service related benefits on an episode level. The relationship benefits could, according to Ravald and Grönroos, be illustrated in terms of safety, credibility, continuity, etc. All of these lead to trust for the supplier. However, to me, the relationship consists of all dealings between a customer and service provider. The findings from the studied business-to-business case suggest that there is a partnership level “above” the product level implying benefits on a more general level. In addition, the performance of value creating activities on both product and partnership level, relative sacrifices, was found to build the value feature Trust and filter the perception of received customer value within the relationship (chapter 6).

130 As a suggestion, the specific content, to fill the interaction level value with, can be gathered from the formulas proposed in chapter 6, expressing the origin and effect of customer-perceived value.
tion levels – where the process and outcome of lower interaction levels builds the process on the next one. Extending this to the customer-perceived value concept, “time for value creation” implies a complementary perspective regarding value creation and perceptions of received value, intersecting the interaction levels.

Value in-use
The services within a total service offering are produced in a process of more or less interaction between customer and service provider. Consequently, value is created and perceived already during the interaction process.

This fact has been emphasized by previous scholarly work, e.g.: Holmlund (1997) includes the “process domain” in her conceptual model of perceived relationship quality regarding quality as perceived during interaction at either of the interaction levels. Lapierre (1997) suggests that “value exchange” should capture the value created during actions between customer and service provider. Parasuraman and Grewal (2000) identify “in-use value” as the utility derived from using hardware or a service, while Woodruff (1997) mentions “value in use” and “possession value”.131

I chose the label value in-use to capture the aspect of value creation during the process in which the total service offering is produced.

Value in-use and the process within which value is created can be associated with the engine flight hour agreement of aircraft engine maintenance in the studied setting. As long as an engine is attached to the contract, it is the object for all services included. Value is for example created when overhauls are made on the engine in the service provider’s workshop, when maintenance is planned to achieve availability, or when the technical support from the service provider solves different problems that may occur during the customer’s line maintenance.

Redemption value
In addition to the “value in-use”, there will be some remaining value when the process is over; a value to utilize during a shorter or longer frame of time.

Returning to the researchers referred to above, this is how they denote the remaining value after process ending: Holmlund (1997) illustrates perceptions of results in the “outcome domain”, appearing on all interaction levels in her perceived relationship quality model. Woodruff (1997) describes “received value” and Parasuraman and Grewal (2000) uses the label “redemption value” to denote the residual benefits of a service or a hardware at end of lifetime or

131 “Value in use” has in addition recently been used by Vargo and Lusch (2004a, 2004b). The signification of their “value in use” concept is discussed in footnote 6, p. 2.
termination of services. Lapierre (1997), on the other hand, confuses the terminology somewhat by using “value in use” to describe remaining value, thereby meaning the outcome an organizational customer achieves by the use of the result of a professional service.

I prefer to identify the value achieved from the outcome of the total service offering in accordance with Parasuraman and Grewal (2000), i.e. redemption value. Thereby I want to focus the value possible to retrieve in case of reselling.

The most apparent “redemption value” at the termination of an engine flight hour agreement is the remaining value in the engines. This is a value that is often measured by the number of hours left to use in life-limited parts. Other types of redemption value can be more intangible. If knowledge transfer has occurred from service provider expertise to the customer’s staff during the time of the agreement, this enhanced knowledge base within the customer’s organization can be recognized as a redemption value.

7.2.1.4 Point of time for value assessment

Holmlund (1997) concludes that evaluations of quality are made repeatedly within an organization, implying that perceived quality is a dynamic phenomenon changing over time. Parasuraman and Grewal (2000) came to the same conclusion concerning perceived value. Lapierre (1997) identified value assessments made “before”, “during”, and “after” the value creation process. Woodruff (1997) illustrated pre-purchase assessments by “desired value”, i.e. preferences for product attributes and the attributes’ performance in achieving the customer’s goals and purposes. “Received value” is, according to Woodruff (1997) an evaluation of actually received product attributes and attribute performances, made after use.

Thus, I acknowledge that assessments of customer-perceived value are made repeatedly. The total service offering is evaluated before, during, and after delivery. Assessments are, in addition, made at different interaction levels, implying evaluations before, during, and after actions, episodes, and sequences. Even the relationship in itself will be evaluated in the same way.

7.2.1.5 Summarizing the theoretically based part of the customer-perceived value model

The total service offering is embedded in a relationship and so is the perception of customer value. The preceding sections have identified scholarly work on aspects applicable to the customer-perceived value concept. These aspects
have been introduced to the theoretically based part of the conceptual model of customer-perceived value.

The customer-perceived value model includes the following concepts to illustrate issues connected to the creation, perception, and assessment of customer-perceived value: “actors”, “interaction levels”, “time for value creation”, and “point of time for value assessment”. The first concept points to the parties involved, both individuals and organizations, that create, expect, perceive, and assess value. Different aspects connected to time frame, the latter three, answer questions of when and under what circumstances (interaction levels) value are created, perceived, and assessed.

The dynamics of the customer-perceived value concept have been elucidated as it has been recognized that assessment of perceived value may change over time and vary between employees in an organization. The value perceptions are in addition influenced by external actors – the supply network, other organizations with connection to the dyad, and the public environment.

The next section will deal with benefits and sacrifices forming the customer-perceived value of the relationship, i.e. the total service offering and the partnership framing it. This will be the empirically based part of the customer-perceived value model illustrating the substantial “what” of the value creation, i.e. what value is created to be perceived by the customer and, in addition, how this value can be assessed.

### 7.2.2 Empirical foundation

The right-hand part of the customer-perceived value model (figure 7-2, page 178) is built on an empirical foundation originating in the case study. This part (marked in figure 7-5 below) focuses the value assessment of the relationship, i.e. what the value assessment actually consists of in this case study. In addition, implications due to type of value assessment are considered. It is this part of the model that is refined compared to the tentative conceptual model in chapter 2. The concepts included are gathered from the first proposed substantive theory of customer-perceived value, i.e. the outcome of the deepened analysis in chapter 6.
The empirical study consisted of a static evaluation of customer-perceived value of a total service offering within a business-to-business relationship. It was a “snapshot” of attributes building perceived value at the time of the interviews. Consequently, as developed from the outcome of the empirical analysis, the right part of the customer-perceived value model provides a static picture too.

However, by framing the static evaluation within the relationship, opportunities for dynamic evaluations are brought to the fore. The snapshot picture can be taken over and over again, focusing on different interaction levels, time of value creation, time of assessment, and different actors. By repeated picturing connected to the same dynamic unit of analysis, it is feasible to assess customer-perceived value over time and to capture changes in perceptions. Thus, it can be stated that the customer-perceived value model can be used as a dynamic model.

I define a dynamic model as one that holds components capturing aspects of variation, thereby providing opportunities for tracing different types of alterations, e.g., changing perceptions over time.

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**Figure 7-5. Focusing the empirically based part of the customer-perceived value model.**
7.2.2.1 Value assessment of the relationship

The value of a relationship is created by benefits received on three levels – product level, partnership level, and psychological level\textsuperscript{133} – from which sacrifices made are subtracted. These three levels, together with sacrifices, appear in the empirically based part of the conceptual model, inevitably accompanied by the central and unifying notion explaining the delivery and effect of value: flow\textsuperscript{134}. Thus, there are five components to be included in the conceptual model of customer-perceived value under the heading “value assessment of relationship”. I will first account for them rather briefly, to provide a general view, and then go into a deeper discussion about the content and connection to the studied case and previous analyses.

(1) The product level – the total service offering – is an explicit base of the relationship. The value delivery from the total service offering is captured by the product features, illuminating the essence of what the offering implies for the customer. The total service offering with its product features is included first in the customer-perceived value model. (2) The more general level of interaction was labeled Collaborative partnership in the case study analysis. The partnership implies value exceeding the total service offering; thus it is added into the model as the second component. (3) Sacrifices will then be the third component to include. (4) The notion of flow is central for this part of the model, explaining the origin and effect of customer-perceived value. Flow is the fourth component of the model.

Together, these four components provide substance to customer-perceived value by building a cube of more or less specific factors from which to evaluate the total service offering and the partnership. The cube illustrates “what” the value assessment is made of in the customer-perceived value tradeoff. To describe this “what”, the value terminology of value attributes (classified according to dimension and type), value drivers, and value features can be used. The flows building the origin and effect of customer-perceived value are captured by these units of analysis, from a very detailed level aggregated up to the very essence of value.

(5) Trust was identified as the psychological level of the value perception in the case study. Trust will be the fifth component included in the conceptual model, acting as the effect and the filter by which the customer filtrates the perceived value. Trust is located to the right of the cube with the first four components.

\textsuperscript{133} The three levels of value creation were identified through the first analysis of the case study, see section 5.2.

\textsuperscript{134} Identified through the deepened analysis, see chapter 6.
The total service offering

The total service offering (Grönroos, 2000) is the most visible basis of value delivery, more or less regulated in contracts and business agreements. The total service offering is composed, according to Grönroos’ (2000) definition, of the basic service package: the core service, facilitating, and supporting services. Benefits, traded into the customer-perceived value from a product level, are expressed by the product features of the total service offering. Below I will discuss these components further.

The core service is the heart of what is provided. In the studied case the core service consisted of scheduled maintenance of aircraft engines, i.e. activities to overhaul the engine hardware.

The technical documentation accompanying the engine and different types of customer support, e.g. information concerning the status of an engine in the workshop, are examples of facilitating services. These types of services are thought of as necessary to make the core service accessible to the customer. However, when I used “facilitating services” during interviews I was constantly misunderstood. The interviewees started instead to talk about the next group of services, the supporting services. This is illustrated by the following extract (somewhat shortened) from one interview. I started with an explanation of how facilitating services is defined together with an example from another context. Then I asked:

Researcher: “Can you identify any facilitating services in the actual offering?”
Interviewee: “Spontaneously I come to think about the planning service, [...].”
Researcher: “But that’s a supporting service – we discussed that one before.”
Interviewee: “But it’s a service conducted to facilitate the customer’s work. [...]”

To avoid these kinds of confusions, I have decided to choose a more appropriate name for this category of services. Using the label mandatory services I underline the necessity of performing these activities to make the total service offering available for the customer and in fact possible to use at all. For example, an airline operator is not allowed to use an engine without technical documentation. Even if the service provider’s activities of maintaining the engine and completing technical documentation are very closely connected to each other, they are still separate activities – working on the physical engine and writing and printing a certificate respectively. Thus, I exchange the label facilitating services for mandatory services and include this concept in the customer-perceived value model just outside the core of the total service offering.

The supporting services consist of additional services, not necessary for using the core service, but which add value and differentiate the offering from those of competitors. From the studied case supporting services can be exemplified with maintenance planning, engine condition trend monitoring, transports,
and the financial service implied by the engine flight hour agreement. The supporting services are also included in the customer-perceived value model, forming a circle around the mandatory services.

**Product features**

What the customer really receives in benefits from the total service offering is elucidated by what I label the *product features*. These features are the essence of the offering and express how the needs of the customer are met. The studied case revealed three product features – *Availability of engines, Organization efficiency, and Financial benefits* (see e.g. figure 5-3, p. 99, and section 5.2.1). The product features are built by specific goods, software, and services combined to a unity within the total service offering. But in addition, they are dependent on the service production and are closely connected to the service provider’s prerequisites to deliver the offering and create value. Service provider prerequisites in the studied case are of course permissions and licenses from authorities and OEMs to perform the maintenance. Although, in the engine aircraft maintenance industry, these sorts of prerequisites are hygienic factors since all workshops have to be approved to be in business. Uniqueness in prerequisites is instead built by internal quality standards, routines, processes, employee expertise, etc. The product features are visible in the customer-perceived value model at the side of the total service offering, just as if this essence was obtained through cross sectioning the offering.

**Partnership**

The partnership level involves more general aspects of the relationship than the product level. The partnership is inevitably connected to the total service

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136 Grönroos (2000, p. 143) proposes that, in order to quantify the value of a total service offering, the “offering features” have to be identified. These are described as “[...] various features that distinguish a given offering from an existing one or from competing alternatives [...]”. When I use the concept *product features* I do not include that sort of comparison, but focus on the complete offering, add the interaction process and the service provider’s prerequisites to compose and deliver the offering. As a result the product features capture what this offering implies for the customer, i.e. in this study equivalent to the value features on product level.

137 Consequently, the product features are context specific as well as the underlying value drivers and attributes building the value perception. See for example the studies by Lapierre (1997) and Ulaga (2003) revealing value drivers within professional services and in the manufacturing industry (appendix C).

138 The parts of the total service offering included in the “augmented service offering” (Grönroos, 2000, p. 165), i.e. the service process and interactions between service provider and customer.

139 Edvardsson (1998) has stressed the importance of service provider prerequisites to deliver value through the process and outcome of a service.
offering, a frame for all actions and interactions between the customer and service provider. In the studied case service provider attitudes and actions, demonstrating willingness for cooperation and development, were stressed by the interviewees. They provided examples such as the service provider’s approach in contacts connected to the specific business agreement, actions to gain mutual development of the business and relationship, and social contacts. In the analysis these were used to build the partnership level. Partnership is accordingly added to the conceptual model, below the total service offering.

Sacrifices
Sacrifices are the next components to be incorporated in the model of customer-perceived value. Sacrifices are what the customer has to forfeit to use the total service offering and maintain the relationship with the service provider. It is what the customer has to give to get the benefits.

In the tentative conceptual model the sacrifices were visible in the “qualitative display”, but hidden in the “monetary display”. Sacrifices were then just subtracted from benefits and the outcome formed a net-value of the total service offering. Today, I do not find that satisfactory. I want to show the sacrifices of the customer-perceived value concept more distinctly since they are an essential part of the customer-perceived value concept. By conceptualizing sacrifices separately, attention is drawn to their importance. Sacrifices are added at the bottom of the “value assessment of relationship”-cube in the conceptual model.

I also want to emphasize, once again, that if benefits from product and partnership level are not efficiently delivered to the customer, unnecessary indirect relationship costs (Grönroos, 2000) will occur and form additional sacrifices. Accordingly, all value attributes and drivers on the benefit side can become sacrifices if not properly delivered by the service provider.

The notion of flow
In the deepened analysis of the findings from the case study, “flow” was found to be the central notion revealing the sources of customer-perceived value. Flow is then used metaphorically – as a mental image to facilitate understanding – in order to capture the movement of tangible and intangible exchanges between the parties. Flows capture the creation and effect of value by intersecting the product features and the partnership level, as well as the sacrifices made. Thus, this notion is suggested to be necessary for explanations. In this way, flow becomes important also when incorporated into the conceptual model.
Already in chapter 5 it was recognized that customer-perceived value could be regarded from two perspectives. First we had the origin of value, i.e. “how” the service provider supplies value. Then we had the effect of value, i.e. “effects” of the service provider’s value delivery found inside the customer’s organization, eventually traced to the income statement. The two perspectives of customer-perceived value gave repercussions when the different types of flow were identified in chapter 6. Flows of goods, information, risk, involvement, and money were discovered in the “origin-side” of customer-perceived value. In the “effect-side” of customer-perceived value, monetary flows of revenue benefits, cost benefits, interest effects, and costs to use could be traced.

I propose that the value creation and its effects normally can be captured by the notion of flow. The different types of flows are probably rather common too, especially the monetary flows on the “effect-side” of customer-perceived value. However, the specific nature of the flows in different business-to-business settings has to be investigated further.

Finally, a remark concerning an adjustment compared to the tentative conceptual model ought to be made. Flow involves time aspects. In the tentative conceptual model, time was included to capture the monetary value of a total service offering. As I consider flow to have a larger explanatory power (see chapter 6), and, in addition to accommodate time, I have come to the conclusion that it is better to bring forward flow in the customer-perceived value model. Furthermore, I have recognized the appropriateness of flow to describe and explain both the origin and the effect of customer-perceived value, i.e. for qualitative as well as monetary assessments.

**Trust**

Trust is the fifth component to add to the empirically based part of the conceptual model. Trust is, in this study a concept – a value feature – grounded in the analysis. This value feature was described in section 5.2.3 and was thoroughly discussed in the previous chapter, e.g. in section 6.2.2 and 6.3.2, and I will simply recapitulate on some characteristics.

Trust contains the psychological level of the value perception, affectively influenced, and should be interpreted as the customer’s feelings of confidence for the relationship, the service provider, and the product, giving him peace of mind. Trust was also revealed to be a concept of double identity – both an

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140 Grönroos (2000, p. 143) proposes revenue benefits, cost benefits, and investments, to be used in order to capture the monetary value of a total service offering.

141 Although it has been recognized that trust – however with differing definitions – is considered important in industrial network theory and in addition discussed by several researchers concerned with value in business-to-business relationships, e.g. Wilson and Jantrania (1994), Walter et al. (2002), Lapierre (2000).
effect and a filter. All perceptions of actions and interactions within the relationship were gathered and evaluated on a psychological level. This evaluation, which probably involves expectations and comparison standards, becomes the effect, thereby building Trust. However, at the same time Trust acts as a filter. It filtrates the provided value and constitutes the perception part of the customer-perceived value. Trust turns supplied customer value into a customer-perceived value. Trust was proposed to act as a filter also in monetary evaluations of customer value, in this case influencing the choice and valuation of items to include in the assessment.

Trust, with its characteristics of being both effect and filter, is integrated in the conceptual model to the right from the more specific elements in the cube.

Value terminology

Customer-perceived value is built by the specific factors from the cube in the conceptual model. The cube consists of the benefits and sacrifices described earlier. Thus, it originates in the flow of product features from the total service offering, from the partnership, and with the flow of sacrifices subtracted.

To trace, explain and visualize customer-perceived value, the value building factors have to be identified at a more specific level. This study proposes three explanatory levels of factors\textsuperscript{142}. The smallest constituents of value, the value attributes (classified according to dimension and type), form value drivers, which in turn can be grouped to all-embracing value features\textsuperscript{143}. The value features capture the essence of customer-perceived value in a business-to-business relationship.

The usefulness of the value terminology was demonstrated previously, in the first phase of the case study. The value maps, constructed to visualize customer-perceived value in the investigated setting, were built of value attributes, value drivers, and value features, identified during the analysis. By examining the value features, and consequently the subordinated value drivers and attributes, the intersecting flows with their sources of customer-perceived value could be discovered. This was done in the preceding chapter, illustrated by the proposed substantive theory explaining customer-perceived value.

\textsuperscript{142} The “value terminology” was explained in section 5.1.1 and illustrated in figure 5-2 on page 91.

\textsuperscript{143} In this study, the product features and the value features on product level are identical. This can perhaps be disorientating. However, the concept product features, connected specifically to the total service offering, were developed already during the initial theoretical investigation of the study. The concept value features was developed at a later stage, during the analysis. The value features are applicable to describe value in common, not just for the total service offering. Product features can, in addition, be used to describe a total service offering without applying a customer-perceived value perspective. These are the reasons I chose to keep both concepts.
For reasons of clarity, the value terminology is not explicitly included in the conceptual model. Instead, I have chosen to illuminate the value terminology’s important role in writing – as a tool to elucidate, describe, visualize, and analyze customer-perceived value, applicable to the total service offering, the partnership, and the sacrifices.

7.2.2.2 Type of value assessment

An assessment of customer-perceived value could be made in either qualitative terms or in monetary terms. This fact was previously established by the initial theoretical findings, used to construct the tentative conceptual model. The empirical findings elucidated these complementary aspects of customer-perceived value.

Qualitative assessment – the origin of value

A qualitative assessment of the origin of value can be made by exploring the value features, drivers, and attributes originating in the flows of product features, partnership, and sacrifices. This means that a qualitative assessment of customer-perceived value is built by the aspects accounted for under the previous subheading, i.e. an estimate of the “value assessment of relationship” cube, dyed by Trust.

An evaluation such as this is accomplished by posing specific questions about service provider performance. Measurement can be made, e.g. by classifying the performance from poor to excellent by the use of a ten-graded scale. If appropriate, comparisons between competing offerings can be included in the evaluation. Hence, an assessment can be made that provides valuable information when aims of product development or strategic marketing positioning are in focus.

In the qualitative display of the tentative conceptual model, it was proposed that the evaluation against competitors should always be done, thereby being explicitly incorporated in the model. I realize now that there can be situations when it is not interesting, necessary, or feasible to include a competitor comparison. Consequently, I omit the comparison with competing offerings from the conceptual model of customer-perceived value, but state that this may be done when of interest.

To summarize, there are opportunities to qualitatively assess the service provider’s performance creating customer-perceived value – depicted just as it is under the heading “value assessment of relationship” in the model. This is what the arrow, marked “Qualitative”, immediately under the heading indicates (figure 7-2).
Monetary assessment – the effect of value

To carry out a monetary assessment of customer-perceived value, it is necessary to follow the next arrow in the customer-perceived value model (figure 7-2), the one marked “Monetary”. This procedure involves two more concepts, retrieved from the substantive theory in chapter 6: stochasticity and substantiality.

The starting point for a monetary estimate is still the cube of specific value building factors. But now the flows from the origin of value have to be traced from their sources further to the resulting effects in the customer’s organization. It is these effects that can be captured in monetary terms and eventually traced into the income statement of the customer. Here Trust acts as a filter, influencing what items are to be included in the assessment and their subsequent valuation.

To reach the monetary goal of the assessment, effects of stochasticity have to be considered first. In a long-term maintenance contract, there is a varying degree of uncertainty concerning occurrence of incidents. Other contexts may imply lesser degrees of uncertainty. The stochasticity concept captures this uncertainty, i.e. assumptions concerning how many times during a certain period of time something is likely to occur.

However, even if assumptions about stochasticity are settled there is another problem to face in monetary assessments, namely the degree of substantiality. All effects of customer-perceived value are not possible to translate into monetary terms. Some factors may not even be worth attempting to translate, as there is too much doubt connected to their monetary influence. This is captured by the concept substantiality.

Thus, monetary assessments of customer-perceived value have to consider stochasticity and substantiality. These concepts were not included in the tentative conceptual model as they were revealed during the empirical investigation. Consequently, stochasticity and substantiality are empirically based concepts introduced to the refined conceptual model of customer-perceived value.

7.2.2.3 Summarizing the empirically based part of the customer-perceived value model

The empirically based, right-hand part of the customer-perceived value model elucidates the substantial “what” of the value creation, i.e. what value is created to be perceived by the customer. Two different approaches of customer-perceived value assessment are in addition emphasized in this part of the model.
“Value assessment of relationship” was the first heading to be incorporated into the right-hand side of the model. The following components are found under this heading.

The value creation within the relationship, as well as the effects of delivered value, is covered by the central notion of flow. Flow contains time aspects of customer-perceived value creation and effects. Further, the sources of customer-perceived value are explained by various types of flows, each illuminating origins and effects of value. These flows intersect the features of the relationship.

The product features capture the essence of customer-perceived value on a product level, i.e. from the total service offering. The benefits from the total service offering are complemented with benefits derived from general aspects of the partnership. Next, these benefits are related to the sacrifices given. It is within these relationship aspects that the content of customer-perceived value is built, i.e. the benefits received and the sacrifices given.

Eventually, Trust is incorporated, gathering the psychological aspects of the relationship. Trust is built by all dealings within the relationship. Trust acts simultaneously as a filter, turning supplied customer value into customer-perceived value.

The value terminology can be used as a tool to identify customer-perceived value within the relationship. The tool provides units of analysis to identify and describe value. Next, the value terminology implies that value attributes are aggregated into value drivers. The value features capture the essence of related value drivers on an overarching level.

“Value assessment of relationship” in the conceptual model has thus been positioned as the part describing the specific “what” from which assessments are made.

Two complementary ways of assessment are the final components of the conceptual model of customer-perceived value. The heading “type of assessment” recognizes the qualitative and the monetary assessment.

A qualitative measurement is made of the components included under the previous heading, “value assessment of relationship”. However, if a monetary worth is to be assessed, uncertainty has to be considered. Uncertainty is captured by the concepts stochasticity, dealing with how often an incident is likely to occur, and substantiality, describing the differing degrees of ability to really capture a value in monetary terms.

This summary concludes the description of the empirically based, right-hand part of the customer-perceived value model. The theoretically based, left-hand part of the model was reported in the previous section (7.2.1). Thus, the account of the components included in the conceptual model is complete.
The paragraphs in the last section of this chapter will act as a summary by proposing a definition of customer-perceived value. The definition is based upon the theoretical and empirical findings brought together in the customer-perceived value model.

### 7.3 Summarizing by defining customer-perceived value

This chapter has accounted for the proposed conceptual model of customer-perceived value (figure 7-2, page 178). A model holding concepts considering different aspects of the origin and effect of customer-perceived value, received from a total service offering embedded in a business-to-business relationship. The left-hand part of the model is based entirely on the work of other scholars, and is thus built on a theoretical foundation. The right-hand part of the conceptual model is built on an empirical foundation, as the empirical findings were brought back to theory, developing the tentative conceptual model presented in chapter 2.

