To Lena, Birger, Lasse and Gül
Ulf Nilsson

Product costing in interorganizational relationships

A supplier’s perspective
Product costing in interorganizational relationships: A supplier's perspective
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Ulf Nilsson
Abstract

Product costing in interorganizational relationships is a study of how the supplier’s product costing and other types of cost data are used in a relationship with a buyer.

Traditionally, management accounting is assumed to take place within an organization where the management of the company decides how to design the costing system based on the needs of the organization. However, many companies of today are involved in closer relationships with suppliers, buyers or an entire supply chain, which blurs the traditional boundaries between them. One of the key characteristics of such relationships is an extensive exchange of information for the coordination of the two parties. How the supplier’s product costing can support such cooperation is not dealt with to a large extent in the literature.

This thesis describes, explores and to some extent explains the interorganizational use and design of the supplier’s product costing. Further, it explores the relationship between the supplier’s product costing and interorganizational cost management that normally is coordinated by the buyer.

The empirical data is collected from three Swedish suppliers in the automotive industry.

In short, the results of the thesis are:

15 different situations are identified where product costing and other types of cost data are used between the buyer and the supplier. The most important situations deal with the joint development of the product.

The supplier’s product costing supports the interorganizational cost management in a number of different ways. This means that the supplier plays a more important role for reducing costs and increasing the efficiency of the cooperation than normally recognised in this type of literature.

There are indications that the supplier questions and discusses the design of its costing system due to the external use.
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1 Introduction, problem statement and purpose

Since the 1990’s the interest in supplier relationships appears to have increased (e.g. Ellram and Feitzinger, 1997). In many industries of today there is an evident change from the earlier confrontational, arm’s-length type of relationships to closer and long-term ones. The best known examples of long-term relationships with suppliers are probably found in the Japanese automotive industry (e.g. Lamming, 1993) but similar trends can also be seen in Europe in companies such as ABB and Volvo. However, even at this early stage of the report, it is important to note that not all buyer-supplier relationships are close or are getting closer, nor are closer relationships “better” regardless the conditions. Instead, different segmentation or portfolio approaches are common. The most well-known portfolio approach to purchasing was presented by Kraljic (1983) in an article in Harvard Business Review and it has been followed by a number of similar literature focusing on segmenting various relationships with suppliers (Gadde and Snehota, 2000). Similar approaches are frequent when suppliers classify customer relationships.

The importance of close relationships with suppliers with the aim of developing a competitive advantage was recognised during the seventies. Both the European and the American industry found that Japanese companies were faster out on the market, had a higher level of quality and lower costs. One of the most important books on this subject is “The machine that changed the world” dealing with lean production in the Japanese automotive industry by Womack, Jones and Roos (1990). During the seventies, Japanese companies also established plants in Europe and America and the Japanese way of organising the suppliers became therefore more noticeable. Japan’s Ministry of International Trade and Industry states the importance of developed relationships with the suppliers for the Japanese industry:

“Japanese manufacturing industry owes its competitive advantage and strength to its subcontracting structure.”

(Dyer and Ouchi, 1993, p 51)
According to Dyer and Ouchi (1993) the key factors of the successful Japanese partnerships include long-term commitments, cooperation in order to reduce the costs of the whole supply chain, well-developed communication including cost and manufacturing information, willingness to make customised investments and actively working for mutual trust and goal congruence. They cover a main part of what is often considered to be important for a close relationship.

During the last decade there has been a strong and outspoken trend towards outsourcing. The benefits of outsourcing have been further increased due to the development of information technology (IT) which has reduced the costs for administration and coordination between two separate parties (Walsh, 1991). This has, among others, meant that companies bought an even bigger share of component and services than before. The specialisation has led to further dependence and interest in the relationships with suppliers (Slack, 1991).

“The trend towards companies ‘sticking to their knitting’ and concentrating upon their core business, within which they seek to generate sustainable competitive advantage, has also been complemented by an increasing stress upon alliances.”

(Otley, 1994, p 293)

Several of the new ways of operating are going in the direction of closer relationships. Some of the more well known concepts and techniques are vertical disintegration (Porter, 1987), reduction of the number of suppliers (Håkansson, 1987), Just-in-time (JIT), different kinds of partnerships, and outsourcing of non-core activities. The common theme is mainly to reduce time, waste and buffers in the research and development (R&D) and manufacturing processes by relying more on the suppliers’ know-how and ability to deliver the expected quality and at the right time (e.g. Bromwich and Bhimani, 1994 and Holmlund and Kock, 1995).

The trends mentioned here regard the relationship between the supplier and buyer as important. This relationship is in many cases so important that both parties seriously consider the other’s needs and development in order to create as effective a relationship as possible. The main reason for the increased importance of suppliers is probably the inability of many companies today to stay competitive relying solely on their own capabilities. This, in turn, it is argued, is caused by harder global competition, shorter life-cycles and pressure on profits (Van Weele, 1994). A company is in many cases forced to consider issues across the organizational boundaries. Competition, at least partly, will be between different supply chains rather than different companies (Hines, 1994 and Schorr, 1998). It is therefore important for every participant across the supply chain to contribute to the joint creation of economic value (Cottrill, 1997).
Introduction, problem statement and purpose

“(...)it is no longer sufficient to be the most efficient firm; it is necessary to be part of the most efficient supplier chain.“

(Cooper, 1995, p 185)

“The new competitive paradigm is that supply chain competes with supply chain and the success of one company will depend upon how well it manages its supply chain relationships.”

(Christopher, 1998, p 245)

“...a single firm can not necessarily position itself as an operations leader without the help of other firms in the chain.”

(Maloni, 1997, p 5)

The importance of being a part of one or several supply chains can be seen in some Japanese “keiretsus” (similar to supply chains). A firm that belongs to a keiretsu is usually forbidden to do business with firms from other keiretsus (Sakai, 1990). As cooperation increases, the boundaries between the companies become less clear. This can be seen in different interorganizational cooperations regarding e.g. common R&D projects, sharing essential information, placing employees in the other firm and different kinds of risk sharing (Cooper and Slagmulder, 1999). By blurring the organizational boundaries, the two companies can improve the total efficiency (Cooper and Yoshikawa, 1994a).

“In summary, the supplier becomes what is an extension of the manufacturer’s plant”

(Munday, 1992 a, p 35)

The importance of the suppliers for the buyer is further enhanced if one takes a look at the buyer’s cost structure. The goods purchased are normally treated as direct material and they may in many of today’s companies make up a considerable part of the total costs. A survey which Ask and Ax published in 1997 shows that as much as 47 % (on average) of the total manufacturing costs in the Swedish manufacturing industry is direct material. In certain industries, such as the automotive industry, the cost of direct material can be as high as 85% of the manufacturing cost (Christopher, 1998). International studies report a similar degree of purchased goods (e.g. Ellram, 1996). The magnitude of outsourced products also changes the structure of the total costs from a mix between fixed and variable to mainly variable. This phenomenon is described in transfer pricing and is called “upstream fixed costs” (e.g. Anthony, Dearden and
Govindarajan, 1992). The variability tends to intensify further up in the supply chain due to factors such as forecast lags and reliability problems. The effect is often referred to as “the Bullwhip effect” in the literature since a small ripple in the beginning of the whip can create a large swing at the end. Since the “bullwhip” (amplification in demand and variability) can seriously damage the suppliers further up in the supply chain, it can have a large impact on the design of the supply chain (Fine, 1998 and Towill, 1996).

By sharing organizational resources including information, it becomes possible to coordinate the activities and resources in a way that increases efficiency and performance (Helper and Sako, 1995).

“...if the firms operate in isolation, they will make decisions that minimize their own costs but not necessarily those of the network as a whole.”

(Cooper and Slagmulder, 1999, p 146)

One way to increase the efficiency is to use different kinds of interorganizational cost management techniques. Most of the techniques seem to have their origin in Japan but similar trends can be seen in western countries. A common aspect of these techniques is that they operate over the border of the single company.

As already indicated, various types of closer relationships are discovered in several disciplines, e.g. logistics, supply chain management, purchasing and industrial marketing, and also on an almost daily basis in the news since the subcontractors are an important part of the business life. This development is also reflected in literature across disciplines. In addition to the ones discussed in purchasing, supply chain management and logistics, one can see a large number of articles on collaboration between firms published in the Strategic Management Journal and the Journal of Marketing since the beginning of the 1990’s (Ring, 1996). Also, the Academy of Management has published a special issue on the same subject.

As mentioned above, a close relationship blurs boundaries. This can be contrasted with the normal approach to management accounting as a phenomenon taking place within an organization and accordingly viewing the organization as a closed unit (Puxty, 1993). Accordingly management accounting is normally considered to be occupied with internal issues.

“As we have seen, the normal approach to management accounting is to acknowledge that it takes place within a business organization. The step that follows immediately from this is to suppose that, because management accounting takes place within the organization, therefore matters concerning management accounting should be considered from the point of view of the organization.”

(Puxty, 1993, p 10)
"Definition of problems, and evaluation of solutions, are both generated from the organization's viewpoint."

(Puxty, 1993, p 10)

“A traditional cost plus approach represents a “closed systems” approach. This approach ignores the interaction between an organization and its environment, considers very few variables in explaining system behaviour…."

(Ansari, Bell and The CAM-I Target Costing Core Group, 1997, p 17)

The traditional cost analysis uses a value added perspective (selling price-purchased material) which does not point out the potential to exploit the linkages between the companies (value chain perspective) in order to reduce costs or increase diversity (Shank and Govindarajan, 1989). The consequence will be that the company does not consider the interaction with the supplier (or buyer), it will not be able to fully explore the interaction between the purchased raw material and other cost elements (e.g. higher quality material that can reduce costs) (ibid.).

The internal focus of management accounting can be seen in definitions. For example Oxford Dictionary of Accounting, second edition, (Hussey, 1999) defines management accounting as

“The techniques used to collect, process, and present financial and quantitative data within an organization to enable effective scorekeeping, cost control, planning, pricing, and decision-making to take place”

(Hussey, 1999, no page numbers, emphasis by the author)

This definition clearly indicates the assumption of management accounting as a tool used internally. However, the discussion in this chapter shows that in some cases companies establish close relationships in which information exchange plays an important role. How the traditional management accounting is used and designed in this type of relationship is, as far the author has found, an unexplored field. In the relationship, it is also possible that cost data regarding the supplier can be used along with other types of information in order to increase the benefits of cooperation. This means that it is possible that product costing and management accounting in practise are used and designed in ways not recognised in literature.