The theoretically based part focuses on the business-to-business relationship and encloses time aspects. “Actors”, “interaction levels”, “time for value creation”, and “point of time for value assessment” are components included. All concepts stress the dynamic aspects of customer-perceived value, as perceptions of value may change over time and between employees in an organization. However, it is necessary to complement the left-hand part of the model with a specific content regarding “what” these assessments are built of, i.e. with a description of the substance within the relationship.

The right-hand part of the model contains the content of the relationship under the heading “value assessment of relationship”. Here the benefits and sacrifices derived from the total service offering and the partnership are found, forming the origin and effect of customer-perceived value. It was recognized that the notion of flow is central to explain customer-perceived value from the relationship. However, the different types of flows do not reach the customer unaffected. All dealings between the parties build the customer's feelings of trust for the service provider, i.e. a psychological level of the relationship. Trust is, in addition, not only an effect, but serves also as a filter, transforming customer value into customer-perceived value.

To analyze and illuminate customer-perceived value, the use of the value terminology is proposed. This is a tool to form units of analysis of the specifics of customer-perceived value: from the value attributes, the smallest constituents of value (possible to classify in dimension and type), further grouped into value drivers, and eventually forming all-embracing value features.

Eventually, the right-hand part of the conceptual model emphasizes the two complementary types of evaluation of customer-perceived value: The
qualitative and the monetary assessment, found under the heading “type of assessment”.

The empirically based part of the conceptual model is static. Applying the concepts included to an analysis gives a “snapshot” of customer-perceived value – here and now. However, by repeated picturing linked to the concepts held in the left, dynamic part of the model, it is possibly to trace the development of customer-perceived value, over time and connected to different actors. Consequently, I argue that the complete proposed conceptual model of customer-perceived value can be used as a dynamic model.

The theoretical platform in chapter 2, did not only propose a tentative conceptual model of customer-perceived value. A tentative definition of the concept was also suggested. It is now time to complete the study by refining this definition.

However, even if I realized from start that the customer-perceived value concept was multifaceted, and that more complexity was added through the embeddedness in the business-to-business relationship, I did not realize the extent of this complexity. Therefore, I have to admit that I have not succeeded in providing a short and effective definition of customer-perceived value. Instead, based on the theoretical and empirical findings from this investigation, I put forward a short definition followed by a list of several items clarifying the many facets of customer-perceived value:

Customer-perceived value in business-to-business contexts is the customer’s perception of the net-worth of benefits and sacrifices derived from a relationship with a service provider.

- The relationship consists of all dealings between the two parties, the total service offering and in addition partnership aspects.
- The benefits from the total service offering and the partnership, as well as the sacrifices, can be explained by different types of flows. For practical usefulness, these benefits and sacrifices, as well as the flows, will have to be filled with substance, i.e. a context specific content.\(^\text{144}\)

\(^\text{144}\) As in this study where for example benefits consisted of Availability of engines, Organization efficiency, Financial benefits, Collaborative partnership, and Trust. Flows of information, involvement, and cost benefits – among others – were also identified.
All dealings within the relationship build the customer's perception of trust\textsuperscript{145}, which concurrently filtrates the experienced value into the subjective customer-perceived value.

Customer-perceived value is created and perceived as value in-use and redemption value, i.e. partly during the interaction process between the parties and partly as a result of the process' outcome where remaining value after the termination of services sometimes could be possible to retrieve in case of reselling.

Customer-perceived value is created and perceived on different interaction levels within the relationship. Impressions of value are aggregated from activities, episodes, and sequences, up to a relationship level.

The organization’s perception of customer value is built by the individual employees’ perceptions and, in that respect, influenced by external parties: the supply network, other organizations, and the public environment. Thus, different comparison standards are used when experiences are evaluated against expectations.

Customer-perceived value is a dynamic concept, as perceptions of value differ over time and between individuals.

Customer-perceived value can be explained in terms of the origin of value, i.e. how the service provider delivers value, and the effects of value, i.e. the effects of the value delivery inside the customer’s organization. These effects can be traced into the customer’s income statement and consequently translated into monetary terms. The origin of value is, on the other hand, better described in qualitative terms.

For the purpose of value audits and product development it is proposed that a monetary customer-perceived value is calculated. However, it is not possible to capture the total value due to uncertainties. Stochasticity and substantiality have to be dealt with to reach a monetary worth.

For the purpose of strategic marketing, positioning and product development, it is proposed that assessments of customer-perceived value are made in qualitative terms. If appropriate, this type of evaluation can be made compared to competing offerings.

By this illumination of the customer-perceived value concept, I conclude the report of the study and analyses. The final chapter will further discuss the findings with an emphasis on trustworthiness and contributions of the work.

\textsuperscript{145} Trust defined as the customer's feelings of confidence for the relationship, the service provider, and the product, giving him peace of mind.
8. **Discussing research outcome and contributions**

This final chapter is divided into four main sections. First, the outcome of the research project is summarized and related back to the initial research questions for evaluation. This section contains a rather long account, compiling the findings presented in chapter five to seven, provided in order to give the reader a brief outline of the conducted work. Secondly, research contributions on theoretical, methodological, and managerial levels are discussed. The third section considers criteria of trustworthiness, related to the actual study. Finally, I present some suggestions for further research.

8.1 **Summary of research results**

This study has built on work mainly from the service research field, a field that previously has focused principally on consumer markets. By seasoning service theory with the perspective of relationship marketing and specific research on the concept customer-perceived value, a fruitful base was built to explore and deepen the understanding of customer-perceived value created from total service offerings in dyadic business-to-business relationships.

The theoretical platform was used for guidance in the collection and analyses of empirical information in order to answer the general research question: *How can customer-perceived value be described and explained in a context where total service offerings are provided within business-to-business relationships?* However, it is not one single answer that is proposed here, but several. Each answer illuminates different facets of the complex concept. I will use the developed models (figure 8-1) to guide the tour of these facets. Concurrently, I comment on how the general and the specific research question (see section 1.3.2, p. 15 ff.), the latter guiding the empirical work, have been solved.

From the top downwards in figure 8-1, we are moving from:

A. the specific setting in the commercial engine aircraft industry,
B. to offerings focusing this and similar settings, presumably maintenance processes,
C. to more commonly provided total service offerings within dyadic relationships in business-to-business contexts.
Figure 8-1. Overview – the three vital models presented in thesis.
By the development of the uppermost model in figure 8-1 (A), the first step towards a deepened understanding of the customer-perceived value concept was taken. The figure holds a description of context specific elements building customer-perceived value at a specific point of time in a specific empirical setting: the relationship between a service provider and a customer within the commercial aircraft engine maintenance industry. The acquired description of customer-perceived value was, at a later stage, used as a basis to enhance the level of abstraction, thereby contributing to accomplish the object of explanation. In addition, by first describing customer-perceived value in the specific setting and then working further for the suggestion of an explanation, it was possible to reach the final stage of achieving a more general description of customer-perceived value.

The theoretical platform established the main dimensions of customer-perceived value – benefits and sacrifices. Then the empirical work and subsequent analysis followed in order to elucidate the elements filling these dimensions with substance. This first phase of the study involved particular attention to the specific research question: “Which are the principal attributes creating customer-perceived value?” The content of the value maps – complete with the explanatory list of value attributes – forms the suggested answer, as the maps illustrate all of the identified value attributes that build customer-perceived value. The value maps are built from the smallest constituents of value, the value attributes, which are further aggregated into value drivers, and then eventually into value features. All elements are visible on the complete value maps in appendix G.

The value maps provide a clear picture of customer-perceived value that is easy to communicate. The degree of detail can be adjusted to suit varying needs. To communicate customer-perceived value at an overarching level, use only value features. These can be complemented with value drivers to enhance the understanding of the origin and effect of customer-perceived value. To trace and develop value creation, the detailed level of value attributes should be added.

The value maps were the means to understand that customer-perceived value is created at three levels. The first is connected to the specific product – the total service offering – and its ability to fulfill the needs of the customer in terms of the identified value features, i.e. Availability of engines, Organization efficiency, and Financial benefits. The second level of value creation is the partnership level with the value feature Collaborative partnership. The third level is about psychological aspects, illustrated by Trust. Trust is a concept that emerged from the analysis and in this study is defined as the customer’s feeling of con-

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146 For full size model, see figure 5-3, on page 99. The figure illustrates the overall value map, describing customer-perceived value in the investigated setting.
fidence for the relationship, the service provider, and the product, giving him peace of mind. The benefits from these three levels are set against the sacrifices given, i.e. the value feature Sacrifices to use offering. In this manner the customer-perceived value of the specific relationship was described.

In addition, the value maps pointed to the fact that customer-perceived value can be regarded from two complementary angles. The left-hand sides of the maps express the origin of value, i.e. how the service provider acts to create value. The right-hand side of the value maps identifies the effects of value, i.e. the effects of customer-perceived value within the customer’s organization.

Value building attributes were searched for both within the customer’s and the service provider’s organizations. No difference between the customer’s and the service provider’s view was found concerning the highest aggregated level, the value features. It was instead at the lowest level, among the value attributes that different views between the parties were visible. A few of these involved differences that remained also when aggregated into value drivers. The different views between the parties have been made visible by the marking in value maps and the explanation list (see appendix G).

The context-specific description was made possible by the use of qualitative research methods. Information collection was made from semi-structured interviews within a single-case case study. Analysis of the material followed then with techniques gathered from grounded theory (Strauss & Corbin, 1998) along with matrices and displays (Miles & Huberman, 1994). Even if this approach is very time consuming, I would argue that this type of thorough investigation has to be made when a complex and under-investigated concept (Ulaga, 2001) such as customer-perceived value, is to be conceptualized within a new context. In addition, I propose that the developed value terminology, consisting of value attributes, value drivers, and value features, can provide a useful tool for identifying value creating elements and aggregating them into higher descriptive levels.

As stated above, the first phase of the study revealed the double nature of customer-perceived value, having both an origin side – how the service provider should act to deliver value – and a side illuminating the more or less monetary quantifiable effects of value. However, the degree of translatability into monetary terms varied across the attributes and some were found to be of non-monetary, psychological, nature.

The practical issue of monetary translation of customer-perceived value was touched upon within the second and minor phase of the empirical study. By the division of the value maps into an origin-side and an effect-side, it was recognized that, to reach a monetary customer-perceived value, a path has to be established from the origin to the effect. Thus, a specific action by the service provider will imply an effect in the customer’s organization. This is an
effect that, eventually, will affect the income statement by its monetary worth. When the direction of the path – from origin to effect – is established, it can be explored. In the study this was accomplished with help of structured interviews where effects in terms of man-hour time for the customer’s employees were investigated. Man-hours can then easily be translated into monetary terms by applying an appropriate man-hour rate and, consequently, forming a monetary customer-perceived value.

The middle model (B) in figure 8-1 turns us back to the general research question – now to solve the problem of explaining customer-perceived value in the specific and similar settings. The notion of flow, identified through the deepened analysis of the empirical material, was proposed to play an important part of the answer to the problem.

Different types of flows explain the origin and effect of customer-perceived value within a business-to-business relationship. Flows intersect the value features and provide the sources of value within the relationship. Concurrently, flows build and are being filtered by Trust on their way to accomplish the customer’s perception of value. This is illustrated by the middle model, explaining the value perception at a specific point of time.

On the origin side, flows of goods, information, risk, involvement, and money intersect the value features of Availability of engines, Organization efficiency, Financial benefits, Collaborative partnership, and Sacrifices to use offering. Thereby the value creative sources of customer-perceived value are made clear. At the effect side, illustrating the effects of customer-perceived value, the flows intersect the same value features as above but now expressed in monetary terms assignable to the customer’s income statement: flows of revenue benefits, cost benefits, interest effects, and costs to use. However, uncertainties sometimes make monetary translations of customer-perceived value difficult. The concepts stochasticity and substantiality are introduced in order to capture these uncertainties.

Beside flow, the concept of Trust is vital for the explanation. Trust deals with the psychological level of the relationship – the customer’s feelings of confidence for the service provider and the product. It is built by all dealings within the relationship and concurrently filters the experience, i.e. Trust is proposed to have a double identity, being both an effect and a filter. In monetary evaluations of value, Trust is suggested to act as a filter too, influencing the choice and valuation of items included in such assessments.

147 For full size model, see figure 6-1, on page 141. The figure illustrates the origin and effect of customer-perceived value with flow as the central explanatory concept.
It is Trust that turns supplied value into the customer-perceived value. And as some degree of Trust is always present in the minds of the individual staff members, the objective customer value will never be attained. A service provider can only deliver a customer value. The customer-perceived value is reserved for the receiving party’s assessments, since that type of value is filtrated by Trust.

The last model (C) in figure 8-1 on page 203, completes the outcome of the study. We keep to the general research question, again focusing the descriptive aim, but now moving from the specific context to purposes of wider application. Thus, a conceptual model is proposed, i.e. a specification of important concepts related to different aspects of customer-perceived value when embedded in a dyadic business-to-business relationship.

The empirical study provided a “snapshot” of customer-perceived value, a static picture of value expressed by the two previously presented models. The dynamism in the conceptual model is instead achieved by the work of other scholars (mainly Holmlund, 1997, 2004; Lapierre, 1997; Woodruff, 1997; Parasuraman & Grewal; 2000), building the theoretically based, left-hand part of the model. Actors, interaction levels, point of time for value assessment, and time for value creation are located in this part of the last model (C) in figure 8-1.

The empirically investigated right-hand part of model C considers the specific factors that create customer-perceived value. Here we find the flows, i.e. the sources of value, streaming through the relationship and intersecting all value features obtained from the relationship. Value features in terms of benefits are derived from the total service offering, i.e. the product features, and from the partnership. Sacrifices given are subtracted in order to attain a net-value. However, as it was recognized that flows concurrently build and filtrate Trust, the actual customer-perceived value is not attained until the flows have passed through the filter of Trust.

The two complementary ways of customer-perceived value assessments – qualitative and monetary – are incorporated in the empirically based part of the conceptual model. Thereby the necessity of dealing with uncertainties to reach a monetary value is emphasized, expressed by the concepts stochasticity and substantiality.

The empirically based part of the model gives a static depiction of customer-perceived value; the value perceived at a certain point of time. However, by taking the static “snapshot” of the relationship – either qualitatively

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148 For full size model, see figure 7-2, at page 178. The figure proposes a generally applicable conceptual model describing customer-perceived value of a total service offering, embedded in a business-to-business relationship.
or monetarily – several times, connected to a certain concept in the theoretically based part of the model – a dynamic picture of customer-perceived value is suggested to be attainable.

The study was completed by the proposal of a definition of customer-perceived value (section 7.3). As the definition turned out to be a rather long list of properties, I will not repeat it here, but simply reiterate that the concept is as multi-faceted as a brilliant cut diamond. Hopefully this study is another small step towards a greater understanding about the diamond of customer-perceived value.

To summarize the summary: Customer-perceived value of a total service offering, embedded in a dyadic business-to-business relationship, has through this study been described in a specific context – the commercial aircraft engine maintenance industry. In addition, an explanation of the origin and effect of customer-perceived value in the specific, and similar, settings has been provided. Finally, a conceptual model, together with a definition of customer-perceived value have been proposed to seize more generally applicable aspects of the multifaceted and dynamic concept. Thus, solutions to answer the general and the specific research question have been put forward.

8.2 Contributions of the work

Research shall make a contribution! So says Gummesson (2000) and I agree. But what is then regarded as a contribution? The subheadings theoretical, methodological, and managerial contributions are frequently found within a thesis – they are in this one too. But it is also possible to consider contributions from a complementary perspective proposed by Gulbrandsen (2000). His dissertation on research quality disentangles the quality notion of research, thereby identifying three other aspects of contributions: originality, scholarly relevance, and utility value.

Originality concerns the key criterion of research, the attained degree of novelty. The second aspect, scholarly relevance, refers to both cumulativity in relation to prior research – filling out holes or opening up new areas for research – and to generality – general principles, research tools and methods. In respect to this study, I will discuss my view of obtained originality and scholarly relevance jointly under the subheadings theoretical and methodological contributions.

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A fourth sub-element of research quality is identified as “solidity”, connected to methodology and the traditional criteria of validity, reliability, stringency, etc. Solidity is discussed in terms of trustworthiness under subheading 8.3.
The last perspective, utility value, is also called external relevance. The utility value reflects the short- and long-term practical benefits industry or society can draw from the research outcome. The benefits attained from this research project, applicable for practice, are discussed below under the subheading managerial contributions.

8.2.1 Theoretical contributions

It is possible to consider four explicit contributions from this research project to the theoretical field. These will be stated below, but first some general comments.

The theoretical platform for the project was gathered mainly from service research. Prior service research has however principally focused on consumer markets, but this study demonstrates its appropriateness to research within business-to-business settings. Hence it follows that the contributions from this work do not just contribute to specific knowledge about the customer-perceived value concept. This study also adds to the business-to-business perspective within service research.

The growing importance of service based research on value should also be emphasized. As the service-centered marketing logic is proposed as an evolving logic for marketing in general, it should be recognized that this logic involves a view where value is perceived and determined by the customer (Vargo & Lusch, 2004a). Consequently, I propose that the subsequent contributions focusing on customer-perceived value add valuable understanding about value in a service-centered business logic.

As the first of the four contributions, I recognize the content in the descriptive value maps. The mapping of attributes building customer-perceived value in the commercial aircraft engine maintenance industry is a contribution of scholarly relevance, as it adds to previous research about the concept. In addition, originality is achieved, as the delineation of value attributes within the specific industry, has not, to my knowledge, been accomplished previously.

This investigation of customer-perceived value is a response to Ulaga’s (2001) call for studies of the concept in business-to-business settings. Only quite recently Ulaga (2003) stated that only a very few empirical studies had been made and the need for further empirical research remained.
the value maps presented in this study, i.e. how the service provider creates value for the customer.

The description of the “effect-side” – and the connection between the “how-side” and the “effect-side” – is proposed to be a specific contribution from this study. Lapierre (1997) – keeping to engineering consulting businesses within the professional services sector – touched upon this matter, recognizing dimensions of value in connection to time of value creation: during and after the assignment. However, this study’s detailed description of customer-perceived value within the product, partnership, and psychological level, in both the “how-side” and the “effect-side”, is proposed to bring new light upon the phenomenon.

Moreover, compared to Lapierre’s (2000) study of customer-perceived value of professional services when provided to business customers, this investigation adds in knowledge through the substance built into the maps, illustrated by the hierarchy of specific value attributes, drivers, and features. Thus, the value maps add to context specific knowledge about the customer-perceived value concept.

Furthermore, it was emphasized that the value maps are built of empirically grounded attributes. This means that the basic parts of the customer-perceived value concept, the benefits and sacrifices, have been depicted in specific terms. Thereby substance is brought into the concept, a matter that Woodruff (1997) draws attention to when stating that definitions of value often rely on other, not well-defined terms. A substance that, I would argue, is crucial when specific understanding of customer-perceived value is sought.

The second contribution, mainly of scholarly relevance, is also traced from the value maps. Now I focus on the double nature of the customer-perceived value concept, i.e. the possibility to express value in qualitative terms as well as in monetary. The theoretical findings indicated that some researchers (Anderson et al., 1993; Anderson & Narus, 1999) advocated the use of monetary units to express customer-perceived value, while others used a quality-based content for the definition (e.g. Zeithaml, 1988; Woodruff, 1997; Lapierre, 2000; Ulaga & Chacour, 2001). This study comprises both perspectives and recognizes them as complementary.

The two complementary perspectives of customer-perceived value were made clear when value attributes and drivers were visualized on the value maps. It was then evident that customer-perceived value can be expressed in terms of “origin of value” as well as in terms of “effect of value”. The former was proposed to be assessed in qualitative terms and the latter in monetary terms. However, it was also emphasized that, in order to reach a monetary value, it is necessary to start on the “origin-side” of the value maps and trace the path of specific value attributes further into the “effect-side”, i.e. to eluci-
date the effects inside the customer’s organization and, eventually, into the income statement.

The third contribution of this work is the first proposed substantive theory, i.e. the explanatory model considering the origin and effect of customer-perceived value from a relationship within the specific, and in probably similar, settings. It was suggested that flows of different natures were the common denominator expressing the sources of customer-perceived value. Furthermore, the explanatory model highlighted the double identity of Trust, being both an effect of all dealings within the relationship and a filter of value perceptions.

I especially want to point to the “origin-side” of customer-perceived value and the sources found there. It is not a revelation that flows of goods and information provide value. That has been recognized within logistics and supply chain management for a long time (Christopher, 1998; Keebler et al., 1999). Instead, I argue that originality in theoretical contribution is achieved through the identified flows of involvement and risk. In addition, the specific connections between different types of flows and value features are elucidated by the proposed model, thereby adding to originality.

Last but not least, the proposed conceptual model of customer-perceived value, i.e. the second substantive theory, is recognized as the fourth contribution of the study. In fact I regard this model – due to the opportunities for its application in a wider range of business relationships – to be the most important contribution of the study. However, it is a contribution reached by the step-wise work where the prior models constitute the basis.

The conceptual model was developed when an empirically grounded substantial content to assess customer-perceived value from was inserted into a dynamic frame of previous scholarly work on customer-perceived value and relationship quality (mainly Holmlund, 1997, 2004; Lapierre, 1997; Woodruff, 1997; Parasuraman & Grewal, 2000). The focus for the assessment is a total service offering embedded in a dyadic business-to-business relationship. This conceptual model emphasizes the two complementary ways of assessment – qualitative and monetary. Thus, customer-perceived value of a total service offering has been conceptualized in an elucidating manner. The conceptual model’s foundation in prior scholarly work involves contributions of scholarly relevance. In addition, I argue that the empirically founded part of the conceptual model implies the necessary degree of novelty to assert originality to the work.
8.2.2 Methodological contributions

The methodological contributions of this work are meager. The research strategy and the specific methods for collecting and analyzing information are all long since known and well tried. Still, I hope that the careful description of course of action has not only contributed to trustworthiness but also to learning of the practical application. Hopefully, the novice researcher or practitioner has gained knowledge of a possible way of combining strategy and specific methods when approaching a problem. But a note of caution should be sounded; this approach is only for thorough investigation and not for any “quick fix”.

However, although the applied strategy does not imply any novelties, I want to add some comments concerning the tools used, thereby focusing minor contributions of scholarly relevance.

First, I put forward the value terminology as a contribution. It was developed during the study to capture and structure customer-perceived value formed within the relationship. A hierarchy of customer-perceived value is illuminated by the value terminology: The smallest components of value were identified as value attributes. These consist of actions, effects, or circumstances forming the base of value creation. The value attributes were also possible to classify according to dimension and type. To enhance the understanding and provide a more general view, the value attributes were aggregated into value drivers151. Finally, the all-embracing value features were recognized, seizing the essence of value creation from the total service offering and the partnership. The visualized customer-perceived value – the value maps – is built from the structure identified by this value terminology. Thus, the value terminology is applicable both on the origin and the effect side of customer-perceived value.

Secondly, I want to bring attention to the approach for achieving a monetary translation of customer value. Monetary assessments of customer-perceived value are possible by tracing effects of action into the customer’s organization and eventually to the income statement, although any such attempts have to deal with the obstacles that uncertainty implies. Stochasticity and substantiality were the two types of uncertainties identified in this study complicating monetary assessments of value.

The value maps were the starting point for the translation into monetary terms, implying that the preceding steps of information collection, analysis, and conceptualizing in maps are necessary to conduct beforehand. From the value maps the paths from origin to effects of value can be identified. Next, the paths are

151 “Value driver” is a term used also by Lapierre (2000) and Ulaga (2003) to describe creation of value at a comparable level.
explored, i.e. filled with facts to quantitatively investigate provided value. The knowledge achieved from this procedure can, for example, be used for the development of products, as input in negotiations, or a base from which customer value-based pricing\textsuperscript{152} can be applied.

**Third**, the composition of interview topics to capture customer-perceived value can be considered. The study implied that a combination of approaches within the interviews was used to grasp the complexity of a total service offering within a business-to-business relationship. First, the different interaction processes were discussed with the interviewees. Then, the substantial content of the total service offering together with relationship aspects were focused. Finally, the critical incident technique (CIT) completed the interviews to gather specific stories of interaction, thus complementing the previous parts of the interview and securing that no vital information was forgotten. Most likely this approach can be improved upon. However, I want to emphasize my experience that the first part of the interviews, i.e. focusing on interaction processes, was invaluable in gaining an understanding of the activities and value creation within the relationship. In addition, the second part, i.e. the total service offering and relationship aspects, was necessary to secure that all components of the business were covered.

### 8.2.3 Managerial contributions

I have previously stated that the practical usefulness of research outcomes is important to me as an “ex-practitioner” and industrial doctoral student. Fortunately in this respect, I see several implications for practitioners from this study. Below I will start by declaring my view of the external relevance of the study, i.e. its utility value. Then, I will continue with some advice to managers gained from my experiences of this research project. However, even if the advice is written with the commercial aircraft engine maintenance industry studied in focus, I consider the findings applicable to similar business-to-business settings, e.g. industries working with maintenance processes. Furthermore, I believe that industrial suppliers – increasing the service content in their offerings and perhaps aiming for the provision of entire functions by total service offerings – can learn from these suggestions.