To summarise, interorganizational cooperation blurs in many ways the boundaries of a company and requires amongst others coordination of a variety of processes. Certain techniques and methods of dealing with interorganizational cooperation and coordination have been developed in a number of fields, including cost management. Further, a number of common decisions are made, with significant financial impact of both the
focal firm and the other parties, in order to coordinate the large number of facets of the relationship. In an environment like this, would it still be reasonable and meaningful to assume that the product costing is used for only internal purposes? If not, how is the supplier’s “intraorganizational costing” designed and used in a close relationship including common attempts to increase the efficiency of not only the focal company, but also of the relationship and the other party? Based on the discussion above:

the purpose of this thesis is to describe, explore and to some extent explain how product costing is used and designed in interorganizational relationships.

The purpose will be stated more precisely in a number of research questions based on a literature review covering product costing, interorganizational relationships and interorganizational cost management (chapter two).
The main purpose of the literature review is to guide the collection, and the
analysis of the empirical observations. In this thesis two main concepts,
product costing and interorganizational relationships in which the product
costing is studied, are the dominant parts of the frame of reference. It is
divided into three sections.
1. The first elaborates the concept of product costing.
2. The second discusses the nature of the relationship in which product
costing is likely to be found.
3. The third discusses interorganizational cost management and the role of
costing in the new manufacturing environment.

2.1 Product costing

2.1.1 Introduction - the Swedish costing tradition

Compared with many other countries, the Swedish tradition of costing is
relatively standardised, which has influenced both practice and textbooks
(Ask, Ax and Jönsson, 1995). As a result, changes have been less dramatic
over time and the use of different costing methods has been more
homogeneous in Sweden than for example in Norway (Bjornenak, 1997).
The key actors in the development of accounting methods, principles and
models during the last century have been cooperating companies (both
accountants and top managers), enterprise associations and academics
(Samuelson, 1990).

Due to the industrial development in Sweden, the accounting systems
(factory accounting) were fairly developed already in the 18th century
(Samuelson, 1990). Concepts such as cost centres and cost objects were
widely used. A main part of the methods and concepts used today existed in
the beginning of the 20th century (ibid.). The costing was then mainly based
on allocated costs used especially for pricing decisions. Frenckner (1970)
also claims that until the 1920’s an important purpose of the cost
accounting was to determine amounts of direct labour and direct material.

Since this thesis deals with suppliers located in Sweden, the Swedish costing tradition is
elaborated.
Later the Swedish product costing became more refined as allocation of overhead costs became more detailed. The main purpose of product costing was to set prices (internal as well as external) even though other decision situations such as purchasing and manufacturing were also discussed (e.g. Sillen, 1912). In the early 1930's the Swedish National Board of Education initiated a project to standardise the terminology for the industrial absorption costing. The project was later taken over by the Swedish Standard Association and was presented in 1937 as the “Uniform principles of full costing” (Enhetliga principer för självkostnadsberäkning – “EP”) (Samuelson, 1990 and Frenckner and Samuelson, 1984). The committee comprised, among others, representatives from some of the largest manufacturing companies such as ASEA (today ABB), SKF, Ericsson and Volvo (Ask, Ax and Jönsson, 1995). The main purpose of the Uniform principles seems to have been the establishment of a basis for long-term pricing. It was agreed that basing prices on absorption costing would create a sound competition among the companies. The use of absorption costing would show the long-term costs and therefore bankruptcies due to too low prices could be avoided and the market would be stabilized. There were, however, a number of other purposes with the Uniform principles. Ahlberg and Sundqvist (1970) have, based on the debate in a magazine (Affärsekonomi), found a number of purposes: a long-term and common pricing method, avoiding unfair competition, providing a basis for different types of comparisons of profitability, making education easier, simplifying valuation of inventories and increasing the possibility of control. The authors (1970) found that the motives for EP, were in many ways, similar to those of Coward (Norway) and Schmalenbach (Germany).

During the Second World War the principles were assigned an external role. They were used for price regulations and therefore their importance and impact increased. This method of pricing is still used by companies delivering to the national defence (Frenckner and Samuelson, 1984).

When governmental involvement in costing issues decreased in the late 1940’s, the debate regarding the choice of costing method became more intensive (Ahlberg and Sundqvist, 1970 and Samuelson, 1990). Although a number of different roles of product costing were discussed, the main focus of the debate was product costing for pricing decisions. A number of academics and practitioners participated in the lively debate, but the most important contribution was probably contained in the reports and thesis written by Professor Paulsson Frenckner (1953). His main conclusion was that full costing was not the ultimate solution for every problem related to product costing. In many cases, he said, it was seen as an estimation and compromise for a number of different motives for cost allocation.
Literature review

The *Uniform principles of full costing* and other industry specific recommendations based on them have, to a large extent, influenced the Swedish costing until the present.

The short historical review shows a clear difference between the Swedish and the Anglo-Saxon costing tradition. Since the 1930’s the Swedish costing tradition has strongly focused on costing for the decision-making, mainly for pricing. Further, the principles in terms of cost allocation have been refined and adjusted to the specific circumstances in different industries in order to provide more relevant costs for decision-making. That can be compared to the Anglo-Saxon tradition (according to Kaplan, 1982), which primarily focused on financial accounting. In the Anglo-Saxon tradition, costs were calculated mainly to determine the value of the stock for use in financial accounting (Johnson and Kaplan, 1987 and Kaplan, 1982). The problems arose when those costs were used by operating executives for decision-making in the belief that they represented “the true costs” (Kaplan, 1982). During the 1950’s, the focus turned to internal decision-making and responsibility rather than external financial issues. This fundamental change in focus led to the emergence of what is known as management accounting (ibid.). It can be worth noting that Ryan, Scapens and Theobald (2002, p 69) refer to this change as: “This change in the nature of the *internal* accounting […]” (emphasis added).

Some aspects of the short historical review can be of interest for this thesis: (1) It is clear that the Swedish costing tradition has been, and still is, based on well-developed absorption costing, (2) it has been and still is relatively homogeneous, (3) it has, occasionally, been used for regulating prices, and (4) the Swedish costing tradition has its roots in an environment with less developed vertical integration.

The four aspects can be worth considering when studying cooperation between a buyer and a supplier regarding issues related to the supplier’s product costing: (1) If a buyer uses costing as a source of information for decision-making, it will most likely be interested in the allocated overhead costs and other conversion costs since information about them can be useful. (2) If the costing is homogeneous, the differences between the buyer and the supplier in terms of costing are smaller. As a result, the buyer finds that the supplier’s costing system is useful and changes might not be necessary. (3) The fact that the buyer forces the supplier to “open his books” in order to reduce or control the profit margin is not new and has been observed in the defence industry (Freckner and Samuelson, 1984). What is new is the cooperation-oriented relationship towards mutual benefits. It is still likely that the price is discussed as an important aspect even in a closer relationship. One important point of departure and also a mutually accepted reference could be a cost-based price. If the costing
traditionally is used as a reference for a fair price, most likely both parties will accept it. (4) Sweden has a very strong costing tradition, especially in the manufacturing industry (Samuelson, 1990). The Uniform principles of full costing issued in 1936, have ever since then influenced the Swedish costing practice to a large extent (Frenckner and Samuelson, 1984). The Swedish costing tradition therefore has its roots in principles developed in the middle of the 1930's when the business environment most likely was very different in terms of vertical integration. The best known example of the differences between today and a company from that time is probably Ford Motor Company during the 1920's. At that time Ford tried to control the whole value chain including e.g. railways, sheep farms and iron mills (Drucker, 1990). The interorganizational aspects of costing were probably considered to be rather irrelevant at that time and in that environment.

2.1.2 Product costing and related concepts

Frenckner and Samuelson provide a wide description of costing:

“Measuring, calculating or reporting of costs and/or revenues for a cost object in a specific situation. Further, costing can be used both before and after the decision is made.” (Translated)

(Frenckner and Samuelson, 1984, p 13).

Accordingly, the cost object plays an important role since the costs and/or revenues are related to the situation. Costing includes both estimated and measured actual costs caused by the cost object (Samuelson, 1990). The cost object is thus a central concept. In literature it often seems to be related to the product, product line, etc. But it can also be, among other things, a service, a customer, a market or a manufacturing process. One reason for the product-related cost object is the obvious wish to compare the costs with the source of the revenues (Johansson and Östman, 1992). CIMA’s (Charted Institute of Management Accounting) definition of “cost” (as a verb) in Official Terminology of Management Accounting (1996) is in line with Frenckner and Samuelson’s description above, and further underlines the variety of cost objects: “To ascertain the cost of a specific thing or activity” (p 12, translated). Horngren, Foster and Datar (1997) describe a cost object as “anything for which a separate measurement of costs is desired” (p 26). Compared to the Anglo-Saxon the Swedish literature on costing appears to use the term
“product costing” (produktkalkylering) in a wider meaning.[4] In this thesis, the terms “product costing” and “costing” are to some extent used interchangeably.

The costing is closely related to the type of decision made such as pricing, production method and sourcing. From this perspective the design and the use of the costing are linked, since the former is directly related to the situation in which costing is used. The design of the costing thus deals with how the costs are measured, calculated and reported when they are used in the specific situation. The underlying assumption and goal is that product costing should provide the decision-maker with information regarding how much the product (or other cost objects) costs, so that the decision-maker can come to an economically feasible decision. This view of decision-making is strongly supported by Horngren (1995) when discussing management accounting and cost management:

“At a most fundamental level, the focus of cost management should be on decisions. How can various cost management techniques, systems and measurements spur and help managers to make wiser economic decisions? We should never lose this focus of decision support.”

(Horngren, 1995, p 282)

If the costing system is designed in a flawed way, the decisions regarding e.g. pricing, offers or choice of product will be wrong (Cooper, 1987). Cooper and Kaplan spell out the close relationship between costing and decision-making:

“Bad information on product costs leads to bad competitive strategy.”

(Cooper and Kaplan, 1988, p 96)

It is, however, worth noting that a number of researchers, by having a wider and partly different focus, claim that the decision-making situation is far more multidimensional and complex than described by Cooper and Kaplan. The information, including financial data, used for decision-making has, as an indication of the complexity, been categorised in a number of different ways such as soft vs. hard (Häckner, 1985), official vs. non-official (Earl and Hopwood, 1980), different stages of decision-making (King, 1975), the decision process (Cyert and March, 1963), long-term vs. short-term (Emmanuel, Otley and Merchant, 1990) and feedback for existing products vs. feed forward for future products (Cooper, 1996).

2 A clear example is that two important Swedish books have titles related to “product costing”, although costing issues related to other cost objects than the product per se are dealt with. (The books are “Industrial Product Costing” (1984) by Frenckner and Samuelson and “Product costing in theory and practice” (1997) by Ask and Ax. Titles translated).
It is also worth noting that the strong focus on the decision-making aspect presented here does not exclude the fact that cost accounting can have other functions such as demanding responsibility for control purposes (Mellemvik, Monsen, and Olson, 1988, Samuelson, 1994), scorekeeping, direct attention, problem solving (Simon, Guetkow, Kozmetsky, and Tyndall, 1954) and external financial reporting (e.g. Horngren, et al., 1997). Product costing can be used for the initial planned official purpose and also used (or abused) for secondary purposes such as supporting personal advantage by misleading the management (Samuelson, 1994).

If the focus is on the decision-making, the costing can normally just cover certain consequences, namely the most essential and measurable financial aspects of the outcome of the decision (Frenckner and Samuelson, 1984). Further only company costs are considered, while those that are caused outside the company such as community welfare, etc. do not appear in the calculation (Simon, 1976). The relationship between the decision situation and costing is illustrated in the figure below.

![Figure 2.1](https://via.placeholder.com/150)

**Figure 2.1** The relationship between the decision situation and costing (Frenckner and Samuelson, 1984, p 43, translated)

The different alternatives, along with the financial consequences, of the specific situation are unique with regard to space (e.g. a department or the whole company) and time. According to Johansson and Samuelson (1988) product costing is used in the following situations:
Literature review

Decision-making
- Pricing
- Product related decisions (quantity and type of products)
- Manufacturing method

Other situations
- Cost control
- Internal profit measuring

The need of knowing cost consequences of decisions can be met in two ways, routine costing and non-routine costing (see figure 2.2). If the point of departure is the decision situation, it is claimed that routine-based full costing is not appropriate for all sorts of decisions (e.g. Clark, 1923). As mentioned above, many decision situations are unique in terms of financial consequences. This prompts the calculation of the costs and/or the revenues based on the conditions of the specific decision situation. With nine different decision situations in a fictive company, Clark (1923) shows that there is a need for different ways of calculating costs. However Clark’s fictive company is simplified and the need for further adjusted calculations could be even larger in a more complex “real” company’s situation (Ahlberg and Sundqvist, 1970).

On the other hand, there are also motives for using routine costing. The main motive seems to be simplicity based on an explicit or implicit cost-benefit approach. The routine costing, accordingly, uses more or less the same assumptions regardless the situation (Frenckner and Samuelson, 1984). It is however worth noting that it is also possible to calculate the costs by modifying the routine costing (Johansson and Samuelson, 1988).

A main part of the last decade’s discussions regarding product costing, which started with “the relevance lost debate” (Johnson and Kaplan, 1987), and the following surveys of costing practice seem to focus on the design and the use of the costing system and how the design is based on compromises between a number of different functions. Kaplan (1988) even claims that the development of the product costing is driven by the needs regarding inventory valuation and tax reporting purposes. He thought that the problem with the compromise between different needs was so serious that he wrote an article in Harvard Business Review titled “One cost system isn’t enough”. The contributions by Professors Cooper and Kaplan (e.g. 1987), regarding the use of activity based costing (ABC) and activity based management (ABM), are other well known examples underlining the role of decision-making. The figure below illustrates the relationship between the routine costing, non-routine costing and the costs supporting the decision-making.
As mentioned above, the concept of costing can cover routine-based calculation and adjusted calculations (Frenckner and Samuelson, 1984). Routine costing is normally conducted with different types of information systems, routines, regulations, etc. Therefore the routine costing system tends to be a compromise between a number of different requirements. Naturally the adjusted calculation is not settled in the same way since the conditions of the specific situation is the point of departure rather than a compromise of a number of different situations and requests. In this thesis, the terms “routine costing” and “costing system” on one hand and “non-routine costing” and “adjusted calculations” on the other hand are used interchangeably. Occasionally the term “cost data” will be used representing a wider focus than costing.

A field closely related to cost accounting is management accounting. Some authors claim that cost accounting is related to cost accumulation for stock valuation, while management accounting deals with the provision of information for the organization to support decision making (Drury, 1996).
The distinction however, is vague in the bulk of the literature (ibid.). One difference is that management accounting has a clear internal focus, while cost accounting also provides data for external stock valuation. In line with this, Horngren, et al (1997) state that management accounting largely emphasises the planning and control purposes by providing information that helps the managers to make decisions to fulfil the goals of the organization.

This thesis focuses on a number of aspects in order to give meaning and content to the concept of costing. The following components will be used:

- Allocation of overhead costs
- Costing method
- Standard costing and variance analysis
- Cost of capital and depreciation

2.1.3 Allocation of overhead costs

One of the most discussed and historically controversial issues in costing is whether overhead costs should be allocated or not (e.g. Frenckner and Samuelson, 1984). In many decision situations it can be valuable to compare the costs and the revenues of different alternatives. Costs normally occur when resources are used in the company. Revenues occur when a product or service is sold. In order to compare the costs with the revenues, or to see the economic consequences of a decision, some kind allocation of either costs or revenues is often necessary. Normally the costs are allocated to a cost object. The problem is that a large portion of the costs is not caused by cost objects such as a product or a department. Therefore, strictly from a logical viewpoint, a problem occurs since the cost allocation makes overhead costs appear as if they are caused by the cost object, while in many cases they are not. This argument is based on the neo classical economic theory. Kaplan summarises this point of view (1977):

“many accountants and almost all economists argue that any allocation of joint costs (including overhead and depreciation over time) is arbitrary and serves no useful purpose”

(Kaplan, 1977, p 52)

Although relatively arbitrary, the costing literature pays a lot of attention to cost allocation. The reason perhaps is that in practice costs are allocated to a large extent.
“[…] too much cost allocation has been carried out in practice to lead us to believe that it is all bad.”

(Dopuch, 1981, p 6)

Recent surveys on how costing is designed and used in practice have shown that a majority of the respondents allocate their cost in one way or another (e.g. Ask and Ax, 1997 and Lukka and Granlund, 1996). There are several reasons for allocating costs. A basic assumption seems to be Clark’s (1923) famous expression “different costs for different purposes”. A common and important reason is probably to provide information regarding the cause-and-effect relationship (e.g. Horngren, et al 1997). Other reasons mentioned in the literature are responsibility, dimensioning, estimating the alternative value of the resources, the cost object’s ability to bear the costs, stabilising the competition (Frenckner, 1953), fairness, benefits received and justifying or motivating costs (e.g. Horngren, et al., 1997).

During the “Relevance lost debate” the major issue was not whether the overhead costs should be allocated or not, but rather how to allocate costs to achieve a more clear cause-and-effect relationship in the costing. The main reason for the debate was that the present manufacturing and market environment increased the fixed overhead costs, which caused a change in the cost structure (e.g. Berliner and Brimson, 1988, Cooper and Kaplan, 1987 and Miller and Vollman, 1985). Johnson and Kaplan give an example of the criticism of the way costs are allocated.

“Overhead costs were combined into large, frequently plant wide, overhead cost pools.”

(Johnson and Kaplan, 1987, p 184)

The major aspects dealt with in the literature of cost allocation are the structure of cost pools, the allocation bases and the volume/capacity of the allocation base that should be used for cost allocation.

As regards the cost allocation process, the concept of cost pools is often used. The individual cost is often related to at least one cost pool. When the cost allocation proceeds, the costs lose their individuality and become part of a cost pool. Cost allocation is thus made of cost pools rather than individual costs (Horngren, et al., 1997). The structure of the cost pools is of paramount importance for the possibility to allocate the overhead costs based on a cause-and-effect relationship between the costs and the cost objects. It is argued that the more aggregated the cost pools are, the more “peanutbutter-effect” is caused when allocating the overhead costs (e.g. Horngren, et al., 1997). The normal approach is to put costs influenced in a similar way by the allocation base in the same cost pool. In such cases the cost pool becomes homogeneous, which is preferable from a cause-and-
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When responsibility is the aim, the cost pools are grouped in order to follow the organizational structure such as departments, machine groups, etc.

The function of the allocation base is to “measure” how much of the costs of the cost pool the cost object has caused. The purpose is to estimate the relationship between the cost object and the cost pool (Frenckner and Samuelson, 1984). The literature on costing suggests a wide range of quantitative cost schemes (Ahmed and Scapens, 1991). One of the issues debated in recent years has been the allocation bases related to the (production) volume like direct labour and direct material. The arguments presented against volume-related allocation bases have mainly been their inability to present the cause-and-effect in an appropriate way (e.g. Cooper and Kaplan, 1987). The allocation bases can, according to Frenckner and Samuelson (1984) be divided into three groups: time, value and volume (quantity).

When allocating fixed overhead costs, the volume of the allocation base (and cost object) is important. The problems related to the choice of volume are only valid for fixed overhead costs, though they can be relatively large, especially in the short-run. When the volume does not considerably change over the time, the problem is of less importance. But that is not always the case. The main question is how the costs for the unused capacity should be dealt with. If the costs of the unused capacity are allocated to the cost objects, they will be charged a larger part of the overhead costs. This phenomenon has several, often rather dramatic, names like “the black hole demand spiral” (Horngren, et al., 1997) or “death spiral” (Cooper and Kaplan, 1991). The different types of volume or capacity mentioned in the costing literature are theoretical, practical, normal and budgeted (e.g. Drury, 1996 and Johansson and Samuelson, 1988). The first two are related to the capacity to produce, while the latter is related to demand-dependent levels.

2.1.4 Costing method

Costing method is closely related to cost allocation. It can be divided into several ways. One is the distinction between job order costing and process costing. Job order costing is appropriate in situations where one is working on specific jobs, projects, contracts, etc. while process costing is recommended when the products in a production process flows in a continuous fashion such as a petrol refinery.

The most debated distinction is probably the use of full costing or variable costing. Full costing means accumulation of costs like material, labour, variable and fixed overhead costs and their subsequent assignment
to the particular cost object. With variable costing one only assigns the variable costs to the cost object.

2.1.5 Standard costing and variance analysis

A standard is a value or quantity settled beforehand. Standard costing is used in order to simplify costing, create a more effective responsibility and performance control, simplify the budgeting process and the accounting (e.g. Atkinson, Banker, Kaplan and Young, 1995 and Johansson and Samuelson, 1988). Standards became common in the Scientific Management School and Taylorism and were often related to time and working studies (Miller and O'Leary, 1987). According to Taylor, it would be possible to reduce the waste of human resources by using standards. He says that the waste of human resources was not as obvious as the waste of other resources such as material. By setting standards on a certain activity it was also possible to compare the actual performance with the standard.

“Cost accounting could now embrace also the individual person and make them accountable by reference to prescribed standards of performance.”

(Miller and O'Leary, 1987, p 241)

Standards have two main purposes, the motivational and the planning/simplifying. Drury (1996) summarises the motivational purpose as follows:

“[…] if people know in advance that their performance is going to be judged, they are likely to act differently from the way they would have done if they were aware that their performance was not going to be measured.”