The first managerial contribution I want to mention is the value maps, describing the origin and effect of customer-perceived value in the commercial aircraft engine maintenance industry. The utility value of these is immediate for a service provider in industry. The maps provide an opportunity to work for an enhanced customer-perceived value. That availability of engines is

\textsuperscript{152} See Rosvall and Rosvall (2000) for procedures to achieve customer value-based pricing.
basic for value creation is well known. But no less important is the value feature of Organization efficiency – pointing to opportunities to provide value by an efficient information flow.

As the second contribution, I want to focus the different flows providing sources of value. The flow of information was mentioned above. In addition the flow of involvement is recognized as important for the progress of long-term partnerships. Other flows identified were those of goods, risk, and money, and – on the “effect-side” of customer-perceived value – the flows of revenue benefits, cost benefits, interest effects, and costs to use.

The third contribution has in fact already been discussed. What I have in mind is the tools for analysis of customer-perceived value that was accounted for in section 8.2.2 “Methodological contributions” above. I regard the value terminology, the approach for monetary assessments of customer-perceived value, and the composition of interview topics as being useful for practitioners tackling problems of identifying and assessing value. Thus, these are tools with a direct utility value in practice.

Now over to my advice: The case in this study concerned a long-lasting relationship formed around a business deal of substantial scope. The first thing to consider before applying the findings to other deals is the meaning of the words “relationship” and “business deal of substantial scope”. All customers cannot and should not be treated in the same way.

Partnerships can be established when mutual opportunities of profitability from the relationship are achievable. This means, consequently, that from the service provider’s horizon, the business almost certainly must be of a rather considerable extent. In addition, a mutual attitude of thinking – a genuine will to participate in each other’s development – is a prerequisite for establishing a profound relationship. There must be a desire from both parties to build a close partnership within the relationship.

As a service provider the decision has to be made with which customers these close connections should be developed. When that question has been answered, the findings from this case could be studied and evaluated in relation to other long-term customers. For some customers, the extent of the business, the opportunities for profitability, or other factors, may indicate that the close engagement is not anything worth striving for. If this type of relationship, i.e. one that involves a profound mutual understanding, is not desirable, only certain selected parts of these findings should be applied. Service provider expertise will have to determine which actions are appropriate for each customer.

When working with few customers, the opportunities to customize the total service offering – the solution offered – to the customer’s unique situation are good. Of course, the service provider has to evaluate all customizations in
relation to his costs. Additional services could be additional costs, without actual customer-perceived value. Beside the customization of new business deals, of equal or possibly even greater importance, will be the need to continue to develop the business during the relationship. In long-term relationships the opportunities for continuous improvements and work for increased efficiency – and thereby profitability – are, in both organizations, normally favorable.

Use the techniques to explore customer-perceived value as presented in this work – map the origin and effect of value. Focus the sources of value, and especially the flows of goods, information, risk, and involvement, and how they interact with identified value features to create value. By following the flows from the source to the customer, bottlenecks and value destroyers will be identified and possible to eliminate. Service mapping techniques (e.g. Norling, 1993) are well-known methods from the service research field to further explore a customer’s path and interactions with the service provider in order to achieve efficiency and enhance value. In addition, recognize that value creation is made and can be analyzed at different interaction levels and concerning time of value creation – value in-use or as a redemption value.

Work with the time aspects of the offering. What are the optimal lead times for this customer? How can the flow of material be carried out to meet these needs? What are the optimal intervals of communication and how should it be carried out? How can the flow of information be carried out to meet these requirements? Combine the service perspective with logistical efforts to provide value.

Take a service perspective at the business operations – all staff member contacts with the customer’s are important. Thus, work with services in focus when new total service offerings are developed as well as when existing offerings are in need of improvement. Identify communications and interactions between service provider and customer and see to it that these are accomplished as smoothly as possible. However, efficient interaction does not mean interaction without face-to-face meetings.

Think about how the organization is set up – does it favor the development of relationships and extended business deals? Is enough time set aside for personal meetings, marketing with focus to develop the business, and mutual work for developing the interactions and communications within the relationship? Do not forget the importance of good personal chemistry and a well-composed team of competencies to serve the customer’s organization. Support a culture of working close to the customer, be present and engaged in the customer’s operations, and listen to the customer. Additionally, attitude and core values have to be commonly shared among all employees in the organization.
Do not forget the mandatory services of the total service offering. The services that are necessary in order to provide the customer accessibility to the core of the offering and in fact make it usable at all. Often these services are seen just like administrative routines, but appropriately shaped and performed they will provide important opportunities to deliver value to the customer. These services are one key to reduce unnecessary relationship costs for the customer.

The best way to easily provide enhanced customer-perceived value is probably to work with the basics of the existing offering (i.e. activities and performances that are taken for granted by the customer), as for example with the mandatory services mentioned above. But also basic elements connected to the other services in the offering – such as turn around time connected to the core of the engine maintenance and – are important sources of value improvement. Identify factors preventing the customer from perceiving optimal value, thereby causing indirect and psychological relationship costs. To have basics in place will be – or rather is – a prerequisite to keep customers and attract new ones in the highly competitive aircraft industry.

The basic elements of the offering are also especially important for another reason. They are closely connected to how the customer staff’s feelings of Trust are built through the value driver of reliability. As we have learnt from the value map of Trust, reliability can be accomplished by, for example, accuracy of turn around times, easy accessibility to various supporting services, correctness of documents, expertise in support and, not least, by honesty in communication. Unsatisfactory performance connected to such elements of the interaction will inevitably hollow the feeling of Trust in the long run. A long-term lack of reliability can consequently bring a relationship to an end – when the customer has lost all confidence in the service provider’s abilities. Thus, this is another good reason to work with basic performance of the existing offering.

Remember also how Trust was found to be both an effect of all dealings within the relationship and a filter, filtrating the experiences of the relationship to a customer-perceived value. Built-in with Trust are evaluation processes where experiences are compared to expectations. Hereby the need of managing not only customer experiences but also expectations is emphasized. And when a high degree of Trust is achieved in a relationship between a customer and a service provider – through their individual staff members – a mutuality is achieved that will be hard to break.

Inevitably, all of the actions mentioned above will point to the need for employees not only with technical skills, but also with logistical and soft skills. And do not forget that all skills have to be developed and nourished continuously.
8.3 Trustworthiness of the study

The criteria for trustworthiness of research are not indisputable. Even if the traditional value-free approach of positivism and its criteria directed to objective measurement do not, today, have a part within the interpretative paradigms and qualitative research, their influence can still be traced within some approaches (e.g. the “hard case study” in terms of Yin, 1994, as described by Braa and Vidgen, 1999). Preference of criteria is rather a matter based on ontological and epistemological values. In this section I will account for my view of demands for quality criteria connected to the actual study.

Trustworthiness of qualitative research is a matter of subjective judgments, although not a question of degree of rigorousness. Strictness in design, especially the use of methods to collect and analyze information, is a prerequisite for high quality research. However, interpretations made by the researcher are inevitably subjective, colored by preunderstanding and theoretical basis. This means that there is no single interpretation of a qualitative study. Different researchers have different approaches to a problem and can make different interpretations or “qualitative research captures multiple versions of multiple realities” as expressed by Coffey and Atkinson (1996, p. 163).

The studied phenomenon – customer-perceived value – is by its nature an example of a concept shaped by multiple realities. It is an abstract idea, created by human beings each forming their view of it. Although humanly created, I believe that it is possible to investigate the phenomenon, as some sort of shared view of value ought to exist within business life. This is a prerequisite for possibilities to explain, build theory, and make generalizations. Still, the reasoning above means that the research outcome is dependent on the individual researcher’s interpretations.

A discussion about reliability, i.e. the repeatability of the research with exactly the same outcome, is according to this view of thinking, unfeasible. The basis for trustworthiness is better advanced by other judgments. Below, the issues of transparency, validity, and theory density will be examined.

Another important criterion of research quality is contributions derived from research (Gulbrandsen, 2000; Gummesson, 2000). Contributions from this work were considered separately in section 8.2.

**Transparency**

Transparency of the research design and procedures applied is important on a general level to achieve credibility. Every reader of a research report must be able to make his or her own judgment of research quality regarding the presented text, methods used, analysis of data, results, etc. Consequently, in order to describe the research process with sufficient detail it is important to facilitate judgments for quality. It is a matter of “marking the path” for the reader...
(Frenckner, 1986). Moreover, I include the presentation of the researcher’s own values and experiences as well as a statement of selected theoretical platform (Gummesson, 2000) in the transparency notion.

I declared earlier my view of strictness in research design as a necessity to reach a high quality in the outcome. As the observant reader may have already noticed, the choice of strategy to collect and analyze information was developed as a part of the project and not prepared in advance. Nevertheless, it has been my intention to work systematically and perform each step with a high level of rigor. This form of evolving design however implies additional emphasis on transparency.

The demand for transparency has been met in several ways: I have presented my own basic standpoints including my preunderstanding. The investigated setting has been accounted for, as has my connection to the service provider. The theoretical base, building the conceptual framework and accordingly guiding the study, has been made evident. Furthermore, a detailed description of the research process is provided, including a careful account of the outcome of analysis and theory building. I hope these procedures facilitate the reader’s final judgments of quality and contributions.

Validity
How do we know that this study really is about the customer-perceived value concept? That the research reflects this concept and not any other? It is about being assured about validity, essentially that “a theory, model, concept, or category describes reality with a good fit” (Gummesson, 2000, p. 93). Or as Kvale (1997) says about validity: “the extent to which a method investigates what it is supposed to investigate” (p. 215). The actions taken to secure validity as well as possible shortcomings in this matter are accounted for below.

Triangulation, the use of multiple procedures to reduce the risk of misunderstanding and misinterpretation, is an often suggested approach to enhance validity. In particular, the use of multiple data sources in case studies has been advocated (Yin, 1994). However, this is a point where some may advance criticism regarding this study. Even if multiple sources of data have been studied (e.g. contracts, project documentation at Volvo Aero, company presentations from both Volvo Aero and Skyways, as well as aviation magazine articles), interviews are the key data source from which the outcome has

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153 Denzin (1978, in Janesick, 2000) has described four major forms of triangulation; the use of multiple data sources within a study (data triangulation), by several researchers working with the same data (investigator triangulation), by different approaches to the same data (theory triangulation), or by the use of several methods on the same problem (methodological triangulation). A fundamental belief behind the concept is that there is a “fixed object” that can be triangulated. In this study it would be the customer-perceived value concept that could be triangulated.
its empirical grounding. Acknowledging defective triangulation, I instead request the reader to examine the way the interviews and outcomes have been handled to enhance validity.

To have a **substantial understanding** of the context and the subject of investigation is important and a prerequisite for a successful use of interviewing as main source of information collection (Kvale, 1997). In fact, and this is rather obvious, it is about knowing what you are asking about and being able to judge what is interesting and catching hints for further questioning. It is consequently about preunderstanding and its importance to enhance ability to capture nuances and complexity.

I judge that the time I spent in the service provider’s organization and the theoretical studies I conducted before meeting the specific practice was well-invested time that contributed to the richness of the interviews. This richness is reflected by the multitude of value attributes extracted from the material, highlighting several aspects of customer-perceived value. The large number of value attributes made it possible to develop well grounded categories conceptualizing customer-perceived value in the actual setting and to reach a level of abstraction necessary for the building of theory to explain the concept.

**Validation** is a matter of **constant checking up** during the entire research process (Kvale, 1997) and to reflect upon each step of the work. It is about a continuous comparison of interpretations, the outcomes of analysis, and actual data (Strauss & Corbin, 1998). I have found it rewarding to reflect by drawing, writing, and also discussing ideas with supervisors and colleagues around me. Being forced to articulate ideas about the evolving framework has sharpened my thoughts.

**Member checking**, i.e. checking with the persons who gave the data (Punch, 1998), has been used as an important source for validation in several steps. First, transcriptions of interviews were sent to the interviewees to ensure authenticity. Then I presented the outcome from the first step of analysis, the value maps, to the interviewees. The informant feedback on analysis (Miles & Huberman, 1994; Strauss & Corbin, 1998) corroborated the interpretations at the same time as minor corrections and amplifications were made. The value maps have, in addition, been confirmed by Volvo Aero management representatives when presented in the research project steering group. As a final check of validation, a thesis draft has been read by representatives from each company.

**Theory density**

By means of an abductive approach to a single-case study, two substantive theories have been suggested as an outcome of this investigation. Thus, claims
have been made for generalization to similar settings as the studied one. I therefore see a need of considering quality criteria connected to the specific issue of theory building in addition to the discussions above about transparency and validity. But before I focus on the proposed criteria of theory density, some words about generalization from case studies.

When case studies are discussed, the issue of analytical generalization is proposed as a qualitative criteria (Healy & Perry, 2000). That comes from a standpoint, with which I concur, that generalization in qualitative studies concerns the building of theory, not statistical generalization from a sample to a larger population (Yin, 1994). Yin emphasizes that analytical generalization is a matter of using previously developed theory “... as a template with which to compare the empirical results of the case study. If two or more cases are shown to support the same theory, replication may be claimed.” (p. 31, my italics). Thus, there is a slight but distinct difference compared to abductive reasoning where new ideas – theories – are generated by relating actual data to previous theory and concepts. Moreover, theory building from analytical generalization has been a subject for discussion related to single-case studies, where Yin (1994) and Eisenhardt (1989) argue for a multiple-case design to secure the generalization by replication of cases.

I argue that there are considerable possibilities to learn from the single-case’s uniqueness and thereby reaching the aim of getting deepened insights into a certain phenomenon as customer-perceived value. This is a standpoint shared by Dyer and Wilkins (1991) – expressed in their rejoinder to Eisenhardt (1989) – where they argue for deep investigation that provides rich descriptions of the context. The main advantage of the single-case study is precisely the possibilities to concentrate on the case and attain depth in the investigation, to find as much information as is possible from a holistic view; to give a thorough description of the facts revealed within the case, its complexity and context, and the interpretations that can be made from it. And by using an abductive approach applied to a single-case, I believe that theory building is both desirable and attainable. That statement leads me further to the actual criteria for judging the quality of a theory.

Eisenhardt (1989) proposes a good theory to be parsimonious, testable, and logically coherent. In judging the quality of a theory, I agree with all of these criteria, with, however, a reservation for “testable” as I am not sure that this is achievable in all situations. That will leave me with (1) parsimoniousness, pointing to the necessity of reaching a certain level of abstraction, and (2) logically cohesiveness.

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154 See further section 3.2.3.
155 However, when applying these criteria to the outcome of this study, I must make a reminder of the rather “low” conceptual level of the work. It was observed in section 1.3.3 that the main concept of customer-perceived value was already in position and the theory building instead
Based on the deep analysis of the single case – and the first description of customer-perceived value in the studied relationship – an explanatory model, a first substantive theory of the study was built. This theory provides possibilities for explanations of customer-perceived value in the specific or similar settings. This step was conducted mainly with a foundation in the empirical material, but involved several smaller iterations to preunderstanding and previous theory. The proposed theory is dense, i.e. it holds rather few concepts reflecting the essence of the empirical grounding’s richness by a coherent construction.

The initial theoretical findings were then related to the empirical ones in the main round of abductive reasoning, thereby producing a proposal for a second substantive theory. This theory was put forward in terms of a conceptual model describing aspects of customer-perceived value when related to a total service offering embedded in a dyadic business-to-business relationship. The conceptual model of customer-perceived value might apply to a wider portion of business-to-business relationships, claims that yet have to be warranted by further studies. However, the guiding stars of parsimony and logical cohesiveness have also been used when addressing dyadic business-to-business relationships more generally.

**Summarizing**

This section has discussed trustworthiness in terms of transparency, validity, and theory density. I have put forward claims for having met these demands of research rigorousness in the following way:

- **Transparency** by a detailed accounting of the research project, process, and outcome.
- **Validity** by having a substantial knowledge of the context and subject of investigation, by constant checking up during the research process, and by member checking, i.e. informant feedback on analysis and writings.
- Finally, **theory density** was achieved through a deep investigation of the single case where the richness in value attributes built a foundation for abductive reasoning and the subsequently proposed substantive theories. Parsimoniousness and logical cohesiveness – quality criteria for judging theory – were suggested to have been met for the presented theories.

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concerned the delineation of particular factors building and influencing customer-perceived value in specific contexts.

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Finally, a comment concerning the economic crisis in the aircraft industry during the period of the investigation (accounted for in section 4.1.3). As a researcher, one cannot ignore this situation, especially not when investigating ideas about customer-perceived value. Most likely, the results from the study are affected. It should be recognized that, in another stage of the business cycle, additional and/or complementary attributes of customer-perceived value might have been found and/or emphasized.

8.4 Some reflections and suggestions for further research

This thesis started from a point of departure where the growing importance of the understanding of value, as being part of the evolving service-centered logic for marketing (Vargo & Lusch, 2004a) and management (Day, 2004), was emphasized. A focus of this logic is a value in use – perceived and determined by the customer (Vargo & Lusch, 2004a). In addition, a development was identified where goods and services are packaged into total service offerings (Grönroos, 2000); discernible also within the industrial sector with an increased demand for offerings integrating services and physical products (Brännström et al., 2001) and with a growing prominence of services (Oliva & Kallenberg, 2003; Fransson, 2004; Hildenbrand et al., 2004). Furthermore, new types of co-created offerings pointed to opportunities for new forms of value creation – jointly by customer and service provider or even in value constellations between several parties (Normann, 2001). Thus, not only is the importance of value as determined and perceived by customers’ emphasized – it is recognized that deliveries and judgments of this multifaceted value take place within business-to-business relationships involving complex exchanges.

Against the outline above, it is obvious that this piece of work, focusing customer-perceived value, is just a little piece of understanding in an immense, and probably constantly changing, jigsaw puzzle of knowledge. Flaws and limitations of the completed work open up opportunities to search for new pieces. In addition, new ideas may hopefully be generated when scholars read about, reflect over, and reframe the reasoning and outcome of the thesis. I will complete the thesis by pointing to some of these flaws and make some propositions for further research. Thus, reflections on the conducted work are woven into the suggestions below.

First, one can discuss why a dyadic relationship was chosen for the study when co-created value in value constellations aspires for a top position on the research agenda. My argument is that understanding must be built from a solid platform. The basis of business – and value exchange – is the “classic dyad”, i.e. the relationship between service provider and customer (Gummesson,
Although the new forms of value co-creation may involve several parties, I would argue that our understanding of value must take its departure from the dyadic relationship. Moreover, our understanding of value on a dyadic relationship level of businesses was not – and is still not – complete.

The step taken in this study is to focus a total service offering where the contracts – or at least some of them – are engine flight hour agreements. In order to provide value, the service provider offers his customers this type of fairly new solution for maintenance, which includes a multitude of services and is priced according to use of engines. Knowledge of such dyadically created customer-perceived value can serve as one – of several – platforms for the further search for understanding of value in co-created in relationships and networks. By this I do not mean that research concerning other approaches to value should cease, awaiting the delineation of all aspects of dyadic customer-perceived value. Of course, research with different perspectives of value, on several levels and with different units of analysis should be carried out on a parallel basis.

Now I would like to turn my attention to some reflections concerning how the information was collected. Interviews were the main source of information and the interviewees were the persons who had direct contact with the other party in the studied relationship. Then, in the analysis, every interviewees’ voice was able to be heard. These facts raise some questions and consequently ideas for the design of new studies.

First, employees other than the ones having direct contact can be approached in further studies. It is possible that additional value attributes can be traced in that way.

Secondly, it has been recognized that customer-perceived value of an organization is built from the perceptions of many different individuals. This study did not investigate the process of reaching a total “organization-perceived value”, instead, all voices was gathered and considered equally in the analysis. To investigate this process and the influence exercised by employees with differing positions and places in an organization is an interesting subject for further investigations.

Third, the fact that the study relies so heavily on interviews raises questions about the way in which this choice has influenced the outcome. What is it that I have not detected? I tried to cover the relationship by posing questions around three areas; processes and contacts connected to different situations, perceived value related to contracts and to the relationship, and, finally, concerning critical incidents. But still, I have relied on stories and memories as told to me by the interviewees. Can other ways of approaching an organization and key employees provide further information? An action case strategy was considered for this study but later abandoned. Maybe close and practical
work together with customer and service provider personnel in order to develop an offering, or parts of it, can add knowledge about customer-perceived value?

Next the case study strategy and choice of case must be considered. The value maps describing customer-perceived value were, in this study, built from a single case. An obvious direction for further research would be to validate the maps by exploring some more relationships in the same industry. Furthermore, extended investigations of customer-perceived value in other business-to-business settings are needed to enhance the knowledge of the multifaceted concept’s empirical content. Such studies would complement the knowledge gathered from this study and the ones made by Ulaga (2003) and Lapierre (1997).

Is it possible that customer-perceived value of other offerings can be described in terms of corresponding value features as Availability of engines, Organizational efficiency, and Financial benefits? That would presumably be offerings of the kind that Oliva and Kallenberg (2003) account for, being priced according to operational availability. Can the suffix “engines” – in Availability of engines – be altered to, say, buses, spare parts, knowledge etc.?

The need for exploring more relationships recurs with regard to the model explaining customer-perceived value. The central role proposed to be held by the notion “flow”, discussed mainly in chapter 6, should be verified by further studies in the actual and other business-to-business contexts. At the same time, the different types of flow should be investigated – on the “origin-side” of customer-perceived value, as well as on the “effect-side”.

By discussing the content of the proposed models, I have deviated more closely into the outcome of the study. Before continuing in that direction, two more comments related to the actual choice of case need to be made.

The study focused a long-term relationship and a total service offering. Even if this is reported as a growing trend within business-to-business, transaction-based business agreements are still made. The outcome of this study is most likely not applicable in its entirety for those businesses. Thus, when the objective is a deep understanding of the specific content of customer-perceived value, investigations will have to be conducted in such contexts too.

Another possible flaw of this study is the concentration on the ongoing relationship. Unlike Lapierre (1997), who investigated value creation both during and after termination of an assignment, I have only focused the ongoing relationship. Even if sources for redemption value can be found on the value maps, explicit knowledge about remaining value after the termination of business can be further developed.
Now back again to the outcome of the investigation. Trust is suggested to have a double identity related to judgments of customer-perceived value, i.e. being both an effect of all interactions as well as a filter, the latter filtrating the perceptions of value. It was also suggested that Trust was affectively influenced. These ideas ought to be the subject of focus in further studies of customer-perceived value in business-to-business settings. Not least in the light of the outcome of Walter et al.’s (2002) study, where trust was considered to only partly form a filtering effect on evaluations of customer-perceived value.

In addition, Trust should be further investigated concerning the connection to evaluation processes – expectations, comparison standards, and tolerance zones – a matter discussed for example in section 6.2.2 and 7.2.1.1. How do evaluations and tolerance zones differ between individuals in a customer organization? How can expectancies and experiences be managed within business-to-business settings to calibrate value perceptions to a desired level?

Another interesting issue for further studies is to deepen the knowledge of the monetary assessments of customer-perceived value. The second, minor phase of the study (section 5.4) looked at one – simple – technique to conduct a translation of value attributes into monetary terms. Although the investigated technique is in line with the one arrived at by Leino (2004), I regard this as a matter insufficiently explored and a subject for deeper investigation. Additionally, more questions could be posed: How are assessments made by customers? By service providers? And not least, how do service providers use such assessments for customer value-based pricing? More knowledge is needed to facilitate the development of total service offerings aimed at providing complete functions and creating win-win solutions between customers and service providers.

As a by-product of the suggested directions for further research above, the third model of the study – the conceptual model of customer-perceived value of dyadic business-to-business relationships – can be verified and/or further developed. It is especially the empirically founded part of the model that is in need of further empirical investigations. But also new ideas, related to any part of the model, can evolve by the use of other theoretical perspectives and framings.

This study is based mainly on service theory, injected by specific research focusing customer-perceived value (chapter 2). The latter includes research that, in its turn, is based on the industrial network theory, briefly accounted for in the first chapter. However, when considering aspects of dyadic interactions, the interaction model (figure 1-1, p. 7) forms an interesting framework from which to further explore customer-perceived value. For example: How do institutionalizations and adaptations within the relationship affect the value perception? In what way do the characteristics of the interacting parties – technology, structure, and strategy – influence the perception of value within
the organization? And how do atmosphere and environment of the dyadic relationship make impressions on customer-perceived value?

Finally, I propose that the knowledge gained from this project and the study of an existing offering within an existing relationship is brought further to the issue of designing services. Customer involvement is proposed to be fruitful in service development (e.g. Matthing, 2004); therefore I suggest that efforts to enhance customer-perceived value could also gain from such approaches. This issue can be approached from different perspectives: How should new total service offerings be composed to enhance customer-perceived value? How can new services be designed and incorporated into an existing offering to increase the value? How can value be added by the improvement of existing parts within a total service offering? How can the service process and interaction between the parties be improved to reduce relationship costs? And, not least, how can partnership aspects be included in service development to provide long-term customer-perceived value?