(Drury, 1996, p 545)

However, it has lately been argued that in more automated manufacturing processes, the use of standards for a motivational purpose is assumed to decrease. The reasons for this assumption are that it is less meaningful to set standards of direct labour in an automated manufacturing process and that it has become too time consuming to set standards with shorter product life-cycles (e.g. Sakurai, 1989 and Howell and Soucy, 1987).

When the purpose is planning and simplification, the aim for the standard is to show a realistic level. It can be compared to the motivational purpose that it is likely to be a bit higher in order to create a goal to strive for, which normally can be reached if every possible effort is made (Frenckner and Samuelson, 1984). The usual way to solve the problem is to compromise and choose a level that is both “efficient and attainable” (Atkinson, Banker, Kaplan and Young, 1995, p 117).
2.1.6 Cost of capital and depreciation

In the Swedish costing literature the cost of capital and depreciation are frequently dealt with as opposed to Anglo-Saxon literature in which they are hardly mentioned (Samuelson, 1990). A possible reason for the difference in that respect, according to Frenckner (1985), is that the Uniform principles of full costing were developed during a period (1930’s) when lenders had lost money due to the too high dividends. The profits appeared to be higher than they really were due to the combination of depreciation based on historical values and a high inflation rate.

The logic behind including the cost of capital and depreciation is that if the resources are not used for producing services or products, they could be used in alternative ways. The depreciation and the cost of capital can be calculated in several ways and over different periods of time. The most common methods in practice in Sweden, according to Ask and Ax (1997), are to calculate the cost of capital based on the financial accounting principles and the depreciation based on the historical cost and the economic lifetime of the asset.

A survey regarding the Fortune 1000 industrial companies in the USA states that a majority of the companies that use depreciation costs for pricing decision employ historical costs (Govindarajan and Anthony, 1983).

2.1.7 Concluding remarks

This section presents a relatively traditional view of product costing and related areas, occasionally referred to as “conventional wisdom”. In this type of literature, the interorganizational aspects are not discussed as far as the author has found. The two main product costing issues presented above are the use of calculated cost data and the design, i.e. the way the costs are calculated.

According to the literature, product costing is used for supporting a number of different decisions. However, decisions in which a buyer is involved are not dealt with to any larger extent. This means that costs might be calculated for a number of decisions in practice not recognised by the literature.

The way cost data are calculated is divided into two main groups, routine costing and non-routine costing/investigations. The routine costing is carried out in a costing system, whereas the non-routine costing is based on the specific conditions of the decision to be made. The fact that the costing system usually serves a number of purposes and presents cost data for a number of different decisions, means that its design will be a compromise between the different requirements. The literature does not, to any larger extent, deal with

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3 Cost of capital here refers to the English meaning, which only concerns the interest rate. According to the Swedish terminology cost of capital (kapitalkostnad) concerns both the interest rate and the depreciation.
the fact that a buyer might use cost data provided by the supplier’s costing system. This means that the buyer can influence the way the costs are calculated.

2.2 Interorganizational relationships

The purpose of this section is to present the underlying dynamics of closer relationships. It is divided into three parts: the basic building blocks of value and supply chains, the characteristics of closer relationships and the reasons for entering closer relationships. The presentation deals with a number of different theoretical approaches that are related to the phenomenon of closer interorganizational cooperation.

2.2.1 Introduction – hierarchies, markets and something in between

According to Porter’s (1985) value chain model, every single company is part of a chain of activities that normally starts with raw material and ends with a finished product. The value chain consists of a number of activities involved in the process of refining the product.

“Every firm is a collection of activities that are performed to design, produce, market, deliver and support its product”

(Porter, 1985, p 28)

Between every activity, the product is exchanged and the refinement continues. Therefore, the value chain is not a set of independent activities, but it is rather built up on complex interdependencies and linkages (Porter, 1985). From this point of view, the product is a set of attributes (Lancaster, 1975) that overlaps the company boundaries. Since all activities are interrelated to each other, the value chain of a company is related to that of its supplier as well as its customer. The interdependencies between activities exist on three levels, between different vertical companies, business units and within the company. Between the activities coordination is needed. The coordination between the activities in the chain offers possibilities to create a competitive advantage. Basically, the coordination is achieved in two different ways, on the market or in a hierarchy. On the market the price mechanism coordinates the activities. The main argument for the market is that since each step is responsible for its survival, it will create strong incentives for efforts. This type of coordination is sometimes referred to as “the invisible hand”. A large part of coordination of activities though, takes place within a planned hierarchy – a company, and “the hand” is then more
“visible”. The argument for the hierarchy is normally that the resources can be used more efficiently in a unified process (Nooteboom, 1999). Williamson (1975) asserts that it is the transaction costs, which determine whether the technologically separable activities are coordinated in a hierarchy or on the market.

“The shift of transactions from autonomous market contracting to hierarchy is principally explained by the transactional economies that attend such assignment.”

(Williamson, 1975, p 248)

In addition to the market and the hierarchy, there is a third type of governance form, i.e. the relationship between the companies (Hägg and Johansson, 1982). This relationship is part of the market, since it is an exchange process between two separate companies. However, the instant effects of the price mechanism are weaker and it is only one of several factors to consider. Two or more firms enter into lasting relationships in order to gain benefits outside buying and selling a standard product at a general market price. The relationship could be considered a hybrid mode between the market and the hierarchy (Williamson, 1991). In the relationship between companies, several factors such as adaptations, contracts, and incentives are “semi-developed” (ibid.).

“Coordination takes place through interaction among firms in the network, in which price is just one of several influencing conditions. The firms are free to choose counterparts, and thus market forces are at play. To gain access to external resources, and make it possible to sell products, exchange relationships have to be established with other firms.”

(Johansson and Mattsson, 1987, p 35)

Heide (1994) presents a similar view of two types of governance forms, the market and the non-market. According to him a discrete exchange of a product on the market is not found frequently. As an extreme example he sites Dwyer, Schurr and Oh (1987).

“[…] a one-time purchase of unbranded gasoline out-of-town at an independent station paid for with cash.”

(Dwyer, Schurr and Oh (1987, p 12)

By using the market as an analytical baseline, two other non-market governance forms are identified, similar to the discussion above, the unilateral/hierarchical and the bilateral. The bilateral includes dimensions such as joint planning and mutuality of interests.
In recent years, academics as well as practitioners have shown a great deal of interest in topics related to coordination of the chain of activities, commonly referred to as supply chain management (Lee and Ng, 1998). The theoretical base is derived mainly from industrial organization, with a contract view of the company, i.e., a company is seen as a nexus of contracts (Harland, 1996). The main reason for the increased interest in supply chain management in the eyes of Olson (1999) is that the increased competition and customer pressure have forced the single company to consider issues outside the traditional boundaries and also pay attention to interorganizational issues. The term supply chain management is used in many different ways, and as a result it partly lacks clarity (Harland, 1996). Harland (1996) has identified four main meanings of supply chain management: (1) managing the internal supply chain between different functions, (2) management of a dyad or direct supplier, (3) managing a chain of businesses like the customers’ customer and (4) management of a network of interconnected companies. As this classification shows, the notion of supply chain management is used to cover both the hierarchy and the market. From this wider view, a supply chain covers different kinds of integration of the relationship ranging from a short-term contract to joint ventures, equity interest to acquisition (Ellram, 1991). Even if the notion of supply chains is relatively wide and the degree of integration varies, some common aspects can often be seen regarding its content or definitions. The central theme seems to be the flow of products linking different organizational units and activities (intra- and interorganizational) with the aim of providing the end customer with goods or services. The two main flows in a supply chain include: (1) information that flows back (upstream) through the supply chain and (2) the product that flows downstream towards the end customer (Handfield and Nichols, 1999). Inherent in the concept is to control the flow of products in a supply chain as a single process rather than the sum of independent transactional relationships (Maloni, 1997). The relationship, often referred to as strategic alliance or supply chain partnership, is a building block of a supply chain. Varadarajan and Cunningham (1995) define a strategic alliance as a relatively enduring manifestation of interorganizational cooperative strategies. This definition entails a pooling of resources and skills of both companies in order to achieve the goals. The main motive for the cooperating companies is to complement each other strategically. According to Shortell and Zajac (1990) this implies mutual gain for the cooperating companies. The strategic alliance enables the companies to achieve a competitive position on the market and thus becomes a part of their overall business strategy (Varadarajan and Cunningham, 1995). In this type of close interorganizational relationships, the importance of the purchasing function
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is often underlined when dealing with issues such as core competence, supply-base structure and cost reduction (Gadde and Håkansson, 1994). In order to monitor and control the key flows, information is crucial (Handfield and Nicols, 1999 and Stevens 1989) along with other aspects such as integration of strategy formation, planning, operations (La Londe and Masters, 1990), inbound logistics, operations, and outbound logistics (Albright and Davis, 1999). The importance of information is underlined by Hill (1998). (SCM is an abbreviation of supply chain management).

“The sharing of information between the buyer and supplier is considered to be a major indicator of the use of SCM”

(Hill, 1998, p 3)

The importance of information exchange is underlined by Gould (1998), who claims that one of the main reasons for the development of supply chain management is the increased possibilities caused by the new information technology. A main part of the information exchange discussed in the supply chain management literature is related to technical areas focusing on logistics such as inventory positioning, inventory visibility, supplier scheduling and capacity planning (Monczka and Morgan, 1998).

2.2.2 Two approaches to interorganizational cooperation - expected outcome and the relationship as such

Several theories and concepts deal with the interaction between companies. Some of them focus on a certain interorganizational aspect, e.g. marketing, cost management or logistics, others concentrate on the general governance structure. Some theories focus on the relationship per se while others pay attention to the individual organization can handle certain issues. The theories have different main questions and perspectives and are at least partly based on different assumptions. Even if the different themes have their own perspective regarding the structure, antecedents and process causing the cooperation, it is worth noting that in many cases the theories are not totally isolated from each other. It is nevertheless possible to identify main themes (Dodgeson, 1991 from Lamming, 1993). However, different theories are often combined for building models (e.g. Ring, 1996). Further, there is no strong consensus about the terminology and typology of defining the variety of interorganizational forms of buyer supplier relationships (Kalawani and Narayandas, 1995). There are a number of continuums or dichotomies in literature dealing with different degrees of cooperation. A few examples are:
Hirschman (1970) categorises the relationships in terms of exit and voice. The underlying factor deals with how problems are solved. The exit relationship represents the mode in which the parties separate if a problem occurs or when the transactions and obligations are fulfilled. In a voice relationship, which is based on social relationships and trust, the two parties try to solve the problem by communicating.