To conclude, I hope that the multifaceted nature of customer-perceived value will continue to fascinate researchers and inspire investigations that can shed further light on this important concept.
REFERENCES


# Appendix A: Value Definitions in Marketing Literature

<table>
<thead>
<tr>
<th>Author</th>
<th>Value definition</th>
<th>Definition type</th>
<th>Setting</th>
<th>&quot;Get-component&quot;</th>
<th>&quot;Give-component&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zeithaml 1988, p. 14</td>
<td>[\ldots] perceived value is the consumer’s overall assessment of the utility of a product based on perceptions of what is received and what is given. Though what is received varies across consumers (i.e., some may want volume, others high quality, still others want convenience) and what is given varies (i.e., some are concerned only with money expended, others with time and effort), value represents a tradeoff of the salient give and get components.]</td>
<td>Trade-off</td>
<td>Consumer product market</td>
<td>Utilities</td>
<td>Monetary and non-monetary costs</td>
</tr>
<tr>
<td>Monroe 1990, p. 46</td>
<td>[\ldots] buyers’ perceptions of value represent a tradeoff between the quality or benefits they perceive in the product relative to the sacrifice they perceive by paying the price.]</td>
<td>Trade-off</td>
<td>Quality or benefits</td>
<td>Price</td>
<td></td>
</tr>
<tr>
<td>Bolton &amp; Drew 1991, p. 376</td>
<td>Defines service value according to Zeithaml’s (1988) definition and continues: &quot;If perceived service value is analogous to the concept of perceived product value, then Zeithaml’s work suggests that service value can be considered to involve a trade-off between a customer’s evaluation of the benefits of using a service and its costs. [\ldots] A customer’s assessment of value depends on sacrifice (i.e., the monetary and nonmonetary costs associated with utilizing the service and the customer’s frame of reference.&quot;</td>
<td>Trade-off</td>
<td>Consumer service market</td>
<td>Benefits</td>
<td>Monetary and non-monetary costs</td>
</tr>
<tr>
<td>Berry &amp; Parasuraman 1993, p. 153</td>
<td>&quot;To the customer, value is: ‘What I get for what I have to give up.’ It is benefits received for the burdens endured. Burdens include both monetary costs and non-monetary costs, for example, an inconvenient location, unfriendly employees, or an unattractive service facility.&quot;</td>
<td>Trade-off</td>
<td>Consumer service market</td>
<td>Benefits</td>
<td>Monetary and non-monetary costs</td>
</tr>
<tr>
<td>Author</td>
<td>Year</td>
<td>Definition</td>
<td>Monetary Trade-off</td>
<td>Business-to-Business</td>
<td>Economic, Technical, Service, and Social Benefits</td>
</tr>
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<td>-------------------------------------------------</td>
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<tr>
<td>Anderson, Jain &amp; Chin-tagunta</td>
<td>1993</td>
<td>“We define value in business markets as the perceived worth in monetary units of the set of economic, technical, service and social benefits received by a customer firm in exchange for the price paid for a product, taking into consideration the available suppliers’ offerings and prices.” “[…] We regard benefits as ‘net’ benefits that subsume costs other than acquisition price (e.g., life-cycle costs) and use ‘received’ to reflect performance in a given usage situation.”</td>
<td>Trade-off</td>
<td>Competitive offerings considered</td>
<td>Monetary and other costs subsumed in benefits</td>
</tr>
<tr>
<td>Gale</td>
<td>1994</td>
<td>“Market-perceived quality is the customer’s opinion of your products (or services) compared to those of your competitors’. Customer value is market-perceived quality adjusted for the relative price of your product.”</td>
<td>Trade-off</td>
<td>Competitive offerings considered</td>
<td>Business-to-business and consumer markets</td>
</tr>
<tr>
<td>Liljander &amp; Strandvik</td>
<td>1995</td>
<td>Value: Episode/relationship quality compared to episode/relationship sacrifice. Quality: Customers’ cognitive evaluation of the service of one episode/ across episodes compared to some explicit or implicit comparison standard. Sacrifice: Perceived sacrifices (price, other sacrifices) connected to the service episode compared to some explicit or implicit comparison standard reference price/across all service episodes in the relationship compared to some explicit or implicit comparison standard.</td>
<td>Trade-off</td>
<td>Consumer markets, relationship perspective</td>
<td>Quality compared to comparison standard</td>
</tr>
<tr>
<td>Ravald &amp; Grönroos</td>
<td>1996</td>
<td>“In a customer-supplier relationship we would like to use the term ‘total episode value’, which then could be described as a function of both episode value and relationship value: ‘Total episode value = Episode benefits + relationship benefits / Episode sacrifice + relationship sacrifice.”</td>
<td>Trade-off</td>
<td>Relationship perspective</td>
<td>Episode and relationship benefits</td>
</tr>
<tr>
<td>Woodruff</td>
<td>1997</td>
<td>“Customer value is a customer’s perceived preference for and evaluation of those product attributes, attribute performances, and consequences arising from use that facilitate (or block) achieving the customer’s goals and purposes in use situations.”</td>
<td>Goal centred</td>
<td>General</td>
<td>Product attributes, its performances, consequences from use</td>
</tr>
<tr>
<td>Source</td>
<td>Quote</td>
<td>Trade-off</td>
<td>Business-to-business</td>
<td>Benefits</td>
<td>Monetary and non-monetary costs</td>
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<tr>
<td>Lapierre 2000, p. 123</td>
<td>“Customer-perceived value can [...] be defined as the difference between the benefits and the sacrifices (e.g. the total costs, both monetary and non-monetary) perceived by the customers in terms of their expectations, i.e. needs and wants.”</td>
<td>Trade-off</td>
<td>Business-to-business</td>
<td>Benefits</td>
<td>Monetary and non-monetary costs</td>
</tr>
<tr>
<td>Parasuraman &amp; Grewal 2000, p. 168</td>
<td>“It is widely known that perceived value [...] is composed of a ‘get’ component – that is, the benefits a buyer derives from a seller’s offering – and a ‘give’ component – that is, the buyer’s monetary and nonmonetary costs of acquiring the offering.”</td>
<td>Trade-off</td>
<td>General</td>
<td>Benefits</td>
<td>Monetary and non-monetary costs</td>
</tr>
<tr>
<td>Ulaga &amp; Chacour 2001, p. 530</td>
<td>“[...] we define customer-perceived value in industrial markets as the trade-off between the multiple benefits and sacrifices of a supplier’s offering, as perceived by key decision makers in the customer’s organization, and taking into consideration the available alternative suppliers’ offerings in a specific-use situation. [...] In this study, the criteria were grouped into ‘quality-related’ aspects as an expression of perceived benefits and ‘price-related’ aspects representing the perceived sacrifices.”</td>
<td>Trade-off, competitive offerings considered</td>
<td>Business-to-business</td>
<td>Quality-related benefits</td>
<td>Price-related sacrifices</td>
</tr>
</tbody>
</table>
APPENDIX B: APPROACHES TO VALUE WITHIN IMP RESEARCH

The aim of this appendix is to give a brief overview of "value research" within the IMP (Industrial Marketing and Purchasing) Group research tradition. Interest in the value concept in industrial markets has arisen only comparatively recently (Walter et al., 2002). However, although research has been scarce, a review of IMP literature reveals that value has been approached from various angles. These include value considered on several levels of network interaction, relationship value, customer-perceived value, supplier-perceived value, value co-created in business relationships, and value creation networks.

By relating different perspectives on value to level and unit of analysis, opportunities to gain a structured representation of the findings in the literature are attained. In the introductory article of Industrial Marketing Management’s special issue on customer value in business markets, Ulaga (2001) accounted for three perspectives on customer value: the buyer’s, the seller’s, and the buyer-seller perspective. The buyer’s perspective deals with the issue of how suppliers create value for their customers and how customers perceive this value. The second perspective, the seller’s, emphasizes customer equity, e.g. customers as assets of a supplier firm. Finally, the buyer-seller perspective focus is on jointly created value in collaborating relationships and networks.

Another opening for considering the value concept is the level of analysis. Two levels are considered, the dyadic relationship level and the network level. Combining perspective and level of analysis within a matrix implies six possible approaches to consider value. Within these approaches the unit of analysis can be located.

The studied papers are located in the following matrix according to the identified six approaches. However, two of them (Ford & McDowell, 1999; Mandják, Simon & Lantos, 2003) consider value from different approaches and are consequently found in more than one square.
### Approaches to value in IMP research related to perspective on value and level of analysis

<table>
<thead>
<tr>
<th>Perspective of Analysis</th>
<th>Buyer’s</th>
<th>Seller’s</th>
<th>Buyer-seller</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Relationship</strong></td>
<td>Customer’s perception of value from relationship with a supplier:</td>
<td>Supplier’s perception of value from relationship with customer:</td>
<td>Value co-creation in dyadic relationships:</td>
</tr>
<tr>
<td></td>
<td>- Value as effects of action (Ford &amp; McDowell, 1999)</td>
<td>- Value as effects of action (Ford &amp; McDowell, 1999)</td>
<td>- Dimensions of relationship value (Wilson &amp; Jantrania, 1994)</td>
</tr>
<tr>
<td></td>
<td>- Relationship functions and trust as relationship value creators (Walter, Hölzle &amp; Ritter, 2002)</td>
<td>- Direct and indirect functions of customer relationship providing supplier-perceived value (Walter, Ritter &amp; Gemünden, 2001)</td>
<td>- Dimensions of co-created value related to layers of resources, actors, and activities (Forsström, 2003)</td>
</tr>
<tr>
<td></td>
<td>- Economic and social elements of value on episode, relationship and network level (Mandják, Simon &amp; Lantos, 2003)</td>
<td>- Economic and social elements of value on episode, relationship and network level (Mandják, Simon &amp; Lantos, 2003)</td>
<td></td>
</tr>
<tr>
<td><strong>Supplier’s value creation potential for a customer:</strong></td>
<td>- Efficiency, effectiveness and network functions for providing customer value (Möller &amp; Törnänen, 2003)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Network</strong></td>
<td>Customer’s perception of value connected to portfolio of relationships and to wider network:</td>
<td>Supplier’s perception of value connected to portfolio of relationships and to wider network:</td>
<td>Value creation in networks:</td>
</tr>
<tr>
<td></td>
<td>- Value as effects of action (Ford &amp; McDowell, 1999)</td>
<td>- Value as effects of action (Ford &amp; McDowell, 1999)</td>
<td>- Value creation principles, drivers, and dynamics in different types of networks (Helander, Alajoutsijärvi &amp; Seppälä, 2002)</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>- Knowledge and learning in different network types (Möller &amp; Svahn, 2002)</td>
</tr>
</tbody>
</table>

156 Selection, not meant to be exhaustive representation of research.
APPENDIX C: RESEARCH FOCUSING CUSTOMER-PERCEIVED VALUE

The common denominator of the presented work below is the focus on customer-perceived value. However, under the last subheading some examples of related work, e.g. concerning relationship value and assessment of value, are included. In addition to the references below, customer-perceived value has been considered in work on service quality, however, in this case with a focus on the latter concept.

<table>
<thead>
<tr>
<th>Author/s</th>
<th>Context</th>
<th>Focus of work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lapierre, 1997</td>
<td>B2B</td>
<td>Identifies dimensions of customer-perceived value (the author uses the label service value or just value) related to time within professional services; value exchange during interaction and value in use after fulfilled assignment. Each dimension contains several specific value criteria. Value exchange level: technical quality (reliability [budget/schedule], information understandability, information practicality, technical expertise, specialized expertise, creativity), functional quality (integrity, responsiveness, professionalism), relational variables (partnership, involvement, confidence), and image (reputation, credibility). Value in use: financial (cost reductions [all kinds], revenues [ROI, ROA], profitability, rentability), social (reduce accident rates, save lives, improve standard of living), operational (productivity, product development and deployment, facilitate operations), and strategic (better decisions, more enlightened decisions). Qualitative study – R&amp;D services and consulting engineering services – Canadian organizations.</td>
</tr>
<tr>
<td>Ulaga &amp; Chacour, 2001</td>
<td>B2B</td>
<td>Measurement of customer-perceived value compared to competitors based on attributes related to product quality (consistency of product, product characteristics, natural product character, ease of use, range of products, nondusting), service quality (reliability and speed of supply, technical support/application, quick service/response, product innovation, technical information/literature, training/seminar, global source of supply, others) and quality connected to promotion related attributes (image/corporate identity, personal relations, reliability of company, public relations, upstream integration, ISO 9001 certification) and price. Interview study, quantitative measurement of value “Customer Value Audit” – German food industry.</td>
</tr>
</tbody>
</table>

157 Underlined = member of IMP Group according to www.impgroup.org (May, 2004).
Ulaga, 2003  
Identifies eight drivers, each with its own subdimensions, for customer-perceived value (labeled relationship value by the author) within manufacturer–supplier relationships: Product quality (product performance; product reliability; product consistency), Service support (product-related services; customer information; outsourcing of activities), Delivery (on-time delivery; delivery flexibility; accuracy of delivery), Supplier know-how (knowledge of supply market; improvement of existing products; development of new products), Time-to-Market (design tasks; prototype development; product testing and validation), Personal interaction (communication; problem solving; mutual goals), Direct product costs (price) (price above, below, at competition; annual price decreases; cost reduction programmes), and Process costs (inventory management; order-handling; incoming inspections; manufacturing). Qualitative study – manufacturing companies in the United States.

Empirical studies – other approaches to customer-perceived value

Ford & McDowell, 1999  
Outcomes of specific relationship situations: Value of effects realized through specific actions from buyer or seller in a specific relationship within a wider network. Effects analyzed both from customer and supplier’s point of view. Qualitative case study – UK industrial companies.

Walter, Hölzle & Ritter, 2002  
Uses the label relationship value in order to emphasize the subject of customer-perceived value in a given supplier relationship. Investigates relationship functions and trust as value creators for the customer in a relationship. Purchasing (direct) functions: cost reduction function, quality function, volume function. Network (indirect) functions: market function, scout function, innovation development function. Quantitative study – German industrial customers.

Mandlák, Simon & Lantos, 2003  
Examines a focal actor’s perceptions of value from business relationships with customers and suppliers respectively, i.e. both customer- and supplier-perceived value. However, the focus is rather on the value of having a relationship in a more general sense. Identifies economic and social elements of value related to level of relationship (episode, relationship, network level). Economic (“business”) elements: Episode level – “Appreciation” of the product (accepted) by the buyer, Feasibility of the product by the supplier (capacity, how busy they are), Solvability of the partner. Relationship level – Profitability of the relationship (“revenue proportional relationship”), Lowering of the transaction costs, Income potential. Network level – Development of a competitive edge. Social (“human”) elements: Episode level – Personal relationship, Satisfaction with the product (supplier’s “call-back”), Mutual sympathy. Relationship level – Mutual conformity to each other. Style of the relationship (friendly, constructive, complex), Reliability, Computability, Durability. Network level – Reference value (active, passive), Relationship erosion in the same network (buyers, potential buyers), Relationship eradication in other network (advertisement award). Qualitative study – Hungarian companies (manufacturing, trading, professional services).

Mikkelsen & Hedaa, 2003  
Customer’s perception of value from supplier relationships, influenced by customer’s overall strategic approach and product category. Three strategic approaches are identified and discussed. Qualitative study – Danish kitchen manufacturing industry (work-in-progress).
<table>
<thead>
<tr>
<th>Author/s</th>
<th>Context</th>
<th>Focus of work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Heinonen, 2004</td>
<td>Consumer</td>
<td>Conceptualizes customer perceived value in four value dimensions: the “when” and “where” surrounding the “what” and “how”. Concludes that time and location of the service are important dimensions influencing value perceptions – in this study even more important than the outcome and process elements of the service. Quantitative study (part of a larger study) – Finnish online bank customers.</td>
</tr>
<tr>
<td>Leino, 2004</td>
<td>B2B</td>
<td>Investigates the monetary value created during an assignment process. Categories for value consist of selection criteria gathered from literature on professional services. Presents a technique to calculate the monetary value. Argues that customer perceived value (CPV) and customer monetary value (CMV) are two separate concepts and that Total customer value = CPV + CMV. Qualitative study – Finnish customers of professional services.</td>
</tr>
<tr>
<td>Paterson &amp; Spreng, 1997</td>
<td>B2B</td>
<td>Examines the relationship between perceived value, satisfaction, and repurchase intentions. Quantitative study – Australian professional business services (consultants).</td>
</tr>
<tr>
<td>McDougall &amp; Levesque, 2000</td>
<td>Consumer</td>
<td>Investigates the relationship between perceived value, core service quality, and relational service quality with satisfaction and future behavioral intentions. Quantitative study – Canadian consumer services.</td>
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<tr>
<td>Ravid &amp; Gronroos, 1996</td>
<td>Consumer</td>
<td>Examines customer-perceived value in terms of episode and relationship value. Discusses how reduction of perceived sacrifices provides enhanced customer-perceived value.</td>
</tr>
<tr>
<td>Woodruff, 1997</td>
<td>General</td>
<td>Presents a framework for customer value and customer value learning.</td>
</tr>
<tr>
<td>Parasuraman &amp; Grewal, 2000</td>
<td>General</td>
<td>Proposes an expanded model of customer loyalty. Service quality, product quality, and price builds perceived value which in turn affects customer loyalty. Value is proposed to be perceived (created / assessed) in four phases connected to time: acquisition, transaction, in-use, and redemption value.</td>
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</table>

**Empirical work – the relationship between customer-perceived value and satisfaction**

<table>
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<td>Examines the relationship between perceived value, satisfaction, and repurchase intentions. Quantitative study – Australian professional business services (consultants).</td>
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<td>McDougall &amp; Levesque, 2000</td>
<td>Consumer</td>
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</table>

**Theoretical work**

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<th>Focus of work</th>
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<tbody>
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</tr>
<tr>
<td>Parasuraman &amp; Grewal, 2000</td>
<td>General</td>
<td>Proposes an expanded model of customer loyalty. Service quality, product quality, and price builds perceived value which in turn affects customer loyalty. Value is proposed to be perceived (created / assessed) in four phases connected to time: acquisition, transaction, in-use, and redemption value.</td>
</tr>
</tbody>
</table>

**Some other selected angles of approach to value**

<table>
<thead>
<tr>
<th>Author/s</th>
<th>Context</th>
<th>Focus of work</th>
</tr>
</thead>
<tbody>
<tr>
<td>Zeitini, 1988</td>
<td>Consumer</td>
<td>Defines value, price, and quality from a customer’s perspective. Relates the concepts to each other in a model. Empirical study, consumers of beverage, adds to previous research.</td>
</tr>
<tr>
<td>Gale (with Wood), 1994</td>
<td>General</td>
<td>Extends total quality management into customer value management. Describes tools for customer value analysis where customer value is compared to competitors. Instructive book with case illustrations.</td>
</tr>
<tr>
<td>Wilson &amp; Jantrania, 1994</td>
<td>B2B</td>
<td>Proposes a conceptual model of co-created relationship value along economic, strategic, and behavioral/psychological dimensions. Includes examples of value from a customer’s perspective. Economic dimension includes: cost reduction, value engineering, investments quality, and concurrent engineering. Strategic dimension: goals, time to market, strategic fit, core competencies. Psychological/behavioral dimension: social bonding, trust, culture. The enumerated factors are thought to develop over time, the first mentioned under each dimension within the shortest time and the other within a growing time frame. Theoretical.</td>
</tr>
<tr>
<td>Flint, Woodruff &amp; Gardial, 1997</td>
<td>B2B</td>
<td>Provides a conceptual model describing how customers' perceptions of value change over time. Theoretical.</td>
</tr>
<tr>
<td>Author/s</td>
<td>Context</td>
<td>Focus of work</td>
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<tr>
<td>Flint, 2002</td>
<td>General</td>
<td>The use of customer value understanding in order to improving the process of new product development. Theoretical.</td>
</tr>
</tbody>
</table>
**APPENDIX D: ASPECTS OF TIME IN CONCEPTUALIZATIONS OF CUSTOMER-PERCEIVED VALUE AND RELATIONSHIP QUALITY WITHIN SERVICES RESEARCH**

<table>
<thead>
<tr>
<th>Author</th>
<th>Time-aspect</th>
<th>Focus</th>
<th>Pre-purchase assessments</th>
<th>Time of purchase/signing of deal</th>
<th>During service process/product consumption</th>
<th>Interaction levels (relationship perspective)</th>
<th>Outcome at end of process/end of use</th>
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<tr>
<td>Lapiere</td>
<td>1997, p. 390</td>
<td>Value focus – value type</td>
<td>Before Expectation of solution to needs/problem.</td>
<td>Transaction value The pleasure of getting a good deal.</td>
<td>Value exchange Means/actions as practices of service provider during service process</td>
<td>In-use value Utility derived from using the product/service.</td>
<td>Value in use Possession value</td>
</tr>
<tr>
<td>Parasuraman &amp; Grewal</td>
<td>2000, p. 169</td>
<td>Value focus – value type (general)</td>
<td>Acquisition value The benefits (relative to monetary costs) buyers believe they are getting by acquiring a product/service.</td>
<td>Desired value Preferences for product attributes and attribute performances in order to achieve desired consequences in use and ability to achieve goals and purposes.</td>
<td>Value in-use Value exchange</td>
<td>Value in-use</td>
<td></td>
</tr>
<tr>
<td>Woodruff</td>
<td>1997, p. 142</td>
<td>Value focus – time of judgement (general)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Liljander &amp; Strandvik</td>
<td>1995, p. 144</td>
<td>Relationship quality focus</td>
<td></td>
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<tr>
<td>Holmlund</td>
<td>1997, p. 102, 163</td>
<td>Relationship quality focus</td>
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**Focus Value focus – value type**

- **B2B**

**Value focus – time of judgement (general)**

- Pre-purchase assessments
  - Before Expectation of solution to needs/problem.
  - Acquisition value The benefits (relative to monetary costs) buyers believe they are getting by acquiring a product/service.
  - Desired value Preferences for product attributes and attribute performances in order to achieve desired consequences in use and ability to achieve goals and purposes.

- Time of purchase/signing of deal
  - Transaction value The pleasure of getting a good deal.

- During service process/product consumption
  - Value exchange Means/actions as practices of service provider during service process

- Interaction levels (relationship perspective)
  - In-use value Utility derived from using the product/service.

- Outcome at end of process/end of use
  - Value in use Possession value
  - Redemption value Residual benefit at the time of trade-in or end of life (for products) or termination (for services).
  - Received value Received value of product attributes and attribute performances in order to achieve desired consequences in use, and ability to achieve goals and purposes.

**Relationship quality focus**

- Received value as the outcome for the customer
  - Quality as the outcome of interactions.
APPENDIX E: "TRUST" IN MARKETING LITERATURE

Trust is in this study a concept grounded in the analysis; it is a value feature capturing the psychological level of the relationship. I found Trust to be the basic outcome to which the identified value attributes could be traced to. I have in the study defined Trust as the customer’s feelings of confidence for the relationship, the service provider, and the product, giving him peace of mind. The decision to use the word “Trust” as a label of the value feature was based on the meaning of the word. (I admit however that I considered both “trust” and “confidence” as possible labels for the value feature but, eventually decided on “trust”.)

Trust: “the belief that somebody/something is good, sincere, honest, etc. and will not try to harm or deceive you”
Belief: “confidence that something/somebody is good or right”
Confidence: “the feeling that you can trust, believe in and be sure about the abilities or good qualities of somebody/something”

Below I have made a selection of other researchers’ definitions of trust, published in marketing literature, to illustrate the abundance of research within the field and point to the opportunities to investigate nuances of the concept.

<table>
<thead>
<tr>
<th>Author</th>
<th>Definitions/descriptions of trust</th>
<th>Context</th>
</tr>
</thead>
<tbody>
<tr>
<td>Moorman, Deshpande &amp; Zaltman, 1993</td>
<td>“Trust is defined as a willingness to rely on an exchange partner in whom one has confidence [...]” (p. 82)</td>
<td>Business-to-business</td>
</tr>
<tr>
<td>Morgan &amp; Hunt, 1994</td>
<td>“We conceptualize trust as existing when one party has confidence in an exchange partner’s reliability and integrity. [...] We argue that willingness to act is implicit in the conceptualization of trust and, therefore, one could not label a trading partner as ‘trustworthy’ if one were not willing to take actions that otherwise would entail risk.” (p. 23)</td>
<td>Business-to-business</td>
</tr>
<tr>
<td>Anderson &amp; Narus, 1999</td>
<td>“Trust in a working relationship is the firm’s belief that another company will perform actions that will result in positive outcomes for the firm, as well as not take unexpected actions that would result in negative outcomes for the firm. The strength of this belief may lead the firm to make a trusting response or action, whereby the firm commits itself to possible loss, depending upon the subsequent actions of the other company.” (p. 384)</td>
<td>Business-to-business</td>
</tr>
<tr>
<td>Grönroos, 2000</td>
<td>“Trust in another party can, for example, be described as one party’s expectation that the other party will behave in a certain predictable way in a given situation. If the other party does not behave in the expected way, the trusting party (for example the customer), will experience more negative outcomes than they otherwise would. Another commonly cited definition of trust states that trust is a willingness to rely on a business partner in whom one has confidence.” (p. 37)</td>
<td>Service management, relationship perspective</td>
</tr>
<tr>
<td>Author</td>
<td>Definitions/descriptions of trust</td>
<td>Context</td>
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</table>
| Johnson & Grayson, 2000 | “Among the many definitions of trust is a generally shared view that trust involves one person’s expectation that another will behave in a certain way [...]. Trust also requires that, if the other does not behave as expected, the trusting party will experience more negative outcomes than if the other does behave as expected.” (p. 358)  
The authors identify four types of trust, i.e. in this case how a consumer’s expectations of trust are developed from different sources.  
- **Generalized trust** – derived from social norms.  
- **System trust** – based on laws, regulations, contracts, bureaucracy, and professionalism.  
- **Personality-based trust** – depends on an individual’s propensity to trust, determined by personality traits.  
- **Process-based trust** – developed by repeated interaction in a specific dyadic relationship and based on expectations developed by the involved parties.  | Consumer service relationships        |
| Liljander & Roos, 2002 | The authors account for three levels of trust (originally proposed by Lewicki & Bunker in 1996) and develop these to be applied in customer-service relationships (p. 599):  
- **Calculus-based trust** – based on the customer’s belief that it is the service provider’s “[…] best interest not to suffer the loss of reputation and profits that a violation of trust would lead to”.  
- **Knowledge-based trust** – based on the customer’s deep knowledge about a service provider, thereby being able to anticipate the firm’s actions.  
- **Identification-based trust** – derived from the customer’s “[…] full confidence in the service company and believe that it will act in their best interests. The service provider has in-depth knowledge of customers’ needs and desires, and customers perceive that their desires are fulfilled.”  
- The calculus-based form of trust is the starting level of a customer’s trust in a service provider. As the relationship develops customers may (but need not to) move further to the knowledge-based level and then to the identification-based trust.  | Consumer service relationships        |
| Johnson & Grayson, 2003 | Three types of trust are defined (p. 2):  
- **Cognitive trust** – “[…] a customer’s confidence or willingness to rely on a service provider’s competence and reliability”. Knowledge is the basis to make predictions about the likelihood that the party in focus will fulfill his obligations.  
- **Affective trust** – “The essence of affective trust is reliance on a partner based on emotions.” Personal experiences, reputation, feelings of security and perceived strength of the relationship build affective trust.  
- **Behavioral trust** – “[…] actions that flow from a state of cognitive and affective trust”.  | Consumer service relationships        |
APPENDIX F: INTERVIEW TOPICS

Information about the project and interview topics were distributed before conducting the interviews. Below is first the information about interview topics for the full interview sent to staff at Volvo Aero and Skyways.

Two interviewees at Skyways had limited contacts with the service provider and therefore shorter interviews were made with them. Interview topics for these two interviews then follow.

Translation to English has been made, as the original material was written in Swedish.

I. Interview topics – complete interview

PROJECT CUSTOMER-PERCEIVED VALUE – PILOT CASE VOLVO AERO/SKYWAYS

Thank you for letting me come and do an interview with you concerning customer-perceived value in the relationship between Volvo Aero and Skyways.

You have earlier received general information about the research project. I will now briefly inform about the topics I intend to cover during the interview.

The interview consists of three parts: Formalities, The specific relationship Volvo Aero/Skyways, and last Critical incidents. Below you find the subjects that I wish to talk about under each subheading respectively.

If you have any questions before the interview, please contact me on telephone 0520-93693 or e-mail catarina.bovik@volvo.com.

Trollhättan 2002-11-22
Catarina Bovik
PART 1 – FORMALITIES

Your background and present position.

PART 2 – THE RELATIONSHIP VOLVO AERO/SKYWAYS

A. Introduction of the concept customer-perceived value

During our conversation I want to discuss the relationship Volvo Aero/Skyways and the maintenance deal in terms of customer-perceived value. Figure 1 illustrates how customer-perceived value in a total service offering is built by components that give and take customer value respectively.

B. General questions about the maintenance deals with VAC

- The process and contacts connected to scheduled overhauls
- The process and contacts connected to unscheduled overhauls
- Contacts concerning administration
- Other contacts within the relationship
- Aspects of leased engines

C. Customer-perceived value in the maintenance agreements

Benefits and sacrifices related to the maintenance agreements divided in six groups of questions: core, supporters, facilitators, time aspects, relationship aspects, and other aspects.

1. Core service – the essence of the offering

   Scheduled maintenance engine
2. Supporting services – additions to the core
   Scheduled maintenance LRU (line replacement units)
   Unscheduled maintenance engine
   Unscheduled maintenance LRU (line replacement units)
   Technical support
     questions concerning operation
     planning for scheduled maintenance
     Engine Condition Trend Monitoring (ECTM)
   Logistics
     Spare parts/Line replacement units
     Supply of components and engineering support connected to AOG
   Spare engine
   Service team
   Transports
   Opportunities for training of maintenance staff
   Engine flight hour agreement

3. Facilitating services
   There could be other services, sometimes defined by contract and sometimes not, that are necessary to get the collaboration to work. You can call such services facilitating services. Check in and luggage handling at airports are examples of facilitators.
   Which facilitating services are present in this deal? What benefits and sacrifices can be identified in connection to them?

4. Time aspects
   In what way does time affect the customer-perceived value?

5. Relationship aspects
   In what way does the relationship affect the customer-perceived value?

6. Other aspects
   Are there any other aspects (effects of the deal in its entirety) of how Volvo Aero performs the engine maintenance that affect the customer-perceived value?

PART 3 – CRITICAL INCIDENTS

A. Positive
   Can you please give 5 – 10 examples (incidents) that illustrate such things that work especially well in the relationship between Volvo Aero and Skyways!

B. Negative
   Can you please give 5 – 10 examples (incidents) that illustrate such things that do not work especially well in the relationship between Volvo Aero and Skyways!

C. Other comments
   Apart from what you have put forward before, is there anything else that you would like to comment concerning the deal/relationship? Anything specific to improve or change?

THANK YOU, FOR YOUR CONTRIBUTION!
II. Interview topics – limited interview

PROJECT CUSTOMER-PERCEIVED VALUE – PILOT CASE VOLVO AERO/SKYWAYS

Thank you for letting me come and do an interview with you concerning customer-perceived value in the relationship between Volvo Aero and Skyways.

You have earlier received general information about the research project. I will now briefly inform about the topics I intend to cover during the interview.

The interview consists of three parts: Formalities, The specific relationship Volvo Aero/Skyways, and last Critical incidents. Below you find the subjects that I wish to talk about under each subheading respectively.

If you have any questions before the interview, please contact me on telephone 0520-93693 or e-mail catarina.bovik@volvo.com.

Trollhättan 2002-11-22
Catarina Bovik

PART 1 – FORMALITIES

Please tell me about your background and present position.

PART 2 – CUSTOMER-PERCEIVED VALUE IN THE MAINTANCE DEAL BETWEEN SKYWAYS OCH VOLVO AERO

Please tell me about your work and your contacts with Volvo Aero.

During our conversation I want to discuss the relationship Volvo Aero/Skyways and the maintenance deal in terms of customer-perceived value. Figure 1 illustrates how customer-perceived value in a total service offering is built by components that give and take customer value respectively.
From your point of view:
What creates and takes customer value respectively in the maintenance deal?
How does this affect your work? Affect Skyways?

PART 3 – CRITICAL INCIDENTS

A. Positive
Can you please give 5 – 10 examples (incidents) that illustrate such things that work especially well in the relationship between Volvo Aero and Skyways!

B. Negative
Can you please give 5 – 10 examples (incidents) that illustrate such things that do not work especially well in the relationship between Volvo Aero and Skyways!

C. Other comments
Apart from what you have put forward before, is there anything else that you would like to comment concerning the deal/relationship? Anything specific to improve or change?

THANK YOU, FOR YOUR CONTRIBUTION!
APPENDIX G: COMPLETE VALUE MAPS AND EXPLANATION LIST OF CUSTOMER-PERCEIVED VALUE

CUSTOMER-PERCEIVED VALUE OF A TOTAL SERVICE OFFERING IN THE AIRCRAFT ENGINE MAINTENANCE FIELD – COMPONENTS OF A FRUITFUL RELATIONSHIP – TOTAL VIEW

CONCEPTS IN EXPLANATION LIST

The value maps are followed by a list containing explanations for the value attributes. The concepts used in the list are as follows:

The components building up customer-perceived value – **Value attributes** – have been grouped into **Value drivers** and also divided in six main groups - **Value features**. Five on the benefit side – **benefit categories** – and one on the **sacrifice** side. All, except Trust, could more or less easily be translated into monetary terms. The value drivers are visible in the value maps, whereas not in the list of explanations.

The value attributes in the list are sorted after the following value features:

- **Availability of engines (A)**: Attributes assignable to availability of engines and components.
- **Organization efficiency (O)**: Attributes assignable to efficiency in the customer’s organization.
- **Financial benefits (F)**: Attributes assignable to financial aspects.
- **Collaborative partnership (P)**: Attributes assignable to the total business and the relationship between customer and service provider.
- **Sacrifices to use offering (S)**: Attributes assignable to the customer’s direct and indirect cost for the maintenance, price included.
- **Trust (T)**: Psychological attributes.

The **value dimension** state in which pane of the balance of benefits and sacrifices (gets and gives) each value attribute ought to be found.

- **Cost benefit**: Attribute influencing the customer’s costs positively, i.e. decreases them.
- **Cost to use**: Attribute involving a direct/indirect cost for the customer.
- **Revenue benefit**: Attribute increasing or securing the customer’s revenues.
- **Neutral**: Have been used very occasionally when it is not clear if the attribute involve get or give.
- **Psychological benefit**: Psychological, non-monetary, benefit.
- **Psychological sacrifice**: Psychological, non-monetary, sacrifice.
**Value type**, i.e. the degree of transferability to monetary terms, has been stated in four classes. To consider apart from the classification is the degree of irregularity, i.e. if a certain value attribute could be calculated more or less easily at a certain occasion due to time frame and degree of uncertainty. Assumptions have to be made to deal with uncertainties.

Possible to calculate  Ought to be calculated with rather high precision.
Possible to estimate  Ought to be estimated.
Difficult to assess  Ought to be hard to calculate.
Non monetary  Psychological, non-monetary, attributes

*Content of remaining columns in explanation list:*

**No.**
A numbering of the value attributes. The first letter refers to the value feature (see above) and the following figure is a unique number. If a "C" follows the figure, the attribute was only mentioned by the customer. If an "S" follows, the attribute was only mentioned by the service provider.

**No. int.**
Number of interviewees, i.e. how many of the interviewed persons that mentioned the actual attribute. The first figure refers to customer personnel and the second to service provider personnel.

**Act. perception**
Actual perception is an interpretation of the interviewed person’s opinion of the actual value.

- Negative opinion, the service provider does not achieve expected value.
= Either no opinion is expressed, or the value is perceived as neutral or on a level of expectations.
+ Positive opinion, the service provider is meeting and exceeding the expectations.
TOTAL VIEW - CUSTOMER & SERVICE PROVIDER - CUSTOMER PERCEIVED VALUE IN AN AIRCRAFT ENGINE MAINTENANCE RELATIONSHIP

Get

AVAILABILITY OF ENGINES
ORGANIZATION EFFICIENCY
FINANCIAL BENEFITS
COLLABORATIVE PARTNERSHIP
TRUST

Give

Sacrifices to use offering

PREREQUISITES IN INDUSTRY:
LAWS, REGULATIONS AND STANDARDS
HOW

- TURN AROUND TIME
- ENGINE CHANGE ON SCHEDULE
- LONG TIME ON WING
- FLEET OPTIMIZATION
- BACKUP SERVICE

WHAT

AVAILABILITY OF ENGINES

EFFECTS

- TIED UP CAPITAL - MINIMIZATION
- MAINTENANCE COST - MINIMIZATION
- FLEXIBILITY (C)
- REVENUE SECURITY

Mentioned by: customer only, both parties
WHAT

- QUALITY OF DELIVERED ENGINES (C)
- SUPPORTIVE ACTIONS (S)
- DELIVERY ACCURACY
- SIMPLICITY IN CONTACTS
- KNOWLEDGE TRANSFER
- SIMPLICITY IN ROUTINES
- GEOGRAPHICAL CLOSENESS

EFFECTS

- EMPLOYEE EFFICIENCY
- ORGANIZATION MINIMIZATION
- TRAVEL EXPENDITURE SAVINGS (C)

HOW

- ORGANIZATION EFFICIENCY

Mentioned by:
- customer only
- service provider only
- both parties
<table>
<thead>
<tr>
<th>SUPPORT</th>
<th>DOCUMENTS</th>
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**ORGANIZATION - HOW**

- **QUALITY OF DELIVERED ENGINES (Q36-C)**
  - SUPPORTIVE PLANNING (Q16-S)
  - RECEIVING/ACCEPTANCE ASSISTANCE (Q19-S)

- **DELIVERY ACCURACY**
- **SIMPLICITY IN CONTACTS**
- **KNOWLEDGE TRANSFER (Q46)**
- **SIMPLICITY IN ROUTINES**
- **REALISTIC TRAINING SITUATION (Q195-S)**
- **GEOGRAPHICAL CLOSENESS (Q70)**

**ORGANIZATION EFFICIENCY**

- **TOTAL CARE COMMITMENT (Q68)**
- **LONG TERM AGREEMENT (Q72)**
- **OEM-WARRANTIES (T&M) (Q53)**
- **ENSURED TECHNICAL SUPPORT (Q73-C)**
- **SUPPORTIVE ACTIONS (S)**
- **REALISTIC TRAINING SITUATION (Q195-S)**

**Mentioned by:**
- customer only
- service provider only
- both parties

**Continued on next page**
COMMUNICATION SUPPORT DOCUMENTS
TECHNICAL DOCUMENTS
INVOICES
LOGISTICAL DOCUMENTS
CONTRACTS
SUFFICIENT SIZE OF STAFFING
ORGANIZATION - HOW

CUSTOMER SUPPORT
TECHNICAL SUPPORT
DELIVERY INFORMATION
DIALOG - FEEDBACK
EFFECTIVE PROBLEM SOLVING
NEGOTIATION ABILITY
SYSTEMATIC ORGANIZATION
FACE TO FACE MEETINGS
CONFIRMATORY
PEDAGOGY IN EXPLANATIONS
EFH-RATE DETERMINATION - INFORMATION
TIDIENESS
ADVANCE INFORMATION
PROMPTNESS IN DELIVERY
EXPLANATIONS TO FACILITATE CONTROL OF PARTS
EXPLANATION OF CONTENT CHANGES VS CUSTOMER
CORRECTNESS IN CONTENT
FACILITATING CONTENT
FACILITATING FORMAT
ADAPTATION TO CUSTOMER ROUTINES
PRESENTATION PERFORMANCE MEASURES
SIMPLICITY IN STRUCTURE/ VARIANTS
DOCUMENTATION OF INTERPRETATIONS
REFRESHMENT OF CONTENT
CLEARNESS IN WORDING
EASY TO CONTACT
CAREFUL CHECK OF INCOMING DOCUMENTS
- EARLY DELIVERY INFORMATION - EARLY
SWIFTNESS IN RESPONSE
CORRECT INSTANCE

Mentioned by: customer only
service provider only
both parties
Continued from previous page
ORGANIZATION - EFFECTS

**Employee Efficiency**
- Minimization of change costs
  - Engines O67
  - LRUs O64-C
- Administrative efficiency
- Flexibility in personnel planning O35-C
- Personnel "upgrading" O151
- Time saving in travels O33-C

**Organization Minimization**
- Size of staffing O65
- Travel expenditure savings O(C)
- Short travel distance O33-C
- Minimization of coordination travels O47-C

**Mechanic time**
- Administrative time
- Planning/planning O150
- Document handling O150
- Component provision O65-C
- Component control O62
- Simplicity - total cost O105
- Purchasing O148
- Financial administration O148
- Warranty handling O64
- Warranty handling O58 O147-C

**Time saving**
- Mechanics
- Administration
- Aircraft crew

**Usefulness in various tasks**

**General "safety margins"**

**Mentioned by:**
- Customer only
- Both parties
# EXPLANATIONS TO VALUE MAPS

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<th>Value feature</th>
<th>Value attribute explanation</th>
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### AVAILABILITY OF ENGINES

**HOW to achieve Availability of Engines:**

**A1-C Swiftness in corrective actions**
The service provider acts swiftly to correct mistakes or deficient quality in engines/components (caused at last overhaul), making them available for use again.

1 | 0 Cost benefit | Difficult to assess | - |

**A2 Early information on delivery schedule**
The customer receives early information about the delivery situation. In case of risk for delivery delays he can take re-planning actions early.

3 | 2 Cost benefit | Possible to estimate | - | +/- |

**A3 Maintenance quality - engines (for engine change on schedule)**
The hardware quality of a delivered engine should imply engine change on schedule. Defects involve delays.

3 | 1 Cost benefit | Possible to estimate | - | + |

**A4 Maintenance quality - engines (for long time on wing)**
Availability reached thanks to high quality maintenance, well-balanced change of life limited parts included. Imply a longer time on wing and fewer unscheduled removals.

4 | 3 Cost benefit | Difficult to assess | = | = |

**A5-C Priority in shop**
Different aspects of creating availability through priority in shop:
The customer receives the priority in shop that is needed to reach the agreed turn around time.
The customer when having an unscheduled removal receives an engine from shop to change with, i.e. the service gives priority to and force the customer’s engine through shop.
The customer at a general level receives a priority in shop by being a long term engine flight hour customer.

3 | 0 Cost benefit | Possible to calculate | -/= |

**A6 Accuracy of promised turn around time**
Creation of availability by keeping the turn around time stated in contract or agreed upon at time for engine delivery to shop.

1 | 2 Cost benefit | Possible to calculate | - | +/- |
<table>
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<tr>
<td>A7</td>
<td>Accuracy of promised delivery dates</td>
<td></td>
<td>The service provider delivers dates with high precision and keeps to them—a necessity for reaching high availability. Defective accuracy involves increased costs, e.g., for spare engines, spare components, or additional repairs to an engine that was on wing for a longer time than scheduled. Consequences could also be found concerning planning, with in worst case lost flight time. To follow up delivery accuracy in statistics makes facts visible.</td>
<td>5</td>
<td>2</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
</tr>
<tr>
<td>A10</td>
<td>Turn around time – length</td>
<td></td>
<td>General claims for short turn around time for both engines and components.</td>
<td>2</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to calculate</td>
</tr>
<tr>
<td>A11</td>
<td>Informative contents of technical documents</td>
<td></td>
<td>Documents, for both engine and components, must contain the information needed, allowing the customer to take preventive actions reducing overhaul occasions and consequently the availability.</td>
<td>2</td>
<td>3</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>A12-C</td>
<td>Alertness in day-to-day communication</td>
<td></td>
<td>The necessity of an alert service provider, having proactive and daily contacts with the customer to be updated on his operations, which in turn is a prerequisite to be able to respond quickly and be flexible to achieve a high availability.</td>
<td>2</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>A13</td>
<td>Pro-actively communication - before engine in shop</td>
<td></td>
<td>To have a communication concerning what to do/not to do before the engine arrives to the service provider’s shop. Pro-active communication can increase the preparations in shop and consequently lower the turn around time.</td>
<td>1</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>A14-C</td>
<td>Provision of logistical documents - LRUs</td>
<td></td>
<td>Customer receives written order acknowledgements containing delivery dates for LRUs meaning increased security for the customer’s planning and ability for early adaptations.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>A15-C</td>
<td>Provision of logistical documents - engines</td>
<td></td>
<td>Customer receives written order acknowledgements and status reports containing delivery dates for engines meaning increased security for the customer’s planning and ability for early adaptations.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>A16-C</td>
<td>Swiftness to inform about possible problems</td>
<td></td>
<td>Service provider swiftly reports back the cause of an unscheduled removal, so that the customer can decide whether actions for the rest of the engine fleet are necessary to prevent more unscheduled removals.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
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<td>No.</td>
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<td>A17</td>
<td></td>
<td></td>
<td><strong>Swiftness in action</strong> Service provider is alert and rapidly takes correct and specific measures to accomplish necessary actions, especially important at unscheduled removals and AOG-occasions.</td>
<td>4</td>
<td>2</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
</tr>
<tr>
<td>A18-C</td>
<td></td>
<td></td>
<td><strong>Maintenance quality – LRU</strong>s** Maintenance of LRU**s is performed with quality, i.e. they work as intended when delivered and last for stipulated time. Implies contributions to engine long term on wing and secure that engine changes could be performed at set time.</td>
<td>4</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>A21</td>
<td></td>
<td></td>
<td><strong>Geographical closeness – transport time minimized</strong> The geographical closeness between customer and service provider involves fast deliveries of engines and components and consequently decreased total turn around time. The same is applicable for material sent for investigation and when service personnel are called out for on wing jobs.</td>
<td>4</td>
<td>3</td>
<td>Cost benefit</td>
<td>Possible to calculate</td>
</tr>
<tr>
<td>A22</td>
<td></td>
<td></td>
<td><strong>Long term engine maintenance optimization</strong> Thorough planning aimed at achieving long term availability. Involves optimization of life limited parts and achievement of a planning that avoids overhauls of the total engine fleet within the same period of time.</td>
<td>1</td>
<td>3</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
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<tr>
<td>A23</td>
<td></td>
<td></td>
<td><strong>Spare engine use</strong> Plan for utilization of the customer’s own spare engines, avoiding need for investments in more spares or additional costs for rental spare engines.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to calculate</td>
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<tr>
<td>A24</td>
<td></td>
<td></td>
<td><strong>“Robbing” of LRU</strong>s on engines in shop The service provider supplies components by “robbing” from the customer’s own engines in shop. Eliminates the need of increased tied up capital in spare components.</td>
<td>2</td>
<td>3</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
</tr>
<tr>
<td>A25-C</td>
<td></td>
<td></td>
<td><strong>Lending of LRU</strong>s by service provider Customer can hold a low level of tied up capital in LRU<strong>s thanks to help from the supplier to lend LRU</strong>s in case of occasional needs.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
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<tr>
<td>A26</td>
<td></td>
<td></td>
<td><strong>Provision of rental spare engine</strong> Provision of rental spare engines by the service provider implies a higher level of availability and a decreased need for the customer to possess own spare engines and in turn a decreased tied up capital.</td>
<td>2</td>
<td>4</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
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<tr>
<td>A27</td>
<td></td>
<td></td>
<td><strong>Transport preparations</strong> To have transport routines prepared decreases the total turn around time.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
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<tr>
<td>A28</td>
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<td></td>
<td><strong>Service provider’s advice</strong> Customer can keep an engine on wing a longer time thanks to technical support from the service provider. Correct actions can be made to prevent unscheduled removals.</td>
<td>2</td>
<td>3</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
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<tr>
<td>A79-C</td>
<td>Flexibility</td>
<td>Service provider acts in a way that enables flexibility for the customer, e.g. in terms of adaptations to occasional needs or by possibilities to choose among alternatives. To provide increased availability could mean an adaptation of the overhaul occasions to the customer’s traffic situation.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
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<tr>
<td>A81</td>
<td>Packaging</td>
<td>That transport packaging is made correctly avoiding damage to engines and components.</td>
<td>2</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>*/+</td>
</tr>
<tr>
<td>A137</td>
<td>Document correctness</td>
<td>Correct documentation is a prerequisite for engine change according to time schedule.</td>
<td>2</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
<td>-/+</td>
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<tr>
<td>A188-S</td>
<td>In-house maintenance components</td>
<td>Service provider component repairs (spare parts and LRUs) in-house affect the turn around time positively.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
<td></td>
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<tr>
<td>A190-S</td>
<td>Preventive maintenance LRU</td>
<td>Service provider makes preventive overhaul on certain types of LRUs minimizing unscheduled removals and decreasing long term maintenance cost.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td></td>
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<tr>
<td>A191-S</td>
<td>Precision &amp; length TAT related to time on wing</td>
<td>Shorter turn around time for engines provides space for a longer operation of engines, i.e. longer time on wing. Especially applicable when many engines fall for overhaul under a short period of time. A longer turn around time could then force the customer to remove an engine prematurely to enable the overhaul to be completed before the removal of next engine. Increased accuracy of turn around time/delivery dates implies that safety margins in planning could be decreased which in turn offers possibilities for a longer time on wing.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
<td></td>
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<td>A192-S</td>
<td>Optimal maintenance</td>
<td>Service provider performs the maintenance and builds the engines in a way that is optimal for the customer’s operations.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
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<td>A210-S</td>
<td>Receiving/acceptance assistance</td>
<td>Service provider facilitates the engine change by making preparations for customer’s receiving/acceptance routines.</td>
<td>0</td>
<td>2</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
<td></td>
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<td>A211-S</td>
<td>Provision of components</td>
<td>Service provider supports with backup-service of components (both engine and aircraft components).</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
<td></td>
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<tr>
<td>A212-S</td>
<td>Stability in maintenance process</td>
<td>Service provider has internally stable maintenance processes meaning security in turn around times for both scheduled and unscheduled removals.</td>
<td>0</td>
<td>3</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
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<tr>
<td>A213-S</td>
<td>Advice – line maintenance and operational practices</td>
<td>Service provider is able to extend the engine time on wing by advice to customer concerning line maintenance and engine use practice.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
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**AVAILABILITY OF ENGINES:** **EFFECTS of achieved Availability of Engines:**

| A8 | Need of own spare engines | Shorter turn around time implies that the customer decreases his need of own spare engines and consequently his tied up capital. Service provider: also technical support, rental engine availability, and back up service for components contribute to decreased tied up capital. | 2 | 4 | Cost benefit | Possible to calculate | - |-/= |

| A9 | Need of rental spare engines | Service provider has a short turn around time for engines increasing the availability and decreasing the need of rental spare engines. | 2 | 1 | Cost benefit | Possible to calculate | - | - |

| A19 | Need of own spare LRUs | A short turn around time for LRUs imply a low level of tied up capital in spare units. Service provider: also technical support, backup service and the scope of the agreement – a multi-service agreement – contribute to low tied up capital. | 2 | 2 | Cost benefit | Possible to calculate | - | -/+

| A20-C | Need of LRU-robbing of own engines in shop | Through a short turn around time for LRUs will the customer’s supply of own spares be sufficient, consequently a decreased need for the customer to rob own engines in shop for LRUs. | 2 | 0 | Cost benefit | Difficult to assess | - | |

| A29 | Avoidance of cancelled flights – unscheduled situations | To avoid cancelled flights due to an Aircraft on Ground situation caused by engine problems. Important that quality in scheduled maintenance is so high so that these situations could be avoided. If an unscheduled situation occurs, it is important to take steps immediately; technical support and service team use can imply that a removal is avoided, fast access to rental spare engines can decrease time on ground. | 4 | 4 | Revenue benefit | Difficult to assess | =/+ | + |