Williamson (1975) categorises the governance structure in market and hierarchy. The underlying question is in which of the two modes the activities are conducted.

Heide (1994) categorises the relationship in three different groups similar to the market and hierarchy discussion above. Heide presents a theoretical framework that provides different perspectives on interorganizational governance. This shows that the non-market governance is a heterogeneous phenomenon and that different approaches are appropriate depending on the situation.

Webster (1992) divides the relationship into a range of seven different types, single transactions, repeated transactions, long-term relationships, buyer-supplier partnerships, strategic alliances, network organizations and vertical integration.

Along with a specific category, certain aspects are often related such as information exchange, trust or characteristics of the exchanged product. The problem with this way of categorising interorganizational cooperation is that the interaction between companies is highly complex, in the sense that it includes a large number of variables often associated with a close relationship. The problem of categorising this type of phenomenon with a single continuum is presented by Heide:

“[…] non-market governance cannot be described by a single continuum.”

(Heide, 1994, p 82)

Due to the complexity of the interface between companies, the discussion in this thesis regarding relationships is divided into two main groups. The first group deals with the characteristics of a close relationship and the second with why companies cooperate. From each group a number of aspects are identified and discussed.

1. The focus is on the relationship per se with a number of factors regarded as contextual. The characteristics enable the factors rather than the goal per se. This theme is based on work regarding sociology, industrial marketing and management (e.g. IMP Group, 1982). It deals with how
companies cooperate, while the economics of the cooperation is relatively subordinate or seen as an assumption.

2. The basic issue is why companies enter and develop closer relationships. The overall goal is economic, that is related to the efficiency and effectiveness obtained by interorganizational cooperation. The expected outcome appears to be an underlying assumption of a large part of the research regarding interorganizational cooperation. The theoretical base comes from the supply chain management literature mainly derived from transaction cost theory.

Instead of trying to categorise a relationship on a one-dimensional continuum with a label, a number of underlying aspects are discussed in order to achieve a deeper understanding of the environment in which product costing is studied in this thesis. There are two main reasons for this rather open approach. Firstly, the relationship is a complex phenomenon. Secondly, there is limited previous knowledge about the product costing in this type situation. Even if it is difficult to categorise a relationship on a single continuum, for presentation purposes the relationship modes will be referred to as close and distant.

The issues regarding why companies cooperate and the characteristics of the cooperation are not separated but rather focusing on different aspects that influence each other. To some extent the characteristics of a close relationship are part of the economic aspects since they influence the way a relationship performs economically. For example, if a buyer is considering outsourcing or keeping the production in-house, the reputation or previous experience (trustworthiness) of the supplier might be of importance.

The reasons for the firms to have different relationships with different buyers and sellers are most likely based on economic reasons. The most efficient degree of closeness depends on a number of factors, e.g. the characteristics of the supplier (incentives, technology, competence, resources, flexibility, etc), the product (R&D, complexity of the product, potential economies of scales, etc) and environmental factors (e.g. level of competition and market). The underlying economic motives will develop characteristics of a relationship. For example, characteristics of product can lead to cooperation that further strengthens the relationship since both parties get to know each other, which can lead to adaptation and dependence (Normann, 1992). The view of interrelationship between characteristics of and reasons for a relationship appears to be rather common. For example according to Tomkins (2001) trust is not a goal in itself, but rather part of an economically beneficial relationship.
“The relationship must deliver something out of value to the parties involved as well as being simply an arena for trust.”

(Tomkins, 2001, p 174)

The logic of the interrelationships between economic/efficiency aspects and characteristics of relationships is shown in the figure below:

![Diagram showing the relationship between economic aspects and characteristics of interorganizational cooperation](image)

**Figure 2.3** The relationship between economic aspects and characteristics of interorganizational cooperation

The figure above is a way of showing the assumption of a relationship between efficiency factors and the characteristics of a relationship. However, it should be noted that since the relationship in many cases presents a high degree of complexity, it is difficult to assess economic consequences (Gadde and Snehota, 2000). Although there are problems assessing all benefits, it is reasonable to expect that the most appropriate relationship characteristics are (or should be) developed in order to achieve an optimal economic output of the relationship. A number of empirical studies have been conducted dealing with the relationship between performance (efficiency, etc) and certain characteristics of interorganizational cooperation (e.g. Petersen, 1999, Varadarajan and Cunningham, 1995 and Steffel, 2000).

In the figure below (2.4), the relation between economic aspects and characteristics of a close relationship is presented on a conceptual aggregated level. It would be difficult to place or move a single case along the line. One reason why it can be difficult to move up or down the line in the figure is that it takes time to develop certain characteristics of a close relationship such as mutual trust, adaptations, information exchange, etc. This cumulative view of the relationship can be seen in different stage- or life-cycle models (e.g. Ford, 1980). The life-cycle models often combine performance aspects in a wide sense with characteristics of a relationship (e.g. Dwyer, Schurr, and Oh, 1987 and Wilson and Mummelaneni, 1986).
Dwyer et al (1987) identify four phases during the development of an interorganizational relationship. The first phase is called awareness and its main characteristic is seeking a partner with certain attributes. The second phase, exploration, means that interaction starts and increases on the basis of a number of sub-processes such as communication and bargaining. At this phase it is still easy to leave the relationship. The third phase is called expansion. Here cooperation becomes more intensive with mutual adaptations and interdependence. Both parties also try to increase the exchanges within the relationship rather than from other potential alternative partners. The fourth phase, called commitment, is the last in the building of the relationship. During the commitment phase, both parties develop shared values, problem and conflict solving capabilities, and mutual inputs and adaptations which cause interdependencies. Wilson and Mummalaneni (1986) present a model that deals with the development of a relationship and how the characteristics of a relationship (trust, social bonds and commitment) and performance-related issues are interrelated to each other. The key concept in the model is the importance of trust for investments.

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4 Dwyer et al (1987) also identified a fifth phase called the dissolution.
2.2.3 Theoretical approaches to interorganizational cooperation

This section presents a brief overview of three main interorganizational theories, resource-based theory, transaction cost theory and the interaction approach. They are further elaborated when characteristics of and reasons for closer relationships are discussed in the next section.

2.2.3.1 Resource-based theory

The main theme of resource-based theory is that in order to understand the behaviour of an organization one must understand the environment in which it operates (Pfeffer and Salancik, 1978). The reason for the external considerations is that the company is dependent on the conditions of its environment and on external resources (Cyert and March, 1963 and Pfeffer and Salancik, 1978). The resource-based theory deals with procurement of resources rather than how to use them. The focus on how to acquire resources rather than how to use them in an efficient way has been criticized as a weakness of the resource-based view (Whetten, 1978). The resources can be obtained either by competing or interacting with the environment (Thompson, 1967). The resource concept has a number of different definitions and has also been classified in several ways e.g. homogeneous/unique, plentiful/rare and mobile/immobile (Ring, 1996).

Pfeffer and Salancik (1978) state that external dependency motivates a strong focus on the environment. The purpose of the interaction with the environment is to manage and secure the resource flows. Underlining the importance of external resources, they declare:

“This book discusses how organizations manage to survive[...]

(Pfeffer and Salancik, p 2, 1978)

Since the resource flows give the external units a substantial influence, the company will try to manage and control the dependencies in order to achieve a high degree of autonomy by reducing the external constraints. Interaction with the environment is motivated by the resource-based theory to reduce the risk of the external uncertainty (Cyert and March, 1963). The role of the relationship is to create and exploit synergies between the resources of the different companies (Ring, 1996).

2.2.3.2 Transaction cost approach

The transaction cost approach is often associated with Professor Oliver Williamson. Its basic logic is that the company tries to minimise the sum of the transaction cost and the production cost (e.g. Williamson, 1985). It assumes that strife for efficiency is the firm’s main goal. The main issue is how to deal with the connection between the different steps in the chain.
The term that is used in the transaction cost approach for this issue is “governance structure”. Between the two extremes, hierarchies and markets, there are different hybrid forms of governance structure such as long-term contracts and joint ventures (Williamson, 1975, 1991).

There are, according to Williamson, three factors that influence the transaction cost: asset specificity, frequency and uncertainty. The asset specificity means how specific the assets are for a certain relationship and accordingly how dependent the companies are on each other. The transaction specific assets can arise both by the buyer and the seller. The term asset, in the transaction cost approach, has a wider meaning than in accounting and it can be tangible as well as intangible. In the transaction cost approach, there are three main types of specific assets: human assets, physical assets and site specific assets. Williamson has also mentioned a fourth type called dedicated assets. The frequency represents the volume and number of purchases. The higher the frequency, the more vertically integrated the relationship between the companies should be, as this increases the chance to gain mutual knowledge regarding each other’s preferences and behaviour (Ring, 1996). Accordingly, the exchange of information has a central role. Uncertainty means that the company cannot predict the outcome of the transaction with another company on the market since the two have different interest orientations. The specific investments could be one reason for integrating and thereby facilitating the control of the activities of one single firm in order to reduce the risk for opportunistic behaviour. Another way to reduce the uncertainty is to use contracts between the companies (Williamson, 1975). Uncertainty is therefore an effect of the assumption that the company is self-interest oriented. A strong self-interest, based on the assumption of bounded rationality, leads to an opportunistic behaviour on the market (Williamson, 1985).

“[…] opportunism refers to the incomplete and distorted disclosure of information, especially to calculated efforts to mislead, distort, disguise, obfuscate, or otherwise confuse.”

(Williamson, 1985, p 47)

Since transaction cost theory has its origin in economic theory, the focus is on notions such as opportunism and self-interest (Nooteboom, 1999) and ways for an actor to protect oneself from the effects of such mechanism. That creates transaction costs. Trust is not a main building block in this theory.
2.2.3.3 The interaction approach

The interaction approach is strongly related to the IMP-Group (Industrial Marketing and Purchasing Group) that is often associated with The University of Uppsala in Sweden. (The terms network theory, the IMP school and market exchange theory also have a similar meaning as the interaction approach described here). Its development was originally based on empirical findings from industrial markets regarding aspects that were largely disregarded or overlooked by the existing theoretical body. The IMP Group (1982) asserts that the market or hierarchy discussion in its extreme form overlooks certain conditions. Firstly, the market is not as flexible and organizations (hierarchies) do not operate as smoothly as assumed. Secondly, the transaction does not take place in a social vacuum or neutral setting. The transactions carried out will create a certain atmosphere and influence the relationship. The theoretical points of departure are mainly interorganizational theory and new institutional theory (IMP-group, 1982). One of the most well-known models of interaction is the interaction model (also referred to as the IMP model).