<p>| A30-C | Avoidance of cancelled flights – problems delivered engine | To avoid lost revenues caused by cancelled flights. Here due to problems detected during/before change to a recently maintained engine. Could be caused by technical quality problems but also problems with documents. | 2 | 0 | Revenue benefit | Possible to calculate | -/| |</p>
<table>
<thead>
<tr>
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<th>Act. perception</th>
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</thead>
<tbody>
<tr>
<td>A31</td>
<td>Avoidance of badwill</td>
<td>To avoid badwill due to delayed or cancelled flights, which in turn could imply passengers choosing another operator or way of traveling. Affects long term revenue for the customer.</td>
<td>1</td>
<td>Revenue benefit</td>
<td>Difficult to assess</td>
<td>=</td>
<td>=</td>
</tr>
<tr>
<td>A32</td>
<td>Punctuality – minimization of delays</td>
<td>Actions (AOG-service) that affects punctuality of flights. The aim is minimal delays when technical problems occur, when delays in turn can imply revenue loss and/or increased costs.</td>
<td>4</td>
<td>Revenue benefit</td>
<td>Possible to estimate</td>
<td>-/+</td>
<td>+</td>
</tr>
<tr>
<td>A138-C</td>
<td>Optimize use of life limited parts</td>
<td>To optimize the use of life limited parts involve a decreased maintenance cost for time and material engines.</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>A139-C</td>
<td>Possibilities for rapid adaptation to internal/external demands</td>
<td>A flexibility from the service provider implying that the customer could rapidly adapt his planning to internal or external demand on flight operations. Facilitates planning of aircraft, engines, crews, and technical staff.</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
<td></td>
</tr>
<tr>
<td>A189-S</td>
<td>Careful use of engines</td>
<td>Customer through training by the service provider becomes aware of how the engines could be flown to decrease risk of damages. Decreases maintenance cost.</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
<td>+</td>
</tr>
</tbody>
</table>

### ORGANIZATION EFFICIENCY

**HOW to achieve Organization Efficiency:**

<p>| O34 | Delivery information – early | To facilitate the customer’s planning – and decrease time for re-planning – through early information about the delivery schedule. | 1 | Cost benefit | Possible to estimate | - | +/- |
| O36-C | Quality of delivered engines | At delivery the engine should be faultless and ready for change, otherwise trouble-shooting and corrective actions will take time for customer. | 1 | Cost benefit | Possible to estimate | - | |
| O37 | Adaptation to customer routines | To adapt documents to customer’s needs is simplifying and time saving. | 2 | Cost benefit | Difficult to assess | = | + |
| O38-C | Advance information | To send documents in advance by e-mail to facilitate for the customer’s staff to prepare the receipt of an engine. Facilitating and time saving. | 1 | Cost benefit | Difficult to assess | = | |</p>
<table>
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<th>Act. perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>O39-C</td>
<td>Explanation of content changes vs. customer</td>
<td>To give clear information about faults found in customer documents, what the correction implies, and how it was verified. Facilitating and time saving.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O40</td>
<td>Facilitating content – technical documents</td>
<td>Documents containing and clearly presenting the information needed by the customer. Facilitates for the customer to obtain the information and therefore time saving.</td>
<td>2</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O41</td>
<td>Correctness in content – technical documents</td>
<td>Correct documentation is vital for time saving. Faults cause time loss for the customer when trouble-shooting. It could also delay the engine change if corrections can not be made fast enough, which in turn would lead to waiting time for staff involved.</td>
<td>3</td>
<td>2</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
</tr>
<tr>
<td>O43</td>
<td>Facilitating format</td>
<td>Document format – paper, electronic, etc. – is adopted to customer's needs. Facilitating and time saving.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O44</td>
<td>Promptness in delivery – technical documents</td>
<td>Technical report is sent immediately when the customer’s personnel have the incident fresh in mind. Facilitating and time saving.</td>
<td>1</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O45</td>
<td>Careful check of incoming documents</td>
<td>Service provider is strict in his control of incoming documents and detects any faults in part or serial numbers. If the component is returned with the same document fault and detected by the customer, it will take time to solve.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O46</td>
<td>Knowledge transfer</td>
<td>Service provider contributes to raise the knowledge level of the customer’s staff – through training or learning in daily contacts, e.g. support situations – imply that they can carry out problems more effectively and reach solutions faster, i.e. save time.</td>
<td>2</td>
<td>3</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O48</td>
<td>EFH-rate determination – information</td>
<td>To get clear information about how the change in flight hour price has been computed together with the first invoice for the year facilitates and saves time.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O50</td>
<td>Correctness in content – invoices</td>
<td>Invoices should be correct when arriving to customer. Faults take time to solve.</td>
<td>2</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O51-C</td>
<td>Facilitating content – invoices</td>
<td>Invoices must contain sufficient information for the customer being able to check them fast and effectively.</td>
<td>2</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
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<tr>
<td>O52-C</td>
<td>Promptness in delivery</td>
<td>invoices</td>
<td>To facilitate for the customer, invoices must be sent relatively fast. Not getting them in reasonable time implies extra administration to look after and make reservations for accrued expenses in the book keeping.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
</tr>
<tr>
<td>O53</td>
<td>Coordination OEM-warranties (T&amp;M)</td>
<td>Service provider has all contacts with OEM concerning OEM warranties (industry practice). Time saving for customer, but if not done efficiently, the customer’s personnel must care about it and then it will be a time sacrificed instead.</td>
<td>1</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O54</td>
<td>Swiftness in response</td>
<td>To have a swift service, give feedback, give replies, inform, perform activities prompt – both concerning technical support and other types of support/information – saves time for the customer.</td>
<td>5</td>
<td>4</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O55</td>
<td>Confirmatory</td>
<td>Service provider puts questions or in other ways confirms to the customer to avoid misunderstandings, securing desired actions are taken, etc.</td>
<td>1</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O56-C</td>
<td>Explanations to facilitate control of parts</td>
<td>Service provider clearly gives feedback in documents to the customer’s engineer when components are changed or borrowed or when numbers mismatch between documents and reality. The cause of the problem is when engine components are changed on different locations and the customer’s staff forget to record the change in the computer system which in turn leads to more problems.</td>
<td>2</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O57</td>
<td>Dialog – feedback</td>
<td>Service provider sees to having a continuous dialog between the parties to keep the customer’s staff updated. Service provider is one step ahead and pro-activeley communicates, informs before the customer actually asks. Creates a good flow of information that saves time. (Though communication from customer to service provider is just as important.) It could concern communication around a specific technical question, generally about the customer’s operations, about planning, or about customer support.</td>
<td>4</td>
<td>3</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O58-C</td>
<td>Fact to face meetings</td>
<td>To have continuous personal meetings could mean effectiveness and problem prevention, thereby being long term time saving.</td>
<td>2</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
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<tr>
<td>O59-C</td>
<td>Delivery information – plain</td>
<td>To get plain and specific notifications about delivery dates by the service provider.</td>
<td>3</td>
<td>Cost</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>O60-C</td>
<td>Sufficient size of staffing</td>
<td>Customer perceives the service provider to have a sufficient size of staffing. The communication is influenced by the staff size thereby affecting customer time consumption.</td>
<td>1</td>
<td>Cost</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>O61-C</td>
<td>Systematic organization</td>
<td>To have a system to systematize what has been communicated in different matters to avoid anything to be forgotten. Time saving for customer.</td>
<td>1</td>
<td>Cost</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>O62-C</td>
<td>Presentation performance measures</td>
<td>Service provider regularly present logistic performance measures that give plain facts and save time for the customer, not having to extract this measures by himself or to ponder upon how the business is working – which turn around times that have been attained for engines and LRU's.</td>
<td>2</td>
<td>Cost</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>O63</td>
<td>Effective problem solving</td>
<td>The service provider's expertise implies time saving for the customer when taking advantage of technical support in case of problems.</td>
<td>2</td>
<td>Cost</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>O66</td>
<td>Total care commitment</td>
<td>A time saving simplicity for the customer when several services are wrapped up into one package, the total care commitment offered by the service provider.</td>
<td>3</td>
<td>Cost</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>O68</td>
<td>Simplicity to use services</td>
<td>Simple and quick to use the services included in the package. Especially in situations demanding fast action, e.g. AOGs. Service provider could also concern a single service as transportation.</td>
<td>2</td>
<td>Cost</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>O70</td>
<td>Geographical closeness</td>
<td>Relatively short geographical distance between service provider and customer implies decreased costs for customer visiting service provider – working time (travelling time and production drop off) and travelling expenses.</td>
<td>2</td>
<td>Cost</td>
<td>Possible to calculate</td>
<td>+</td>
</tr>
<tr>
<td>O72</td>
<td>Long term agreement</td>
<td>It saves time for the customer to have a long term agreement. Applicable both for direct purchasing time and for running in routines with new service provider.</td>
<td>3</td>
<td>Cost</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>O73-C</td>
<td>Ensured technical support</td>
<td>To ensure availability of technical support for all contracted engines saves time for customer staff, knowing it is easy to get help and where to get it.</td>
<td>1</td>
<td>Cost</td>
<td>Difficult to assess</td>
<td>+</td>
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<tr>
<td>O74</td>
<td>Clearness in wording</td>
<td>Contracts between customer and service provider are plainly and clearly written, avoiding misinterpretations and following time for internal and external discussions concerning the matter.</td>
<td>2</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O75</td>
<td>Simplicity in structure/variants</td>
<td>Contracts are clearly structured and built on a general basis. This is to avoid misunderstandings or incorrect actions made due to different terms in different contracts.</td>
<td>2</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O76</td>
<td>Refreshment of content</td>
<td>To have regular contract meetings with involved staff members from customer and service provider organizations clears out question marks and saves time in the long run.</td>
<td>2</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O77</td>
<td>Documentation of interpretations</td>
<td>If uncertainties in contract interpretations have occurred and been cleared out, it is important that the interpretation is documented in writing, easily accessible, for future. Saves time in the long run.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O78-C</td>
<td>Easy to contact</td>
<td>That the service provider has a special phone number for technical support – on and outside working time – facilitates and saves time for customer when needing contact.</td>
<td>1</td>
<td>0</td>
<td>Costs to use</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O82-C</td>
<td>Negotiation ability</td>
<td>Service provider’s personnel have ability to make decisions during negotiations to avoid too much time to be spent in negotiations.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O90</td>
<td>Pedagogy in explanations</td>
<td>Service provider’s staff members explain technical matters in a pedagogic way implies making it easy for the customer personnel to understand and thereby save time.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O111-C</td>
<td>Tidiness</td>
<td>Documentation should be neat and tidy. Corrections and “smearies” in the logbook do not look good in the eyes of authorities and owners.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O132</td>
<td>Warranties (T&amp;M) – rules &amp; routines</td>
<td>Simple and working routines for warranty handling save time for the customer. Applicable for time and material deals.</td>
<td>2</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O195-S</td>
<td>Correct instance</td>
<td>Service provider delivers information and poses questions to the right department/person in the customer’s organization with a smooth flow of information and time savings as a result.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
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<tr>
<td>No.</td>
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<tr>
<td>O196-S</td>
<td>Supportive planning</td>
<td></td>
<td>Service provider takes care about decrees from aviation authorities and manufacturers (AD-notes, service bulletins, OEM campaigns, etc.) and sees to these being considered in the engine maintenance planning. Saves time for customer and gives the customer a better decision support concerning when to take out engines for overhaul.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
</tr>
<tr>
<td>O197-S</td>
<td>Introduction customer staff</td>
<td></td>
<td>Service provider actively participates and introduces new customer staff members to routines between the parties. Time saving as the staff members more quickly are introduced into the work.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
</tr>
<tr>
<td>O198-S</td>
<td>Realistic training situation</td>
<td></td>
<td>Service provider offers an effective knowledge transfer by realizing courses in work shop, where customer personnel get training where his own material is being used.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
</tr>
<tr>
<td>O199-S</td>
<td>Written process description</td>
<td></td>
<td>Service provider facilitates the routines between customer and service provider by documenting how cooperation concerning maintenance should be carried out in a “procedure manual”. Contains information about contact persons, stages in the process, etc.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
</tr>
<tr>
<td>O200-S</td>
<td>Simplicity in organization</td>
<td></td>
<td>Service provider has a simple organization that facilitates for the customer to quickly get the help he needs. The service provider has practiced the system of “single-point-of-contact” implying that one person is responsible for all incoming contacts from customer.</td>
<td>0</td>
<td>2</td>
<td>Cost benefit</td>
</tr>
<tr>
<td>O214-S</td>
<td>Introduction service provider’s staff</td>
<td></td>
<td>Service provider has routines to quickly introduce new personnel, in his own organization, about routines in the relationship between customer and service provider.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
</tr>
<tr>
<td>O215-S</td>
<td>Receiving/acceptance assistance</td>
<td></td>
<td>Service provider saves time for the customer by preparing the receiving/acceptance routine.</td>
<td>0</td>
<td>2</td>
<td>Cost benefit</td>
</tr>
</tbody>
</table>

**ORGANIZATION EFFICIENCY**

**EFFECTS of achieved Organization Efficiency:**

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</tr>
</thead>
<tbody>
<tr>
<td>O33-C</td>
<td>Time saving in travels</td>
<td>Short travel distance</td>
<td>Short geographical distance implies decreased cost for customer when visiting service provider – working time (travelling time and production drop out) and travelling expenses.</td>
<td>2</td>
<td>0</td>
<td>Cost benefit</td>
<td>Possible to calculate</td>
</tr>
<tr>
<td>No.</td>
<td>Value feature</td>
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<tr>
<td>O35</td>
<td>Planning/re-planning</td>
<td></td>
<td>By keeping early delivery promises, the customer’s planning is facilitated and re-planning avoided. If re-planning has to be done it could be extensive concerning many variables as flight routes, crew schedules, technical staff for engine change, etc..</td>
<td>2</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to calculate</td>
</tr>
<tr>
<td>O42</td>
<td>Component control</td>
<td></td>
<td>Documents containing explanations about why components are attached to an engine (changes, loans, etc.) facilitates the customer’s administrative work and saves time.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O47-C</td>
<td>Minimization of coordination travels</td>
<td></td>
<td>Documents (shop finding reports) are detailed enough implying that the customer does not need to send personnel to the work shop to see to findings, coordinate, etc. Saves travel expenses for customer.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
</tr>
<tr>
<td>O64-C</td>
<td>Minimization of change costs - LRUs</td>
<td></td>
<td>It takes time for the customer to conduct a change of an LRU - mechanics to do the change and staff to do the administrative work (document control, computer system registration). If the customer has to take LRUs on and off engines due to lack of spares which in turn depends on too long turn around times, it will mean waste of personnel time.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
</tr>
<tr>
<td>O65-C</td>
<td>Component provision</td>
<td></td>
<td>When the service provider gives notifications about delivery dates and keeps to these, it will imply time savings for the customer. He will not need to search for sent in components or try to get loans when out of own spares.</td>
<td>2</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>O67</td>
<td>Minimization of change costs - engine</td>
<td></td>
<td>It takes time for the customer to conduct an engine change – mechanics to do the change and staff to do the administrative work (document control, computer system registration). If engine changes could be avoided, costs for personnel time could be saved. Different incidents influence the change frequency; accuracy of delivery dates, use of rental spare engines, use of technical support or service team to save an engine on wing.</td>
<td>3</td>
<td>3</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
</tr>
<tr>
<td>O69</td>
<td>Size of staffing</td>
<td></td>
<td>Customer could minimize his own organization – alternatively not need to expand it-- thanks to support from service provider. Implies also a “safety valve” in case of heavy work load, sick leave, and so on.</td>
<td>1</td>
<td>3</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
</tr>
<tr>
<td>No.</td>
<td>Value feature</td>
<td>Value attribute explanation</td>
<td>No.</td>
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</tr>
<tr>
<td>O71</td>
<td>Financial administration</td>
<td>Having a total solution with a flight hour price, saves administrative time for the customer, e.g. for budgeting and invoice handling.</td>
<td>1</td>
<td>3</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>O80-C</td>
<td>Flexibility in personnel planning</td>
<td>Service imply some sort of flexibility for the customer so that he gets opportunity to react to occasional needs or to possibilities to choose among alternatives. May affect planning for several categories of staff.</td>
<td>2</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=/+</td>
</tr>
<tr>
<td>O84</td>
<td>Warranty handling</td>
<td>No time for warranty issues during running engine flight hour agreement. Warranties are only a topic when the agreement ceases to be valid. On the contrary a simplicity in routines handling of warranty claims concerning time and material deals facilitates.</td>
<td>2</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>O147-C</td>
<td>Warranty-handling OEM</td>
<td>Service provider acts swiftly to handle warranty claims towards OEM on behalf of the customer. A swift and smooth handling saves time for the customer. Applicable only for time and material deals.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>O148</td>
<td>Purchasing</td>
<td>Not having to do a purchase for each maintenance occasion saves time.</td>
<td>3</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>O149</td>
<td>Simplicity – total care</td>
<td>The total care commitment implies simplicity and time savings for the customer. Only one delivery address to dispatch to, a limited number of contact ways, LRUs could be left on engine and do not have to be removed, customer could “borrow” LRUs from own engines in shop, the service provider support with planning and similar activities.</td>
<td>3</td>
<td>3</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>O150</td>
<td>Document handling</td>
<td>When the customer receives the technical report in close connection with the actual incidents, he has these in clear memory and can obtain the information more simple and fast.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>O151</td>
<td>Personal “upgrading”</td>
<td>That the customer’s staff members learn more and increase their knowledge thanks to knowledge transfer from the service provider in different situations.</td>
<td>2</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+/-</td>
</tr>
<tr>
<td>No.</td>
<td>Value feature</td>
<td>Value attribute</td>
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<tr>
<td></td>
<td>FINANCIAL BENEFITS</td>
<td>HOW to achieve Financial Benefits:</td>
<td></td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>F49</td>
<td>EFH-rate early information</td>
<td>To get early information about expected flight hour price for the next budget year facilitates budget work and saves thereby time.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>F85</td>
<td>Price per Engine Flight Hour</td>
<td>To give a risk reduction for the customer by an engine flight hour agreement. (Different types of contracts though implying different degrees of risk reduction.) The engine flight hour agreement also provides a simplicity in administration.</td>
<td>4</td>
<td>4</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
<td>+/-/</td>
</tr>
<tr>
<td>F140</td>
<td>Warranties (t &amp; m)</td>
<td>To give a risk reduction for the customer through warranty obligations.</td>
<td>1</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>F193-S</td>
<td>Engine liability shop visit</td>
<td>The liability for the engine (insurance responsibility) for the engine during work shop visits and transports is the service provider’s, implying risk reduction for the customer.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td></td>
</tr>
<tr>
<td>F217-S</td>
<td>Value preserving maintenance routines</td>
<td>The way the service provider performs the engine maintenance with overhauls and inclusion of SB-/AD-notes involve that the asset value of an engine is preserved.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>FINANCIAL BENEFITS</td>
<td>EFFECTS of achieved Financial Benefits:</td>
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</tr>
<tr>
<td>F86</td>
<td>Easy to calculate maintenance cost</td>
<td>The flight hour price gives a simplicity in budgeting and follow-up as the customer pays according to actual hours in air.</td>
<td>1</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>F87</td>
<td>Security of cash flow-level</td>
<td>Engine flight hour agreements imply a balanced cash flow.</td>
<td>1</td>
<td>3</td>
<td>Cost benefit</td>
<td>Possible to calculate</td>
<td>=</td>
</tr>
<tr>
<td>F141</td>
<td>Control of cost</td>
<td>Control of cost and budget outcome through flight hour price and warranties. (Different types of contracts though implying different degree of cost control.)</td>
<td>2</td>
<td>4</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+/-</td>
</tr>
<tr>
<td>F142</td>
<td>Release of capital or forced savings</td>
<td>The cash flow is affected by the engine flight hour agreement as it during contract time implies both “forced savings” and release of capital. Both implying interest effects.</td>
<td>1</td>
<td>3</td>
<td>Cost benefit</td>
<td>Possible to calculate</td>
<td>=</td>
</tr>
<tr>
<td>No.</td>
<td>Value feature</td>
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</tr>
<tr>
<td>F194-S</td>
<td>Benchmarking facilitating</td>
<td>The possibility for the customer to easily compare the agreement with competitors’ offerings thanks to the flight hour price.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>F218-S</td>
<td>Value of engines</td>
<td>Engine value is protected.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
<td>+</td>
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<tr>
<td></td>
<td>COLLABORATIVE PARTNERSHIP</td>
<td>HOW to achieve Collaborative Relationship:</td>
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</tr>
<tr>
<td>P156-C</td>
<td>Flexibility</td>
<td>Cooperation between customer and service provider is done smoothly, without complications, implying need for the service provider to be flexible.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P157</td>
<td>Simplicity</td>
<td>Cooperation is characterized by simplicity and without bureaucratic elements.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P158-C</td>
<td>Continuously</td>
<td>In an extensive cooperation, with many engines included in the maintenance deal, continuous contacts are necessary to keep the service provider updated on customer operating status.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P159</td>
<td>Closeness</td>
<td>Service provider’s and customer’s organizations are close to each other. A way of being – a manifestation of the service provider’s culture – implying that the customer feels the commitment by the service provider.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P160</td>
<td>From all levels in service provider’s organization</td>
<td>Service provider’s management also show interest in the customer, not only contact persons in engineering position.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P161-C</td>
<td>Actively</td>
<td>Interest and commitment from the service provider is manifested actively.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>P162-C</td>
<td>Interest in daily business</td>
<td>Service provider shows an interest in the customer’s daily business, changes in operations and so on.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P163</td>
<td>Interest to expand business offering</td>
<td>Customer feels the active interest from the service provider to expand the business deal – sales persons engage in selling additional services.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>No.</td>
<td>Value feature</td>
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</tr>
<tr>
<td>P164-C</td>
<td>Interest in long term plans</td>
<td>Service provider shows an interest in customer’s long term plans and how the cooperation could be developed as a consequence of these.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>P165</td>
<td>Seriousness</td>
<td>Service provider shows seriousness in contacts and cooperation. Not giving the customer &quot;his left hand&quot; and underestimating the customer's demands.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P166-C</td>
<td>Efficiency</td>
<td>Cooperation runs efficiently.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P167</td>
<td>Right persons in right positions</td>
<td>A working cooperation requires good personal chemistry between customer and service provider staff members. It is also important that the service provider’s team for contacts is composed by the necessary competencies.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P168</td>
<td>Regularity in face to face meetings</td>
<td>Customer perceives that regular personal meetings contribute to facilitate contacts and develop the relationship.</td>
<td>3</td>
<td>3</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>P169</td>
<td>Interest in continuous improvement of collaboration</td>
<td>Service provider shows an interest for a continuously development of the relationship by listening to its customers, to “capture” the customer.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>P170</td>
<td>Commitment</td>
<td>Service provider helps out in all sorts of situations in daily business.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>P171</td>
<td>Understanding</td>
<td>Service provider has an understanding for the customer’s daily business and the problems he meets.</td>
<td>1</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>P173</td>
<td>Optimism</td>
<td>Service provider demonstrates optimism in customer contacts.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P174</td>
<td>Compliance</td>
<td>Service provider demonstrates compliance in customer contacts and shows a real intention to do his utmost to solve the customer’s problem.</td>
<td>1</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P177-C</td>
<td>Network developing – service provider/other operators</td>
<td>Service provider as a complement to daily contacts should provide opportunities to develop the relationship through social activities. This concern the relationship with the service provider but also with other actors in industry.</td>
<td>2</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>No.</td>
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<tr>
<td>P183-C</td>
<td>Provision of information</td>
<td>Service provider provides general information that could be useful for the customer, e.g. information about the aircraft industry worldwide, information about engines, service bulletins expected to come from OEM, offers about components to lend or to buy, and so on.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>-</td>
</tr>
<tr>
<td>P184-C</td>
<td>General picture of fleet and operations</td>
<td>Service provider knows the customer and has a general picture of his operations and engine fleet.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P186</td>
<td>Swiftness</td>
<td>Service provider responds swiftly in all contacts.</td>
<td>1</td>
<td>2</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>=</td>
</tr>
<tr>
<td>P201-S</td>
<td>Marketing events</td>
<td>Service provider establishes social contacts with the customer during different marketing events – exhibitions and similar – and demonstrate engagement for the customer.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
<tr>
<td>P202-S</td>
<td>Non-prestigious</td>
<td>Service provider is not prestigious in cooperation and contacts – that he listens, takes in criticism and, does not explain things away.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
<td>+</td>
</tr>
</tbody>
</table>