![Diagram of the interaction model]

**Figure 2.5** The main elements of the interaction model. IMP, 1982, (p 11 in Ford ed, 1990)
According to the IMP-model, the interaction between two industrial parties can be described and analyzed by utilizing four groups of variables: (1) the interaction process, (2) the participants, (3) the environment and (4) the atmosphere that affects and is affected by the interaction. The basic groups of variables are then divided into a number of sub-categories.

1. The interaction process is divided into (a) the individual episode and (b) the long-term aspects. The episode is divided into four exchanged elements, product or service, information, financial and social exchange. The long-term relationship is interrelated to the episodes in the sense that the episode takes place within the built-up relationship, and the relationship is affected by single episodes.

2. The participants can be the organization and the individuals. Some of the main factors of the organization are: (a) Technology that ties the production of the seller to the application of the buyer. (b) Organizational size, structure and strategy. (c) Organizational experience both from the specific relationship and from other activities. (d) Individuals with different roles, levels and functions who builds up social bonds.

3. The environment of the interaction is divided into five aspects: (a) Market structure, i.e. the number of alternatives both parties have. (b) Dynamism, i.e. the pros and cons switching supplier or buyer. (c) Internationalisation which affects the organization and competence. (d) Position in the market channel represents position of the specific relationship in the extended channel or network of companies. (e) Social system between the two parties and in a wider context. This is emphasised in international relationships but certain industries etc can develop their own “language”.

4. Atmosphere refers to issues such as power, cooperation vs. conflicts and expectations. The atmosphere is divided into two main dimensions: (a) The economic dimension includes the costs and/or revenues of a relationship. (b) The control dimension includes dimensions such as power/dependence, uncertainty and cooperation.

The interaction approach focuses on the interaction in the relationship between actors (nodes i.e. organizations and/or individuals). The single transaction normally takes place within the frame of an established relationship, though the relationship changes over time because of the interaction between the actors. Accordingly, the interaction approach assumes that the relationship is a cumulative process of gaining experience and learning. Relationships change and develop over time and undergo different phases.
The single transaction is embedded in the relationship. This on-going process creates mutual expectations and behaviour pattern, which are often taken for granted. Information plays an important role as a tool for mutual interorganizational learning, understanding and adaptations. It also creates trust that can stimulate increased information exchange.

Since the relationship is developed in a process, the position of the two parties depends on previous activities (Johansson and Mattsson, 1987). Furthermore, as relationships often are connected, these systems appear as networks. This means that the environment of a specific relationship could often be regarded as some kind of network. This in turn, opens up for a lot of analytical challenges of relevance for the notion of interrelated relationships.

The actors in a network and relationship can vary as well as the level of analysis or the studied aspect. According to Harland (1996) some of the aspects are: the competitive position in the network, definition of the components, the structure of the networks and the performance of the network (Harland, 1996). The role of the actors in the network is determined by the resources they control and the activities they perform. Thus it is the unique combination of resources and activities that establishes the identity of the actor (Håkansson and Snehota, 1995).

The focus of the interaction approach and network theory is mainly on the complementarity between the actors and less on the competition and conflicting interests between them. The assumption of the nature of the actors is often based on sociology, which enables the interaction approach to consider trust among other things as an important factor of a relationship. Concepts like efficiency, effectiveness and opportunism are not the main focus.

2.2.3.4 Concluding remarks on the theoretical approaches

One main difference between the three approaches is the unit of analysis. The resource-based theory focuses on the flow of resources controlled by different companies. The interaction approach focuses on the relationship whereas transaction cost theory focuses on the transaction.

According to the resource-based theory, a company is dependent on resources controlled by other companies. The resources can be obtained, among others, by cooperating with each other. Since the interaction approach focuses on the relationship, the single transaction (episode) is assumed to take place within a built-up relationship rather than a “social vacuum”. The relationship is built jointly on a number of aspects and through interaction with the other party. The relationship from a transaction theoretical point of view is based on strictly economic reasons in
order to reduce the total cost for the focal company, which also decides about the governance structure.

The relationship from a resource-based perspective is a balance of a number of conflicting interests such as reducing dependency to gain flexibility vs. investing in order to create and obtain more value. The relationship from an interaction perspective is a cumulative process with mutual adaptations, including building trust. All three approaches deal with dependencies, such as relationship-specific investments, arising through the cooperation. The three approaches tend to highlight different aspects for handling the issue. The resource-based theory claims that dependency is an effect of specialisation and therefore the reduced autonomy has to be balanced with the advantages created by the specialisation. Transaction cost theory assumes that the other party is opportunistic. This problem is solved by contracts or different types of “economic hostages”. The interaction approach acknowledges and highlights mutual trust and commitment.

2.2.4 Characteristics of a close relationship

This section discusses basic characteristics, foundations and dynamics of a close relationship. The characteristics dealt with in this section are not all aspects of a close relationship but some of the most frequently mentioned in the literature. The characteristic information exchange (communication) will be highlighted since it is reasonable to believe this is related to exchanging information regarding costs.

There are a number of studies that have used rather similar characteristics for describing a close relationship. The table below presents some of the characteristics used in the literature. If the characteristic is used, it is marked with X. If there is a similar characteristic, it is marked with its name in the literature.
Table 2.1 An overview of characteristics of a relationship applied in previous literature

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In this thesis, the characteristics will provide one focus of the initial collection of data. That means that there is also room for exploring other aspects of importance. The characteristics chosen are:

1. Information exchange
2. Adaptations and investments
3. Commitment to develop and to keep up the relationship
4. Trust
5. Dependence and power

Point 1 and 2 can be seen as descriptions of the way the relationship is carried out, whereas points 3-5 can be seen as assessments of the relationship. Apart from the five characteristics presented above, one more is considered, but to a lesser extent. That is opportunism. Due to the chosen research method discussed in chapter three, it is not possible to explore this in detail. Further the role of competition and competitors will be dealt with. Competition as such is not a part of the relationship, but as indicated by the IMP model above (section 2.2.3.3) it is a part of the atmosphere surrounding the relationship.
As discussed in section 2.2.1, many of the characteristics appear to be inter-related. Therefore they are elaborated together rather than separately in this section. When elaborating the characteristics, three areas are dealt with. Firstly, the meaning of the characteristic. Secondly, how the characteristic is related to a close relationship. Thirdly, how the characteristic is related to the other characteristics.

The opposite of a close relationship is an arm’s length relationship. In an arm’s length relationship the distance is large between the buyer and the seller and no party controls the other. Under Hirschman’s exit- and voice-terms, this is an exit relationship (Hirschman, 1970). Exit in this case, means that when the short-term obligation or transaction is fulfilled, or a problem occurs in the relationship, one leaves the relationship and finds another partner. The other type of relationship is based on social relationships and trust and is therefore called voice in order to underline the importance of communication. Instead of leaving (exit), the buyer and the seller try to communicate in order to solve problems and to keep up the relationship (voice). Therefore, the information system regarding the environment gives meaning to the environment and provides information on how the environment affects companies’ actions (Pfeffer and Salancik, 1978). Further, in a voice relationship, the coordination between the two companies is explicit and tailored to the specific relationship, which is opposed to the implicit coordination of “the invisible hand” on the market (Clemons, Reddi and Row, 1993).

Helper (1991) has further developed Hirschman’s exit- and voice-terms by using the dimensions of degree of commitment and degree of information exchange. By combining the commitment dimension and information exchange dimension, Helper (1991) identifies four types of relationships between the buyer and the seller. They are called Voice - high commitment and high information exchange, Infeasible – low commitment and high information exchange, Exit – low commitment and low information exchange and Stagnant – high commitment and low information exchange. The category mostly related to this thesis is the voice relationship.

Commitment is regarded as a key factor for the success of an interorganizational relationship (Young, 1996). Commitment refers to the degree of certainty that the buyer will continue buying the products for at least a certain period of time. Commitment could also include the willingness of the company to pay efforts in order to keep up and develop the relationship. Commitment can be of various types, like oral agreements, legal contracts, common investments, equity interest and vertical integration (Harland, 1996), as well as different kinds of adaptations of, for example, a product (Ford, 1980). A high degree of commitment can lead to, among
others, benefiting from synchronisation and reduced uncertainty, but also the risk of being locked into inappropriate technologies (Miles and Snow, 1987) as well as other lock-in effects. The buyers can also commit themselves involuntarily by, for example, only being able to obtain a product from a single or a few suppliers (Helper, 1991). Also the suppliers expose themselves to risks by being dependent on a limited number of close buyer relationships. The benefits of the closer relationship ought to be compared with the risk associated with being dependent on an outside partner.

Information exchange includes both the type of information and the mutuality of information sharing between the buyer and the supplier (Helper, 1991). In some cases from the Japanese automotive industry the suppliers are even expected not only to share information with the buyer but also with the competitors (Dyer and Ouchi, 1993). Several ways of information sharing are possible, like common information system, sending employees to the other party’s plant and common R&D projects. Lamming (1993) points out two aspects of information exchange, the personal and the technical. The personal aspect influences and is influenced by the relationship since it deals with information shared by individuals in the organizations. This kind of contacts between individuals in both firms takes time to establish and develop, but are important for the information exchange because the number of persons working with the relationship in each firm can be substantial (Johansson and Mattsson, 1988). The technical aspect deals with the occurrence of technical solutions for information processing (EDI). Due to the advent of information technology, the information sharing between the buyer and seller has opened an “information highway” that has increased the visibility and transparency between companies involved (Christopher, 1998). The information exchange enables quicker response to market place changes and influences the relationship as such by creating mutual understanding. Another important type of information, according to Christopher (1998), is cost data that is shared both upstream and downstream in order to increase the transparency. The purpose of the cost transparency is to make it possible for the buyer and supplier to work together to reduce costs and improve other factors. One aspect of the cost transparency is the accumulation of value in the supplier's process (Lamming, 1993). Then the costs in different stages of the process become a potential target for improvements. It is important though, to note that the cost sharing can also go in the other direction. In this case the buyer shares cost data with the supplier in order to encourage suggestions of cost savings and other factors from the supplier (ibid.). The cost sharing, according to Lamming (1993), can be used to “share the pain” in difficult times.
Helper (1991) outlines three reasons why information exchange requires and causes a high degree of commitment:

1. It is expensive to build up and maintain a common information system.
2. Exchanging certain type of information requires trust.
3. Knowledge about the other party’s needs, products, processes, etc. can lead substantial benefits, supporting a win-win situation.

1. The administrative complexity of the relationship can be very high and certain interorganizational information systems are in some cases developed (Van Weele, 1994). Those systems can reduce the costs for the interaction between the partners but are also costly. In order to invest in them a certain degree of commitment is required as the investment to a large extent is specifically connected to a certain buyer/seller. From this point of view, it can also be motivated to keep this type of investments at a low level in order to increase autonomy and flexibility.

2. When dealing with another party, there will always be some degree of uncertainty and dependence involved. If there is both high dependence and uncertainty in a relationship, a dangerous situation can occur. To use contracts for regulating or to plan for all kinds of unexpected future events, is in most cases almost impossible or at least very costly (Håkansson and Gadde, 1992). Contracts can also be seen as a sign of mistrust that creates further regulations and mutual constraints and are thereby destructive for the development of the cooperation. Trust can make the exchange more agreeable and flexible than contracts (Nooteboom, 1999). Developing trust and flexibility could be especially important in some situations e.g. when joint innovation is an important feature of the relationship. Therefore trust can be essential in a relationship since it underlines cooperation rather than confrontation and opportunistic behaviour.

Trust can refer to both an individual interpersonal level, and to actors as companies (e.g. Easton, 1992), but it can also be important to establish a wider reputation of trustworthiness. Trust in the specific relationship is developed over time through economic and social exchange processes. Therefore, it is possible that exchange of information develops trust that can permit even more valuable information to be shared in the future (Ring, 1996). Besides the process based trust presented above (i.e. something that comes as a result of performing well, fulfilling agreements and sharing information) trust can be enabled by the characteristics of the members (e.g. age or gender) or by institutional factors like frames of references and common expectations.

An important distinction is drawn between competence trust and intentional trust (Nooteboom, 1999). Competence trust refers to the ability
of the trustee to meet the obligations or expectations. Intentional trust refers to the trustee’s willingness to meet the obligations or expectations. The transaction based theory has later developed the view of trust. Williamson (1993) distinguishes between three types of trust: calculative, personal and institutional. The calculative trust refers to a logic rational self-interest oriented behaviour based on rational factors such as dependencies, power, etc. The personal trust is not based on a self-interest assumption but instead on personal relationships and can therefore only be seen between individuals. The institutional trust is a type of calculative trust that highlights the organizational context.

A key element for building trust in the cooperation is thus related to the sharing of information regarding e.g. manufacturing processes, R&D, but also financial information. The information that is shared can be both informal and formal as long as it is timely and meaningful (Anderson and Narus, 1990). In order to share this kind of information in a cooperative way, trust is important so that the supplier can be sure that the information will be used for mutual benefits (Dyer and Ouchi, 1993) rather than be misused (e.g. forwarded to competitors) or be used just for cutting profit margins. Further, joint development projects (R&D, technology, etc.) involving tacit knowledge can be difficult to regulate and divide. Therefore trust plays an important role in these type of activities.

3. Knowing about the other party’s needs enables mutual adaptation in order to develop the relationship.

“The mutual orientation implies also that the firms have a mutual knowledge about each other and that they are aware of each other’s interests and are prepared to pay some attention to them.”

(Johansson and Mattsson, 1987, p 37)

One way of making adaptations on an operative level, is when the buyer informs the supplier regarding expectations on delivery, price and quality, etc. (e.g. Helper, 1991). The adaptation can, in the long run, be more important than just informing each other in specific transactions. The meaning of adaptation is, according to Håkansson and Gadde (1992), that a certain partner is treated in a unique way. If a group of partners use the same attributes, the adaptation can be for the relationship with a group of partners. If all the partners were a totally homogeneous group, there would consequently be no need for adaptation.

According to Hägg and Johansson (1982), mutual adaptation can have three positive effects: (1) An efficient way to buy or sell the products. By knowing more about each other’s needs the supplier’s resources can be used in a more efficient way. (2) There will be different kinds of incentives to
control the other party due to the investments in the relationship. (3) The adaptation can further develop knowledge when the parties are cooperating.

In many cases adaptation is about substantial investments. From a relationship viewpoint, investments can be viewed in a wider perspective than what is normally considered to be an investment (Hägg and Johansson, 1982). The adaptations and investments from this wider perspective can be of various types: technical, knowledge-based, administrative, economic and legal (Håkansson and Gadde, 1992). Hägg and Johansson (1982) refer to investments specifically oriented to a certain relationship or transaction as relationship specific. Typical for a relationship specific investment is that its value is low or even zero if the relationship is discontinued (ibid., and Williamson, 1975). A relationship specific investment accordingly serves as an “economic hostage” (e.g. Williamson, 1985) in order to foster commitment to the relationship and reduce the risk of opportunistic behaviour. Therefore, the relationship specific investments can increase the incentives to keep up a relationship due to the costs involved in switching to an alternative supplier or, from the supplier’s perspective, looking for a new buyer. An example of relationship specific investments from the automotive industry could be that the car assembler normally invests large amounts in tools that are used by the supplier. The tools can often not be given to another supplier without expenses (Womack et al., 1990).

In order to support investments, there has to be matching incentives. This means that the investments required of each of the parties in order to increase the efficiency of the relationship (or supply chain), have to reduce both parties’ individual costs (Liron, 1999).

Adaptations and investments cause heterogeneity (asset specificity). Therefore different kinds of dependencies or interdependencies occur when the relationship is based on complementary assets and skills. The supplier is dependent on the demand from the buyer, since the demand can have a significant economic influence both in terms of the amount of goods sold and the percentage of the supplier’s total sales (Porter 1980). This type of dependency can also cause a social responsibility of the buyer that goes further than just the legal obligations. The social responsibility can also be important for building up a reputation of being trustworthy, not only in the specific relationship but also in a wider meaning. The buyer on the other hand can be dependent on the supplier if the resources the supplier controls are scarce.

According to Pfeffer and Salancik (1978), dependence of one party upon the other is built, amongst other things, on the importance of the resources that are obtained and on the alternatives to the resources. In the long run the exchange process between the buyer and supplier can be adapted so that it becomes a key to important competencies even if they are “outside” the
company (Håkansson, 1987). The establishment and development of a relationship can accordingly secure the access to scarce resources and reduce uncertainty (Pfeffer and Salancik, 1978). Since the importance of the relationship can differ between the buyer and the seller, the incentives to maintain and develop it can differ. Therefore the dependence and the power in the relationship are often asymmetric (Håkansson and Gadde, 1992). In order to reduce the asymmetry, the supplier and/or the buyer can strive to reduce its own dependence or increase the other party’s dependence. It is also possible for both parties to increase the mutual dependence in order to create stronger mutual incentives for a long-term relationship (Lilliecruetz, 1996).

The (inter-) dependence can create potential problems if the two parties do not trust each other and suspect an opportunistic behaviour (Dyer and Ouchi, 1993). Opportunism in this context means acting in pure self-interest rather than in the interest of both parties in the relationship. Opportunism and opportunistic actors have a central role in the relationship according to transaction cost theory. According to Williamson (1985, 1991) not all the actors are constantly opportunistic, but are rather more or less opportunistic more or less of the time. Accordingly, opportunism varies. With a high degree of opportunism, prior to the transaction, one actor cannot predict the other actor’s opportunism. According to Nooteboom (1999), this view does not consider the opportunity to build up a general reputation for being trustworthy, the idea that Williamson accepts elsewhere.

Closely related to dependence is the notion of power. Power is often given the meaning that a person, an organization, etc. has the ability to influence another party (e.g. Blau, 1964) and make it do something it would otherwise not do. Porter (1980) divides the notion of power into two categories, direct and indirect power. Direct power is concerned with the bargaining power related to the economic influence due to the purchases and can take into account the sales and the percentage of the total sales. Indirect power deals with the conditions of the market and the industry, including barriers and threats of entrance for competitors, the buyer’s possibility to find substitutes and the competition among the existing suppliers. According to Porter (1980 and 1985), the companies involved in a relationship try to increase their power over the other party. This is possible since power is seldom symmetric. With strong bargaining power, it is possible to gain a larger part of the created value in the relationship (ibid.). According to Carlisle and Parker (1989) and Håkansson and Gadde (1992), the attitude to power and dependence has changed. Previously, it was a key objective to stay independent by keeping an arm’s length distance to the supplier or buyer. Since cooperation or purchasing has begun to be more
systematic and long-term, dependence has been more accepted and the question is rather how to handle different dependence situations (ibid.).

2.2.5 The efficiency aspects of interorganizational cooperation

This section deals with reasons why two companies are getting close rather than the consequences and characteristics of a close relationship. The main motive is, in a wide sense, efficiency i.e. that a certain aspect can be beneficial for the company in its strive for increased profit.

Closer relationships often lead to a reduction in the number of suppliers since it is not possible to keep a long-term relationship with too many suppliers due to the intensive work with selection and evaluation and later joint problem solving and improvements (e.g. Spekman, 1988). In some cases single sourcing is applied in a hybrid form referred to as single and dual sourcing, which means that a buyer has two suppliers providing similar products but only one supplier delivers the specific product (Hines, 1995). A barrier to reduce the supplier base is that the buyer becomes dependent upon fewer suppliers. Implementation of a closer relationship is also based on behavioural and cultural aspects as well as the economic aspects discussed below. Due to the reduced number of suppliers, it is also possible to establish and keep a closer relationship including information sharing, mutual problem solving, sharing of success and improvements, and more intensive evaluation of the supplier’s added value (Stuart, 1993).

Before the economic consequences are discussed, it can be worth noting that some difficulties are related to estimating the economic outcome of relationship. Gadde and Snehota (2000) point out that the complexity of supplier relationships makes it difficult to use the supplier in a good way. Firstly, it is difficult to assess the economic consequences due to the complexity of the range of products, services and people involved in the relationship. Secondly the supplier cannot be fully controlled and therefore the relationship contains a degree of uncertainty and ambiguity. A more substantial intervention in a supplier relationship can cause complex and complicated consequences.