**COLLABORATIVE PARTNERSHIP EFFECTS of achieved Collaborative Relationship:**

<table>
<thead>
<tr>
<th>No.</th>
<th>Value feature</th>
<th>Value attribute explanation</th>
<th>No. int.</th>
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<th>Value type</th>
<th>Act. perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>P172</td>
<td>Personal knowledge</td>
<td>That the organizations' staff members have come to know each other. Facilitates contacts.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>P175</td>
<td>Development of relation – routines and documents</td>
<td>That the relationship is developed by mutual improvement of routines and documents to achieve efficiency in both organizations.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>P176</td>
<td>Development of relation – problem solving</td>
<td>To solve specific problems – sometimes before they become problems – concerning planning, technique, and the relationship.</td>
<td>1</td>
<td>1</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>P178-C</td>
<td>Information inflow</td>
<td>Service provider furnishes the customer with common knowledge about the aircraft industry and engine maintenance.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>P179-C</td>
<td>Knowledge development</td>
<td>Provision of knowledge to the customer's organization, indirect training of personnel.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>P180-C</td>
<td>Experience exchange</td>
<td>Exchange of practical experiences between customer and service provider.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
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<td>No.</td>
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<tr>
<td>P181-C</td>
<td>Long term development of business</td>
<td>Cooperation ought to lead to long term business and relationship development.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>P182-C</td>
<td>Network expansion</td>
<td>Customer’s personnel get a larger network among industry people.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
</tr>
<tr>
<td>P185-C</td>
<td>Partner assurance</td>
<td>Customer knows what to expect of the relationship as he and service provider know each other well.</td>
<td>1</td>
<td>0</td>
<td>Cost benefit</td>
<td>Difficult to assess</td>
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<table>
<thead>
<tr>
<th>TRUST</th>
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<tbody>
<tr>
<td>T83</td>
<td>Language</td>
</tr>
<tr>
<td>T102</td>
<td>Service provider’s experience</td>
</tr>
<tr>
<td>T103</td>
<td>Credibility - Turn around times / delivery dates</td>
</tr>
<tr>
<td>T108-C</td>
<td>Regular performance reporting</td>
</tr>
<tr>
<td>T110</td>
<td>Document correctness</td>
</tr>
<tr>
<td>T113</td>
<td>Assurance – information of cost</td>
</tr>
<tr>
<td>T114-C</td>
<td>Day-to-day commitment</td>
</tr>
<tr>
<td>No.</td>
<td>Value feature</td>
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<tr>
<td>T115-C</td>
<td>Flexibility</td>
</tr>
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<td>T116</td>
<td>Helpfulness</td>
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<tr>
<td>T117</td>
<td>Kindness</td>
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<td>T119</td>
<td>Regularity in communication</td>
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<tr>
<td>T120</td>
<td>Warranty handling OEM (T&amp;M)</td>
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<tr>
<td>T121</td>
<td>Long term agreement</td>
</tr>
<tr>
<td>T122</td>
<td>Long relationship</td>
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<tr>
<td>T123-C</td>
<td>Cooperativeness</td>
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<tr>
<td>T124-C</td>
<td>General picture of customer fleet and operations</td>
</tr>
<tr>
<td>T125</td>
<td>Sensitiveness to customer needs</td>
</tr>
<tr>
<td>No.</td>
<td>Value feature</td>
</tr>
<tr>
<td>-----</td>
<td>----------------------------------------</td>
</tr>
<tr>
<td>T126-C</td>
<td>Small company approach</td>
</tr>
<tr>
<td>T127</td>
<td>Rental engines</td>
</tr>
<tr>
<td>T128-C</td>
<td>Contract attention</td>
</tr>
<tr>
<td>T129</td>
<td>Engine Flight Hour agreement</td>
</tr>
<tr>
<td>T130</td>
<td>Multiservice agreement</td>
</tr>
<tr>
<td>T131</td>
<td>Cultural closeness</td>
</tr>
<tr>
<td>T134</td>
<td>Expertise – technical advice</td>
</tr>
<tr>
<td>T135-C</td>
<td>Honesty</td>
</tr>
<tr>
<td>T152-C</td>
<td>ECTM-support</td>
</tr>
<tr>
<td>T153-C</td>
<td>AOG-service</td>
</tr>
<tr>
<td>No.</td>
<td>Value feature</td>
</tr>
<tr>
<td>------</td>
<td>---------------</td>
</tr>
<tr>
<td>T154-C</td>
<td>Sufficient staffing</td>
</tr>
<tr>
<td>T155</td>
<td>Swiftness in action</td>
</tr>
<tr>
<td>T206-S</td>
<td>Time on wing</td>
</tr>
<tr>
<td>T207-S</td>
<td>Good chemistry between staff</td>
</tr>
<tr>
<td>T208-S</td>
<td>Service provider’s resources</td>
</tr>
<tr>
<td>T209-S</td>
<td>Maintenance process control</td>
</tr>
<tr>
<td>T216-S</td>
<td>Brand image</td>
</tr>
<tr>
<td>T217</td>
<td>Quality of maintenance</td>
</tr>
<tr>
<td>No.</td>
<td>Value feature</td>
</tr>
<tr>
<td>-----</td>
<td>---------------</td>
</tr>
<tr>
<td></td>
<td>SACRIFICES TO USE OFFERING</td>
</tr>
<tr>
<td>S88</td>
<td>Lack of freedom to choose cheapest alternative</td>
</tr>
<tr>
<td>S89</td>
<td>OEM-warranties – use to minimize repair cost (T&amp;M)</td>
</tr>
<tr>
<td>S91-C</td>
<td>Price – related to time on wing</td>
</tr>
<tr>
<td>S92</td>
<td>Price – preventive actions to influence EFH-rate on long term</td>
</tr>
<tr>
<td>S93</td>
<td>Risk premium</td>
</tr>
<tr>
<td>S94</td>
<td>Spare engine rent</td>
</tr>
<tr>
<td>S95</td>
<td>Service team charge</td>
</tr>
<tr>
<td>S96-C</td>
<td>Total care premium</td>
</tr>
<tr>
<td>S97-C</td>
<td>Price – related to turn around time</td>
</tr>
<tr>
<td>S98-C</td>
<td>Lack of freedom – use of PMA parts</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>No.</th>
<th>Value feature Value attribute</th>
<th>Value attribute explanation</th>
<th>No. int.</th>
<th>Value dimension</th>
<th>Value type</th>
<th>Act. perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>S99-C</td>
<td>Quality risk – use of rental spare engines</td>
<td>The customer’s opinion that use of rental spare engines could imply compromises with internal quality demands.</td>
<td>1</td>
<td>0</td>
<td>Cost to use</td>
<td>Difficult to assess</td>
</tr>
</tbody>
</table>
| S100 | Price – not included engine maintenance | The fact that the business is built of several types of agreements and that unscheduled maintenance are not included in some of the contracts implies extra cost in case of occurrence. | 1 | 3 | Cost to use | Possible to estimate | - | -/=
| S101 | Price – coordination of scheduled/unscheduled maintenance by service provider | Applicable for contracts with unscheduled maintenance excluded in price. At certain conditions the service provider offers an advanced scheduled maintenance and provides in that manner a lower cost for the customer. | 1 | 2 | Cost benefit | Possible to estimate | + | +
| S133 | Deviation from contract terms | Deviation from agreed contract terms appear across time and causes dissatisfaction and extra costs. It could concern turn around times or certain services that does not turn out as expected. | 2 | 1 | Cost to use | Possible to estimate | - | -
| S143 | Maintenance planning | Planning activities consisting of maintenance planning and the technical department’s coordination with the traffic department, with service provider, and with personnel planning in case of engine changes. | 2 | 2 | Cost to use | Possible to estimate | -/= | =
| S144 | Technical accounting | Work connected with the technical accounting system Amicos. Registrations for traceability of engines and components. Withdrawals of repair orders. Additional reporting to aircraft owner. | 4 | 1 | Cost to use | Difficult to assess | -/= | =
| S145 | Flight hour reporting | Work connected to reporting of engine flight hours; data extraction (technical department), reporting and invoice control (financial department). | 2 | 1 | Cost to use | Possible to estimate | = | =
| S146 | Condition reporting | Work connected with reporting of engine status to the service provider; ECTM-data, boroscope reports, Ground Power Assurance reports and LCF-updating. | 1 | 2 | Cost to use | Possible to estimate | = | =
| S187 | Loss of price knowledge | Customer loosens knowledge about market price as time passes in a long term relation. The knowledge disappears with time, in about three years it is possible to “loose grasp” of the market. | 1 | 1 | Cost to use | Difficult to assess | = | =
<p>| S203-S | Possibility to use LRUs as fault detecting aid | Maintenance of LRUs included in the engine flight hour price gives the customer opportunity to use LRUs for fault detecting and at lack of time omit re-installation of probably faultless LRUs. They are instead sent to shop for repair irrespective of being defect or not. | 0 | 1 | Cost benefit | Difficult to assess | + | |</p>
<table>
<thead>
<tr>
<th>No.</th>
<th>Value feature</th>
<th>Value attribute explanation</th>
<th>No. int.</th>
<th>Value dimension</th>
<th>Value type</th>
<th>Act. perception</th>
</tr>
</thead>
<tbody>
<tr>
<td>S204-S</td>
<td>Engine change costs – extra due to rental spare engine use</td>
<td>Use of rental spare engines from the service provider imply extra costs for the customer because of an extra engine change (removal of rental spare engine).</td>
<td>0</td>
<td>1</td>
<td>Cost to use</td>
<td>Possible to calculate</td>
</tr>
<tr>
<td>S205-S</td>
<td>“Internal” transports of material</td>
<td>Material and documentation could easily be sent with internal mail through customer’s ordinary flights.</td>
<td>0</td>
<td>1</td>
<td>Cost benefit</td>
<td>Possible to estimate</td>
</tr>
</tbody>
</table>
APPENDIX H: QUESTIONNAIRE CONCERNING TIME INFLUENCE ON OFFERING

Below is the questionnaire used when telephone interviews were conducted with personnel in the customer’s organization about different aspects of time consumption. These were all value attributes found within the value feature Organization efficiency. The paths between the “how” and the “effect” sides of the value maps are drawn in connection to the questions.

Each question was only posed to the person that really worked with the task. This implies that almost all questions were just posed to one single person. Information about the interviewees and their positions has been omitted for reasons of confidentiality.

The interviews were held in Swedish and this is a translation of the original questionnaire to English.

PATHS FOR CUSTOMER-PERCEIVED VALUE WITHIN ORGANIZATION EFFICIENCY – QUESTIONS TO CUSTOMER CONCERNING TIME CONSUMPTION

I. Questions concerning engine delivery accuracy and its effect on planning/replanning

<table>
<thead>
<tr>
<th>Delivery information — early and plain</th>
<th>Communication (customer support and/or logistical documents)</th>
<th>Delivery accuracy</th>
<th>Employee efficiency</th>
<th>Administrative efficiency</th>
<th>Planning/replanning</th>
</tr>
</thead>
</table>

**Scenario A.**
An engine is sent for overhaul. There is no immediate planned need for this engine at time for estimated delivery. Consider the following initial position: You get an exact delivery date, one that will be 100% correct, as early as the first delivery notification, i.e. within a week from the shop was received by the shop.

1) Delivery notification within a week from the reception of engine in shop:
   a) How many work hours for re-planning will it cause if the first delivery notification instead has a precision of 2 calendar days?
      - No extra time
      - < 2 hours
      - 2 - 4 hours
      - 5 - 8 hours
      - ... hours
   b) If the first delivery notification instead has a precision of 7 calendar days?
      - No extra time
      - < 2 hours
      - 2 - 4 hours
      - 5 - 8 hours
      - ... hours
2) Delivery notification 3 weeks before delivery:
   a) Instead you get the exact delivery date, the one that will be 100% correct, not until 3 weeks before delivery. How many hours for re-planning will that cause compared to the initial position?
      ☐ No extra time  ☐ < 2 hours  ☐ 2 - 4 hours  ☐ 5 - 8 hours  ☐ .... hours

   b) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 2 calendar days instead of being precise?
      ☐ No extra time  ☐ < 2 hours  ☐ 2 - 4 hours  ☐ 5 - 8 hours  ☐ .... hours

   c) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 7 calendar days instead of being precise?
      ☐ No extra time  ☐ < 2 hours  ☐ 2 - 4 hours  ☐ 5 - 8 hours  ☐ .... hours

3) Delivery notification 2 weeks before delivery:
   a) Instead you get the exact delivery date, the one that will be 100% correct, not until 2 weeks before delivery. How many hours for re-planning will that cause compared to the initial position?
      ☐ No extra time  ☐ < 2 hours  ☐ 2 - 4 hours  ☐ 5 - 8 hours  ☐ .... hours

   b) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 2 calendar days instead of being precise?
      ☐ No extra time  ☐ < 2 hours  ☐ 2 - 4 hours  ☐ 5 - 8 hours  ☐ .... hours

   c) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 5 calendar days instead of being precise?
      ☐ No extra time  ☐ < 2 hours  ☐ 2 - 4 hours  ☐ 5 - 8 hours  ☐ .... hours

4) Delivery notification 1 week before delivery:
   a) Instead you get the exact delivery date, the one that will be 100% correct, not until 1 week before delivery. How many hours for re-planning will that cause compared to the initial position?
      ☐ No extra time  ☐ < 2 hours  ☐ 2 - 4 hours  ☐ 5 - 8 hours  ☐ .... hours

   b) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 2 calendar days instead of being precise?
      ☐ No extra time  ☐ < 2 hours  ☐ 2 - 4 hours  ☐ 5 - 8 hours  ☐ .... hours

   c) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 4 calendar days instead of being precise?
      ☐ No extra time  ☐ < 2 hours  ☐ 2 - 4 hours  ☐ 5 - 8 hours  ☐ .... hours

Scenario B.
An engine is sent for engine overhaul. There is an immediate planned need for this engine at time for estimated delivery.
Consider the following initial position: You get an exact delivery date, one that will be 100% correct, as early as the first delivery notification, i.e. within a week from the shop was received by the shop.
5) Delivery notification within a week from the reception of engine in shop:
a) How many work hours for re-planning will it cause if the first delivery notification instead has a precision of 2 calendar days?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours

b) If the first delivery notification instead has a precision of 7 calendar days?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours

6) Delivery notification 3 weeks before delivery:
a) Instead you get the exact delivery date, the one that will be 100% correct, not until 3 weeks before delivery. How many hours for re-planning will that cause compared to the initial position?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours

b) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 2 calendar days instead of being precise?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours

c) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 7 calendar days instead of being precise?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours

7) Delivery notification 2 weeks before delivery:
a) Instead you get the exact delivery date, the one that will be 100% correct, not until 2 weeks before delivery. How many hours for re-planning will that cause compared to the initial position?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours

b) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 2 calendar days instead of being precise?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours

c) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 5 calendar days instead of being precise?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours

8) Delivery notification 1 week before delivery:
a) Instead you get the exact delivery date, the one that will be 100% correct, not until 1 week before delivery. How many hours for re-planning will that cause compared to the initial position?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours

b) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 2 calendar days instead of being precise?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours

c) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 4 calendar days instead of being precise?
   - No extra time
   - < 2 hours
   - 2 - 4 hours
   - 5 - 8 hours
   - .... hours
9) Source of information
a) What are the implications of how the delivery notice is delivered - if it is given informally by customer support (e-mail or telephone) or by an “official” document as an order acknowledgement or a regularly provided status report concerning engines in shop?

b) How often would it be optimal (from the viewpoint of time consumption) that a status report is delivered?

- Every second
- Once a week
- Twice a week
- Daily

Other comments concerning delivery accuracy for engines connected to time consumption:

II. Questions concerning delivery accuracy for LRUs (line replacement units) and its effect concerning planning/re-planning

**Scenario A.**
An LRUs is sent for repair. There is no immediate planned need for this unit at time for planned delivery.

*Consider the following initial position:* You get an exact delivery date, one that will be 100% correct, as early as the first delivery notification, i.e. promptly after the LRU has been received by the shop.

10) *Delivery notification promptly after the shop has received the LRU:*
a) How many work hours for re-planning will it cause if the first delivery notification instead has a precision of 3 calendar days?

- No extra time
- < 2 hours
- 2 - 4 hours
- 5 - 8 hours

---

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11) Delivery notification a week after the shop has received the LRU, i.e. 2 weeks before planned delivery:

a) Instead you get the exact delivery date, the one that will be 100% correct, not until one week after the shop has received the LRU. How many hours for re-planning will that cause compared to the initial position?

- No extra time
- < 2 hours
- 2 - 4 hours
- 5 - 8 hours
- .... hours

b) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 3 calendar days instead of being precise?

- No extra time
- < 2 hours
- 2 - 4 hours
- 5 - 8 hours
- .... hours

12) Delivery notification 2 weeks after the shop has received the LRU, i.e. one week before planned delivery:

a) Instead you get the exact delivery date, the one that will be 100% correct, not until one week before delivery. How many hours for re-planning will that cause compared to the initial position?

- No extra time
- < 2 hours
- 2 - 4 hours
- 5 - 8 hours
- .... hours

b) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 3 calendar days instead of being precise?

- No extra time
- < 2 hours
- 2 - 4 hours
- 5 - 8 hours
- .... hours

Scenario B.

An LRU is sent for repair. There is an immediate planned need for this unit at time for planned delivery.

Consider the following initial position: You get an exact delivery date, one that will be 100% correct, as early as the first delivery notification, i.e. promptly after the LRU has been received by the shop.

13) Delivery notification promptly after the shop has received the LRU:

a) How many work hours for re-planning will it cause if the first delivery notification instead has a precision of 3 calendar days?

- No extra time
- < 2 hours
- 2 - 4 hours
- 5 - 8 hours
- .... hours

14) Delivery notification a week after the shop has received the LRU, i.e. 2 weeks before planned delivery:

a) Instead you get the exact delivery date, the one that will be 100% correct, not until one week after the shop has received the LRU. How many hours for re-planning will that cause compared to the initial position?

- No extra time
- < 2 hours
- 2 - 4 hours
- 5 - 8 hours
- .... hours

b) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 3 calendar days instead of being precise?

- No extra time
- < 2 hours
- 2 - 4 hours
- 5 - 8 hours
- .... hours
15) Delivery notification 2 weeks after the shop has received the LRU, i.e. one week before planned delivery:
   a) Instead you get the exact delivery date, the one that will be 100% correct, not until one week before delivery. How many hours for re-planning will that cause compared to the initial position?
   □ No extra time □ < 2 hours □ 2 - 4 hours □ 5 - 8 hours □ .... hours

   b) How many working hours for re-planning will it cause if the delivery notification instead was given with a precision of 3 calendar days instead of being precise?
   □ No extra time □ < 2 hours □ 2 - 4 hours □ 5 - 8 hours □ .... hours

16) Source of information
   a) What are the implications of how the delivery notice is delivered - if it is given informally by customer support (e-mail or telephone) or by an “official” document as an order acknowledgement or a regularly provided status report concerning LRUs in shop?
   ..........................................................................................................................................
   ..........................................................................................................................................

   b) How often would it be optimal (from the view point of time consumption) that a status report is delivered?
   □ Every second week □ Once a week □ Twice a week □ Daily □ ....

   Other comments concerning delivery accuracy security for LRUs connected to time consumption:
   ..........................................................................................................................................
   ..........................................................................................................................................
   ..........................................................................................................................................

III. Questions concerning technical delivery documents for engines and their effect concerning time consumption

<table>
<thead>
<tr>
<th>Correctness in content</th>
<th>Technical documents</th>
<th>Delivery accuracy</th>
<th>Employee efficiency</th>
<th>Administrative efficiency</th>
<th>Document handling</th>
</tr>
</thead>
</table>

Initial position: Imagine that the technical documentation (log book-inserts and airworthiness certificat JAA Form One) that are delivered with the engine correspond exactly with the physical engine and the technical accounting system (Amicos) when it comes to part and serial numbers.

Scenario A
17) You detect a discrepancy at the reception – the documents do not match the engine and Amicos with regard to one serial number.
   a) How often does a situation like this occur (share of total number of receptions)?
   □ Never □ < 5% □ 6-10% □ 10-25% □ 26-50% □ >50% □ .... %
b) How many hours extra does it imply in direct working time for the quality controller (certifying staff)?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- >5 hours
- .... hours

c) How many extra hours for the engine engineer?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- >5 hours
- .... hours

d) Now many extra hours totally for the mechanics installing the engine?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- >5 hours
- .... hours

Scenario B

18) You detect a discrepancy at the reception – Amicos does not match the documents and the engine with regard to one serial number.

a) How often does a situation like this occur (share of total number of receptions)?

- Never
- < 5%
- 6-10%
- 10-25%
- 26-50%
- >50%
- .... %

b) How many hours extra does it imply in direct working time for the quality controller (certifying staff)?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- >5 hours
- .... hours

c) How many extra hours for the engine engineer?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- >5 hours
- .... hours

d) Now many extra hours totally for the mechanics installing the engine?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- >5 hours
- .... hours

Scenario C

19) You detect a discrepancy at the reception – the engine does not match the documents and Amicos concerning one serial number.

a) How often does a situation like this occur (share of total number of receptions)?

- Never
- < 5%
- 6-10%
- 10-25%
- 26-50%
- >50%
- .... %

b) How many hours extra does it imply in direct working time for the quality controller (certifying staff)?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- >5 hours
- .... hours

c) How many extra hours for the engine engineer?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- >5 hours
- .... hours

d) Now many extra hours totally for the mechanics installing the engine?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- >5 hours
- .... hours

Other comments concerning technical documents and time consumption:

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IV. Questions concerning technical documentation – engine condition report - and its effects concerning time consumption

<table>
<thead>
<tr>
<th>Promptness in delivery</th>
<th>Technical documents</th>
<th>Delivery accuracy</th>
<th>Employee efficiency</th>
<th>Administrative efficiency</th>
<th>Document handling</th>
</tr>
</thead>
</table>

20) Imagine that engine condition report (named “report of work carried out” in agreement) is delivered exactly according to agreement, i.e. 30 days (4 weeks) after delivery of engine.

a) What does it imply in direct working time if the report instead is delivered 2 weeks after engine delivery?

- None
- It increases
- It decreases
  - If increased/decreased, with how many hours?
    - < 1 hour
    - 1 - 2 hours
    - 3 - 4 hours
    - > 5 hours
    - .... hours

b) What does it imply in direct working time if the report instead is delivered in direct connection to the engine delivery?

- None
- It increases
- It decreases
  - If increased/decreased, with how many hours?
    - < 1 hour
    - 1 - 2 hours
    - 3 - 4 hours
    - > 5 hours
    - .... hours

c) What does it imply in direct working time if the report instead is delivered not until 6 week after the engine delivery?

- None
- It increases
- It decreases
  - If increased/decreased, with how many hours?
    - < 1 hour
    - 1 - 2 hours
    - 3 - 4 hours
    - > 5 hours
    - .... hours

Other comments concerning technical documentation and time consumption:

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V. Questions concerning supportive actions from service provider and effects concerning time consumption

<table>
<thead>
<tr>
<th>Receiving/acceptance assistance</th>
<th>Supportive actions</th>
<th>Employee efficiency</th>
<th>Administrative efficiency</th>
<th>General hours saving</th>
</tr>
</thead>
</table>

21) Imagine that the receiving procedure (control of documents against physical engine/LRUs) was prepared by the service provider in a way that you directly could accept the engine in the receiving/acceptance routine in Amicos.
a) What would that imply in direct working time (time saving) for the quality controller (certifying staff)?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- > 5 hours
- .... hours

b) What would that imply in direct working time (time saving) for the engine engineer?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- > 5 hours
- .... hours

Other comments concerning supportive actions from the service provider and time consumption:

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..........................................................................................................................................
..........................................................................................................................................

VI. Questions concerning flow of information and its effect on time consumption

<table>
<thead>
<tr>
<th>Systematic organisation</th>
<th>Customer support</th>
<th>Simplicity in contacts</th>
<th>Employee efficiency</th>
<th>Administrative efficiency</th>
<th>General hours saving</th>
</tr>
</thead>
</table>

Today there is an extensive exchange of information by e-mail. Imagine that the information was instead accessible on an internet homepage (service provider’s responsibility, but with opportunities to update both from customer and service provider wherever applicable).

22) An engine will be maintained – a scheduled engine overhaul – and information about this engine has been exchanged to and fro since the last maintenance occasion (HSI) and a more extensive communication concerning planning and scope of overhaul has been going on for the last 3 – 4 months. We are now at the point of time when the repair order is to be sent to the service provider.

a) What would it imply in direct working time (time saving) to the engine engineer if all information was easily accessible on an internet homepage?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- > 5 hours
- .... hours

b) What would it imply in direct working time (time saving) for the personnel at the purchasing department (issuer of repair order)?

- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- > 5 hours
- .... hours

c) Is there any other category of personnel that would be affected in terms of time saving? By how many hours?

Personnel category: ........................................................

Personnel category: ........................................................

Personnel category: ........................................................
23) Imagine that the information about the engine status in shop also was accessible on the homepage.

a) How often would it be optimal that such information was updated?
- Every second week
- Once a week
- Twice a week
- Daily
- ....

b) What would it imply in direct working time (time saving) for the engine engineer if this information was accessible on the homepage instead of getting an e-mailed status report?
- None
- < 1 hour
- 1 - 2 hours
- 3 - 4 hours
- 5 hours
- .... hours

24) Imagine that you refrain from a long term maintenance agreement and instead choose to do a purchase at every occasion for overhaul (scheduled overhaul) for every single engine. We then presume that this would be the normal form for purchasing and that all personnel worked after well-established routines with prepared models and check lists.

In time for purchase all time should be included, from the start of purchase (preparation of quotation) until it has been concluded (acceptance of incoming invoice).

a) What would it imply in direct working time for the personnel at the purchasing department to do such a purchase?
- < 4 hours
- 4-8 hours
- 2-3 days
- 3 days
- .... hours/days

b) For the technical director?
- < 1 hour
- 1-4 hours
- 5-8 hours
- 2-3 days
- .... hours/days

c) For the engine engineer?
- < 1 hour
- 1-4 hours
- 5-8 hours
- 2-3 days
- .... hours/days
d) Is any other personnel category affected? With how many hours?
Personnel category: ............................................
☑ < 1 hour ☐ 1-4 hours ☐ 5-8 hours ☐ 2-3 days ☐ .... hours/days
Personnel category: ............................................
☑ < 1 hour ☐ 1-4 hours ☐ 5-8 hours ☐ 2-3 days ☐ .... hours/days

Other comments concerning purchasing and time consumption:
..........................................................................................................................................
..........................................................................................................................................
..........................................................................................................................................
..............................................................................................................................
### Appendix I: Definitions of Vital Concepts

<table>
<thead>
<tr>
<th>Concept</th>
<th>Short description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Actions</td>
<td>The most detailed interaction level between two parties in a relationship, e.g. a phone call or a visit (Holmlund, 1997, p. 331). In the studied case exemplified by a contact regarding work scope for an engine. (p. 22 ff., p. 182 ff.)</td>
</tr>
<tr>
<td>Actors</td>
<td>Actors are the two companies involved in a dyadic relationship, i.e. the customer and the service provider (in a business-to-business context consisting of several individuals). But also companies in the supply network, other close organizations, and the public environment are actors exerting influence on the dyad. (Holmlund, 1997) (p. 47 table 2-1, p. 180 ff.)</td>
</tr>
<tr>
<td>Availability of engines</td>
<td>One of the value features describing the essence of customer-perceived value in the studied relationship. Availability of engines concerns the customer’s need for engines in working order. This value feature is found as one of three from the product level on the benefit side of customer-perceived value. (p. 101 ff.) Availability of engines originates from the flows of goods and information from the service provider (p. 149, 156 ff.). Effects in the customer's organization are comprised of the monetary flows of cost benefits and revenue benefits (p. 164 ff., 170 ff.).</td>
</tr>
<tr>
<td>Benefits</td>
<td>The “get-component” of the customer-perceived value concept, when expressed in general terms. Benefits is thus a unifying term that should be filled with specific substance focusing what a customer receives from a relationship with a service provider. (p. 9 ff., 28 ff., p. 190 ff., p. 199 ff., appendix A)</td>
</tr>
<tr>
<td>Collaborative partnership</td>
<td>One of the value features describing the essence of customer-perceived value in the studied relationship. Collaborative partnership consists of benefits derived from the interaction between the parties on a more general level than the specific product. (p. 113 ff.) Collaborative partnership originates from the flow of involvement from the service provider (p. 149 ff., p. 156 ff.). Effects in the customer’s organization are comprised of the monetary flow of cost benefits (p. 164 ff., 170 ff.).</td>
</tr>
<tr>
<td>Core service</td>
<td>The core service (or goods) is the heart of the package, the reason for a service provider to be on the market (Grönroos, 2000). (p. 24 ff., p. 47 table 2-1, p. 191 ff.)</td>
</tr>
<tr>
<td>Costs to use</td>
<td>A value dimension implying a positive influence on the customer’s costs, i.e. decreased costs (p. 89 ff., p. 126, p. 163 ff., p. 193 ff.).</td>
</tr>
<tr>
<td>CPV</td>
<td>Used as abbreviation for Customer-perceived value, see below.</td>
</tr>
<tr>
<td>Customer-perceived value</td>
<td>The concept in focus for the investigation, consequently discussed all through the thesis. The concluding definition of the concept is: “Customer-perceived value in business-to-business contexts is the customer’s perception of the net-worth of benefits and sacrifices derived from a relationship with a service provider.” Due to the complexity of the concept a complementary list is provided, illuminating the many facets of the concept. See section 7.3, starting at page 199.</td>
</tr>
<tr>
<td>Effect of value</td>
<td>The part of the proposed explanatory model explaining the monetary effects of customer-perceived value inside the customer’s organization, i.e. eventually traced to the income statement (p. 163 ff.). This part is derived from the “effect-side” of the value maps, presented in chapter 5.</td>
</tr>
</tbody>
</table>

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158 Page numbers given refers to a selection of subheadings under which the concept is considered, i.e. this is not a complete index of all occurrences.
<table>
<thead>
<tr>
<th>Concept</th>
<th>Short description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Episodes</td>
<td>An interaction level involving several interconnected actions perceived as a natural entity of interaction, e.g. a negotiation process (Holmlund, 1997, p. 332). In the studied case exemplified by a service occasion for an engine. (p. 22 ff., p. 182 ff.)</td>
</tr>
<tr>
<td>Facilitating services</td>
<td>Facilitating services (or goods) are necessary in the total service offering. If they are lacking, the core service cannot be consumed. (Grönroos, 2000) Due to their role as mandatory in order to provide customer accessibility to the core service and the fact that the label facilitating services was misunderstood by the interviewees in this study – I have chosen to re-label the facilitating services into the more appropriate mandatory services. (p. 24 ff., p. 47 [table 2-1], p. 191 ff.)</td>
</tr>
<tr>
<td>Financial benefits</td>
<td>One of the value features describing the essence of customer-perceived value in the studied relationship. Financial benefits concern the financial aspects of the business deal. This value feature is found as one of three from the product level on the benefit side of customer-perceived value. (p. 111 ff.) Financial benefits originate from the flows of risk and information from the service provider (p. 149 ff., 156 ff.). Effects in the customer’s organization are comprised of the monetary flows of cost benefits and interest effects (p. 164 ff., 170 ff.).</td>
</tr>
<tr>
<td>Flow</td>
<td>“Flow” is the central notion explaining the sources of customer-perceived value, thereby intersecting the value features. Five types of flow concern how the service provider creates value: the flows of goods, information, involvement, risk, and money. Four types of flow explain the effect of value when reaching the customer’s income statement: the flows of revenue benefits, cost benefits, interest effects, and costs to use. In chapter 6, starting at page 140, flow is discussed and positioned in the proposed explanatory model of customer-perceived value. Flow is also integrated in the conceptual model of customer-perceived value, see section 7.2.2.1, page 190 ff.</td>
</tr>
<tr>
<td>Interaction levels</td>
<td>A categorization of interactions within a relationship into hierarchical levels (Liljander &amp; Strandvåg, 1995; Holmlund, 1997, 2004). Acts (or activities) are formed to episodes that are built into sequences, and together forming the total relationship between two parties. Each level implies an increased extension in time. In addition the partner base consists of all external actors influencing the focal parties in the relationship. (p. 22 ff., p. 182 ff.)</td>
</tr>
<tr>
<td>Mandatory services</td>
<td>Mandatory services (or goods) are equivalent to Grönroos (2000) facilitating services. Due to their role as mandatory in order to provide customer accessibility to the core service and the fact that the label facilitating services was misunderstood by the interviewees in this study – I have chosen to re-label the facilitating services into the more appropriate mandatory services. (p. 191 ff.)</td>
</tr>
<tr>
<td>Organization efficiency</td>
<td>One of the value features describing the essence of customer-perceived value in the studied relationship. Organization efficiency concerns the customer’s need of efficient processes and routines when interacting with the service provider, in order to reduce the man-hours needed to get a working business deal. This value feature is found as one of three from the product level on the benefit side of customer-perceived value. (p. 106 ff.) Organization efficiency originates from the flows of information and goods from the service provider (p. 149 ff., 156 ff.) Effects in the customer’s organization are comprised of the monetary flows of cost benefits (p. 164 ff., 170 ff.).</td>
</tr>
<tr>
<td>Origin of value</td>
<td>The part of the proposed explanatory model explaining the origin of customer-perceived value, i.e. how the service provider creates value for the customer (p. 142 ff.). This part is derived from the “how-side” of the value maps, presented in chapter 5.</td>
</tr>
<tr>
<td>Product</td>
<td>According to ISO standard (SS-EN ISO 9000:2000), the result of a process comprising elements from four generic product categories: services, software, hardware, and processed materials (p. 1, 24 ff.).</td>
</tr>
</tbody>
</table>

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<table>
<thead>
<tr>
<th>Concept</th>
<th>Short description</th>
</tr>
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<tbody>
<tr>
<td>Product features</td>
<td>Benefits received from the total service offering, i.e. the product level of the relationship. The product features are built by goods, software, and services combined to a unity within the total service offering and in addition influenced by the service production process and the service provider’s prerequisites to provide the offering. It is the essence of the offering, expressing how the needs of the customer are met. The product features are equivalent to value features derived from a product. (p. 24 ff., p. 162 ff., p. 192)</td>
</tr>
<tr>
<td>Psychological benefits</td>
<td>A value dimension implying a non-monetary benefit for the customer on a psychological level (p. 89 ff., p. 126).</td>
</tr>
<tr>
<td>Psychological sacrifices</td>
<td>A value dimension implying a non-monetary sacrifice for the customer on a psychological level (p. 89 ff., p. 126).</td>
</tr>
<tr>
<td>Redemption value</td>
<td>The remaining customer-perceived value when the interaction process is completed. A value that might be retrieved in case of reselling (p. 47 [table 2-1], p. 185 ff.).</td>
</tr>
<tr>
<td>Relationship</td>
<td>All dealings that occurs between a customer and a service provider, i.e. connected to the total service offering and the partnership. An interaction level consisting of the entire relationship, i.e. all sequences, episodes, and actions occurring between the parties (Holmlund, 1997, p. 97). In this study the long-term relationship between the aircraft operator (the customer) and the engine maintenance workshop (the service provider). (p. 22 ff., p. 182 ff.) The customer-perceived value from a relationship is created by benefits on three levels – product level, partnership level, and psychological level – and with sacrifices given subtracted (p. 98 ff., p. 156 ff., p. 170 ff., p. 190 ff.).</td>
</tr>
<tr>
<td>Relationship costs</td>
<td>“Relationship costs are the additional costs on top of price that occur for a customer due to the fact that he has purchased something from a given supplier or service firm and entered into a relationship with this organization. The relationship costs are of three different types: direct relationship costs; indirect relationship costs; and psychological costs.” (Grönroos, 2000, p. 133) (p. 126 ff.)</td>
</tr>
<tr>
<td>Direct</td>
<td>Costs for the customer depending on the internal systems he has to maintain due to the solution offered by the service provider, e.g. office space, additional equipment, personnel, or software (Grönroos, 2000, p. 133).</td>
</tr>
<tr>
<td>Indirect</td>
<td>A customer’s extra costs for time and other resources in order to maintain a relationship when it does not work out as it should, e.g. costs for complaints, standstill costs, and due to low-quality work of the service provider. (Grönroos, 2000, p. 134) (late in the section starting at p. 145, p. 193 ff.).</td>
</tr>
<tr>
<td>Psychological</td>
<td>Psychological costs arise when the customer staff feel a lack of trust in a service provider. This defective trust causes for example worries about the relationship, insecurity, and lack of control. (Grönroos, 2000, p. 135) (p. 44 ff., p. 118 [footnote 100], late in section starting at p. 145, p. 152 ff.)</td>
</tr>
<tr>
<td>Revenue benefits</td>
<td>A value dimension implying increased or secured income for the customer (p. 89 ff., p. 126, p. 163 ff., p. 193 ff.).</td>
</tr>
<tr>
<td>Sacrifices</td>
<td>The “give-component” of the customer-perceived value concept, when expressed in general terms. Sacrifices is thus a unifying term that should be filled with specific substance focusing what a customer has to give to utilize the benefits from a relationship with a service provider. (p. 9 ff., p. 28 ff., p. 190 ff., p. 199 ff., appendix A)</td>
</tr>
<tr>
<td>Sacrifices to use offering</td>
<td>A value feature identified in the studied relationship, describing what the customer has to give to take advantage of the benefits received from the relationship. Sacrifices to use offering includes the price to pay for the offering, but also other sacrifices to engage in the relationship as for example man-hours (p. 121 ff.). Sacrifices to use offering originates from the flows of money, information, and involvement from the service provider (p. 149 ff., p. 156 ff.). Effects in the customer’s organization are comprised of the monetary flows of costs to use (p. 164 ff., p. 170 ff.).</td>
</tr>
<tr>
<td>Concept</td>
<td>Short description</td>
</tr>
<tr>
<td>----------------------</td>
<td>-----------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><strong>Sequences</strong></td>
<td>A larger entity of interconnected interactions within a relationship consisting of a number of episodes, e.g. a campaign or a project (Holmlund, 1997, p. 96). In the studied case exemplified by a business agreement for maintenance of engines. (p. 22 ff., p. 182 ff.)</td>
</tr>
<tr>
<td><strong>Stochasticity</strong></td>
<td>Stochasticity concerns one of two aspects of uncertainty that has to be considered in monetary assessments of customer-perceived value (substantiality captures the other one). Stochasticity focuses on the probability of a certain incident to occur and, if it does, how often. Assumptions have to be made to deal with stochasticity when calculations of value are made. (p. 126 ff., p. 167 ff., p. 197)</td>
</tr>
<tr>
<td><strong>Substantiality</strong></td>
<td>Substantiality concerns one of two aspects of uncertainty that has to be considered in monetary assessments of customer-perceived value (stochasticity captures the other aspect). Substantiality comprises the problem of how tangible a value attribute is, with what degree of exactness figures can be put on the attribute (the value type is in fact a categorization of substantiality). Assumptions have to be made to deal with substantiality when calculations of value are made. (p. 126 ff., p. 167 ff., p. 197)</td>
</tr>
<tr>
<td><strong>Supporting services</strong></td>
<td>Supporting services are added into the total service offering in order to increase the value of the offering and/or differentiate it from competing offerings (Grönroos, 2000). (p. 24 ff., p. 47 [table 2-1], p. 191 ff.)</td>
</tr>
<tr>
<td><strong>Total service offering</strong></td>
<td>&quot;Physical product components, service components, information, personal attention and other elements of customer relationships are combined into a total service offering&quot; (Grönroos, 2000, p. 7). In this study the total service offering is equivalent to the combination of the basic service package and the augmented service offering (Grönroos, 2000, p. 165 ff.). The basic service package consists of the core service, the facilitating services, and the supporting services – where services also can be goods. (p. 24 ff., p. 46 ff., p. 191 ff.) (The facilitating services were however in this study re-labeled to mandatory service, p. 191 ff.). The augmented service package holds the process dimensions of the service and the interactions between the parties, i.e. the service production and delivery.</td>
</tr>
<tr>
<td><strong>Trust</strong></td>
<td>This value feature describes the essence of customer-perceived value on a psychological level of the relationship. Trust should be interpreted as the customer’s feelings of confidence for the relationship, the service provider, and the product, giving him peace of mind (p. 118 ff.). Trust is an effect of all dealings within the relationship, but acts concurrently as a filter when judgments of value acquired from the relationship are made. (p. 152 ff, p. 168 ff., p. 194 ff.)</td>
</tr>
<tr>
<td><strong>Value attributes</strong></td>
<td>Specific actions and circumstances, or effects of these, that imply customer-perceived value at the most detailed level, i.e. the smallest constituents of customer-perceived value (p. 89 ff., p. 195 ff.). The value maps in chapter 5 are built from value attributes, grouped into value drivers, and finally value features. See also appendix G for the detailed value maps and the explanation list of value attributes.</td>
</tr>
<tr>
<td><strong>Value dimension</strong></td>
<td>A classification concerning how a value attribute affects the customer’s income statement: revenue benefits, cost benefits, costs to use, psychological benefits, and psychological sacrifices (p. 89 ff., p. 126).</td>
</tr>
<tr>
<td><strong>Value drivers</strong></td>
<td>The value drivers are grounded in the value attributes and illustrate how value is “driven” to the customer, thereby illuminating different facets of the overarching value features (p. 89 ff., p. 195 ff.). The value drivers are visible in the value maps in chapter 5. See also appendix G for the complete value maps.</td>
</tr>
<tr>
<td>Concept</td>
<td>Short description</td>
</tr>
<tr>
<td>------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>Value features</td>
<td>The nature of benefits and sacrifices, forming the customer-perceived value, is revealed through the value features. The value features describe the essence of value, i.e. what the customer receives from the relationship. (p. 89 ff., p. 195 ff.) The value maps in chapter 5 are focused on the six value features identified in the studied relationship. The value features are in addition an essential part of the proposed explanatory model of customer-perceived value, presented in chapter 6.</td>
</tr>
<tr>
<td>Value in-use</td>
<td>Customer-perceived value created and possible to utilize during the process in which the total service offering is produced (p. 47 [table 2-1], p. 185 ff.).</td>
</tr>
<tr>
<td>Value terminology</td>
<td>The value terminology is the tool developed during the study to identify and describe the specific content of customer-perceived value. The value terminology consists of benefits, sacrifices, value features, value drivers, value attributes, value dimensions, and value types (p. 89 ff., p. 195 ff.).</td>
</tr>
<tr>
<td>Value type</td>
<td>A classification expressing degree of monetary calculability. Four classes, implying declining possibilities for exact quantification in monetary terms: possible to calculate, possible to estimate, difficult to assess, and non-monetary (p. 89 ff., p. 126).</td>
</tr>
<tr>
<td>Zone of tolerance</td>
<td>Illustrates the range of performance of a service that a customer considers satisfactory (Berry &amp; Parasuraman, 1993). (p. 47 [table 2-1], p. 37, 152 ff.).</td>
</tr>
</tbody>
</table>
### APPENDIX J: SOME ABBREVIATIONS AND TERMS USED IN THE AIRCRAFT ENGINE MAINTENANCE INDUSTRY

<table>
<thead>
<tr>
<th>Abbreviation/term</th>
<th>Short description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AOG</td>
<td>Aircraft On Ground. A situation when the aeroplane is prevented from flying due to technical problems.</td>
</tr>
<tr>
<td>AD</td>
<td>Airworthiness Directive. Requirement from certifying authorities to take certain actions with the aviation equipment, e.g. replace some parts or do some adjustments, in order to maintain airworthiness. The ADs are compulsory to conduct.</td>
</tr>
<tr>
<td>Assy</td>
<td>Short for assembly, i.e. a component consisting of several subcomponents.</td>
</tr>
<tr>
<td>Assy-print</td>
<td>A listing of a component and belonging subcomponents with part numbers and sometimes also serial numbers.</td>
</tr>
<tr>
<td>EASA</td>
<td>European Aviation Safety Agency. EEC (European Economic Community) authority for flight safety, overriding national authorities. Started its operation the 28 September 2003 when replacing the former JAA organization.</td>
</tr>
<tr>
<td>ECTM</td>
<td>Engine Condition Trend Monitoring. A procedure implying that the condition of the engine is closely followed by regular examination of performance data from operation.</td>
</tr>
<tr>
<td>EFH</td>
<td>Engine Flight Hour. The label used by Volvo Aero (compare with &quot;PBH&quot;) for engine maintenance agreements based on the number of flight hours. The customer pays a fixed amount of dollars per flight hour.</td>
</tr>
<tr>
<td>FAA</td>
<td>Federal Aviation Administration. The U.S. (United States) aviation authority.</td>
</tr>
<tr>
<td>HSI</td>
<td>Hot Section Inspection. A limited engine maintenance activity, i.e. restricted to parts in the hot section/turbine section of the engine. Applicable on certain engine types.</td>
</tr>
<tr>
<td>JAA</td>
<td>Joint Aviation Administration. EEC organization, exercising authority for European aircraft. Served up till 28 September 2003, when its operation was taken over by EASA.</td>
</tr>
<tr>
<td>LCF</td>
<td>Low Cycle Fatigue. An OEM-specific term, see LLP below.</td>
</tr>
<tr>
<td>LLP</td>
<td>Life Limited Part. Parts in an aircraft engine with a limited service life, i.e. have to be scrapped after a certain usage.</td>
</tr>
<tr>
<td>Line maintenance</td>
<td>Limited overhauls and checks of the aircraft (engine and airframe), made continuously during daily traffic. Conducted at airports, often by the aircraft operator’s own staff.</td>
</tr>
<tr>
<td>LRU</td>
<td>Line Replaceable Unit. A unit, which can be readily changed on an aircraft or engine during line maintenance, i.e. possible to replace irrespectively of other components.</td>
</tr>
<tr>
<td>MRO-shop</td>
<td>Maintenance, Repair, and Overhaul workshop. Used as abbreviation for aircraft workshops, both those specialized on engines and those dealing with the entire aircraft, i.e. the airframe.</td>
</tr>
<tr>
<td>NAA</td>
<td>National Aviation Authorities. Term for all country specific aircraft authorities.</td>
</tr>
<tr>
<td>OEM</td>
<td>Original Equipment Manufacturer. The manufacturer of an aircraft, engine, or component, i.e. the company owning the design privilege.</td>
</tr>
<tr>
<td>QEC</td>
<td>Quick Engine Change. An airframe component installed on an engine. Normally the QEC is removed together with the engine in order to enable quick replacement of the engine.</td>
</tr>
<tr>
<td>PBH</td>
<td>&quot;Power-By-the-Hour&quot;. Equivalent to the Volvo Aero labeled EFH-agreement for engine maintenance agreements charged by the number of flight hours. PBH is the label used by the manufacturer Rolls Royce.</td>
</tr>
<tr>
<td>PMA</td>
<td>Parts Manufacturer Approval. Used for denoting an independent manufacturer (not OEM) of new parts. The PMA has approval for the manufacturing from the authorities.</td>
</tr>
<tr>
<td>SB</td>
<td>Service Bulletin. Instructions from OEM to perform certain maintenance actions in order to maintain airworthiness, improve performance, or improve service life.</td>
</tr>
<tr>
<td>T&amp;M</td>
<td>Time and material. The traditional way of charging aircraft engine maintenance, implying that the customer pays for used man-hours and material.</td>
</tr>
<tr>
<td>Wet-lease</td>
<td>An aircraft operator’s lease of a complete aircraft with crew from another airline.</td>
</tr>
</tbody>
</table>

159 Compiled with assistance from Volvo Aero staff.
Customer-perceived Value in Business Relationships

Catarina Bovik has elucidated the content of the concept of customer-perceived value in the commercial aircraft engine maintenance industry, a setting where total service offerings are provided within dyadic business-to-business relationships.

The conceptual framework, guiding the empirical study has its points of departure in service research.

In the first part of the analysis it is suggested that customer-perceived value is created at three levels; at a product level, at a partnership level, and at a psychological level. Detailed value maps have been constructed in order to clarify the nature of the concept, which, it is found, has both an origin side and an effect side.

Central in the second part of the analysis is the notion of “flow”. Flows of goods, information, risk, involvement, and money intersect the value features and provide the sources of value on the origin side of customer-perceived value. The effects are traced to the flows of revenue benefits, cost benefits, interest effects, and costs to use. Flows both build, and are filtrated by, “trust” during the process in which the customer’s perception of value comes into being.

A model summarizing important aspects of the concept concludes this very interesting study.

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Professor in business administration, Karlstad University

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