The benefits of a closer relationship are discussed in different ways in the literature. There are three types of stakeholders that are discussed, the suppliers, the supply chain and the buyers. A main part of the discussions regarding benefits and problems of closer relationships are seen from the perspective of the buying company (Kalawani and Narayandas, 1995). The discussion here includes both increasing and decreasing the distance, since it reviews reasons for out-sourcing an internal function and establishing closer relationships with distant suppliers.
The supply chain management and closer relationships can create certain competitive advantages, but there are also barriers to run it effectively. According to Maloni (p 8, 1997) the barriers are:

- Failure to share information
- Fear of loss of control
- Lack of self awareness
- Lack of partner awareness
- Enormity of supply chain
- Inability to recognise goals
- Lack of customer understanding
- Lack of understanding of the supply chain
- Myopic strategies
- Deficiency of mutuality

There are a number of economic benefits of interorganizational cooperations. In the literature there are apparently two slightly different categories that are dealt with. The first is how the buyer can benefit by reducing the input/output ratio. The second deals with how the cooperation per se can be beneficial. The former category has more of an internal focus to purchased components with benefits such as finding sources of cheaper suppliers, reducing the average cost with higher volumes and reducing capital investments (Young, 1996). The second category deals more with benefits from closer cooperation. From a brief review of the literature, Maloni (1997) identifies a number of potential benefits of closer relationships. The motives are:

- Reduced uncertainty for the buyer regarding material costs, quality, timing and easiness of managing a reduced supplier base (Dwyer, 1993).
- Reduced uncertainty for the supplier regarding market conditions, customer needs and product specifications.
- Reduced uncertainty for both parties in convergent expectations and goals, reduced effects from externalities, reduced opportunism and increased communication and feedback.
- Joint product and process development supporting faster product development, increased sharing of technology and greater involvement of product design.
- Greater flexibility is a frequently mentioned reason for long-term relationships (e.g. Ring and Van de Ven, 1992). The flexibility means it is for the two companies to leave the relationship when they no longer
complement each other or if better performing alternatives occur. If the focal company wholly owns the resources the leaving would be more complicated. However, the notion of flexibility could be compared to the commitment to the strategic alliance, which has proved to be one of the key elements of its success (e.g. Mohr and Spekman, 1994). The notion of flexibility implies that the commitment to a strategic alliance is based on the performance or the expected performance of the other party.

- Cost savings by benefits regarding economies of scale in ordering, production and transportation, decreased administrative costs, fewer switching costs (Womack et al., 1990) and enhanced process integration, technical and physical integration and improved asset utilisation (Newman, 1988, Wilson, Dant and Han, 1990).
- Time management by faster product development, faster new products on the market and improved cycle time.
- Stability of lead times and priorities and attention.
- Shared risks and rewards by joint investments, joint research and development, market shifts and increased profitability.

There are obviously a number of benefits a close relationship but there are also costs and other disadvantages. Poole (1997) based on Schermerhorn (1975) summarises a number of potential costs for a close relationship.

- Loss of decision autonomy – due to the obligations, commitments, etc. in the relationship, the parties are expected or required to partly decide together regarding future activities. Accordingly, the company also has to consider the other party when making decisions.
- The second cost of relationship is that the image and identity can be affected in a negative way, which can influence the prestige and strategic position (ibid.).
- Another cost is that the relationship requires organizational resources that are limited or could be used for other purposes (ibid.).

This section has presented a number of rather pragmatic reasons for cooperating. They appear as two main types. The first is related to the cooperation with another party and its characteristics, such as reduced uncertainty. The second is related to what is really delivered, cost savings, time management etc. The two focus areas are therefore:

- Characteristics of the focal company and its ambitions to be an attractive party.
- Characteristics related to the product, i.e. cost, requirements etc.
2.2.6 Concluding remarks

This section presents interorganizational relationships in order to gain more knowledge about the situation in which costing is studied. It has three focuses. Firstly, the activities and their coordination, which serve as a general framework. Secondly, the characteristics of a close relationship with a certain focus on information exchange. This part presents the significant complexity of interorganizational relationships and the difficulties in grasping them in a one-dimensional continuum. A number of common concepts for describing and assessing a close relationship are highlighted. Thirdly, there is a discussion on benefits and motives for companies to enter closer relationships. Further, the trade-offs between pros and the cons of closer relationships are discussed.

2.3 Interorganizational cost management – methods and techniques

As there is a common view that relationships are important and that it is important to be a part of an effective supply chain, a number of interorganizational cost management (IOCM) techniques have been developed (Cooper and Yoshikawa, 1994 a and Cooper, 1995). So far, the IOCM literature has mainly focused on Japanese companies with a long tradition of a more developed cooperation between suppliers and buyers (ibid., Maloni, 1997). (For a historical review of Japanese cost management and target costing, see Koga, 1999). IOCM is not a technique as such but rather an approach on how to cooperate in interorganizational relationships in order to increase the joint efficiency. Cooper and Slagmulder (1999), who have written one of the main books on the subject, describe IOCM as:

“[… ] a structured approach to coordinating the activities of firms in a supplier network so that total costs in the network are reduced.”

(Cooper and Slagmulder, 1999, p 145)

Accordingly, sharing information to coordinate activities between the buyer and the seller is one of the key issues in IOCM.

“The objective of the interorganisational cost management systems is to identify innovative ways to reduce the cost of the products supplied by the entire supplier chain. In theory, these mechanisms should result in lower product costs by allowing all of the firms in the chain to share information.”

(Cooper and Yoshikawa, 1994 a, p 51)
Cooperation and IOCM makes it possible to create a win-win situation by
knowing more about the other party and its resources. (A win-win situation
does not necessarily mean sharing on a 50/50 basis. It rather means that
both parties benefit from the result of the cooperation, Christopher, 1998).

This chapter describes the IOCM techniques mentioned in the
literature. In line with this thesis, the focus is mainly on the supplier's
perspective rather than IOCM in general. The reason for describing the
characteristics of the IOCM techniques and how they are applied is that
they can influence the design and use of the traditional “intraorganizational”
costing system of the supplier. The techniques discussed are:

1. Target costing, value engineering (functional analysis) and value analysis
2. Disclosed cost data (cost split-up and cost breakdown), cost tables, and
   open books
3. Quality-functionality-price trade-offs and related techniques
4. Minimum cost investigations

The main part of the description is on the first two techniques. They are
also more established and commonly referred to in the literature. The
techniques in this chapter are not totally separated from each other but can
rather be used to support each other. Some of them lack generally
established definitions and are occasionally used in different ways, with
different meanings. It is worth noting that CIMA’s Management
Accounting Official Terminology (1996) only includes a few of the
techniques. Further, the second technique is more technically oriented while
the others are more general approaches or methods of working. (For
presentation purposes they are all referred to as techniques in this section).

2.3.1 Target costing, value engineering (functional analysis) and value
analysis

The following section describes the concepts and definitions of target
costing, value analysis, value engineering and functional analysis and then
discusses their relevance to interorganizational cooperation and theoretical
foundations.

2.3.1.1 The concepts of target costing, value engineering and
value analysis

Target costing (TC) is widely dealt with in the management accounting
literature. Developed by Sakurai (1989), the term has its origin in the
Japanese “gena-kikaku”, or cost planning (Koga, 1999). The main part of the
literature deals with practice, and research has mainly been exploratory and usually lacks details. According to Koga (1999), literature appears to rely on anecdotal evidence and descriptions of standard practices on a relatively general level (Koga, 1999).

“[…] the target costing process remains a black box.”

(Koga, 1999, p 2)

Further the literature to some extent has the character of “how to do”. For example the following is written in the foreword and the cover of two of the main books on the subject:

“Read this book to learn how to manage your supply chain to forge a competitive advantage while reducing costs.”

(Cooper and Slagmulder, 1999, backside of the cover)

“We hope you and your organization will reap many benefits by implementing a target costing process using the principles and methods recommended in this book.”

(Ansari et al., 1997, p vi)

Target costing (TC) is based on determining the expected selling price of a product before it is developed, or while it is under development, and then subtracting the expected profit in order to identify the cost at which the product should be manufactured (e.g. Cooper and Slagmulder, 1997 and Ellram 2000). The basic formula of TC is (e.g. Sakurai, 1989):

\[
\text{Target cost} = \text{Selling price} - \text{Required profit margin}
\]

CIMA’s definition of target cost underlines the expectations of the market, and the profit margin as the point of departure:

“A product cost estimate derived by subtracting a desired profit margin from a competitive market price.”

(CIMA, 1996, p 32)

The main part of the literature on TC deals with Japanese conditions. Kato, Böer and Chow (1995) stress that the English word “Target” does not cover the high degree of commitment target cost entails when it is applied in a Japanese company. The target cost in a Japanese company is not a goal as in many Western companies, but a strong commitment that the manager will do everything in his power to reach it (ibid.). The importance of not exceeding the target cost is referred to as “the cardinal rule” by Cooper and Slagmulder (1999), which further underlines its significance. After the target
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is set, a process of decomposing or breaking down the target costs takes on. It is when the target cost is broken down to a component level that it usually involves the supplier.

There are a number of different definitions and meanings related to TC. One reason is that various applications depart from different perspectives and have different scopes. Practically, the actual TC processes differ from one firm to another, though the literature identifies common elements (Koga, 1999). The features of the TC process are often related to areas outside the traditional management accounting, for example in the literature on product development and supply chain management.

Kato (1993) and Fischer (1995) both assert that the TC process begins at the early stages of a product’s life-cycle.

“Target Costing is an activity which is aimed at reducing the life-cycle costs of new products, while ensuring quality, reliability, and other customer requirements by examining all possible ideas for cost reduction at the product planning, research and development, and the prototyping phases of production.”

(Kato, 1993, p 36)

“Target costing is a systematic process for reducing product costs that begins in the product planning stage.”

(Fischer, 1995, p 50)

Ellram (2000) provides a similar definition in which she underlines not only the goal setting aspect but also the fact that TC is a method of working rather than a costing method.

“Target costing is a process whereby an organization develops specific goals, or targets, for its costs to produce a good or service.”

(Ellram, 2000, p 39)

However, in many cases, TC is extended in time to include manufacturing processes. For example Sakurai (1989) defines target costing as:

“[…] a cost management tool for reducing the overall cost of a product over its entire life-cycle.”

(Sakurai, 1989, p 40)

Sakurai claims that TC is not a tool for cost control by using standard costs. Instead, TC is used for cost planning and cost reduction through the two main processes (Monden and Sakurai, 1989 and Ansari et al., 1997):
1. Planning the product that will satisfy the customers, requirements and then establishing the target cost from the target profit and the estimated sales price of the product.
2. Realising the target cost by using value engineering and comparing the target costs with the achieved costs.

Koga (1999) finds limitations with some TC definitions: (1) The first limitation deals with the way the target cost is related to the product development in the TC process. According to Koga (1999, p 24), it is unlikely that a product designer in the conventional way of working: “[…] does not have any cost target in mind when developing a product.”

(2) The second limitation is a practical problem that occurs when the firm realises it is not possible to reach the target cost. Koga (1999) states that several of the “success stories” of TC, such as those describing the automotive industry e.g. Toyota and Nissan, have to adjust their target cost when they realise that the strictly determined target cost cannot be reached. The two limitations indicate that the difference in practice between the TC approach and the conventional approach is not as distinct as it initially appears (ibid.). Koga (1999, p 24) also criticises Sakurai’s (1989) definition of TC presented above. He says that Sakurai’s definition is so wide that “any cost control” can be regarded as TC.

TC is closely related to the concepts of value engineering (VE) and value analysis (VA). (VA is also occasionally referred to as kaizen costing or continuous improvements). The basic idea in VE and VA is to relate the cost of the product to what the customer is willing to pay. VE therefore supports the companies’ efforts to manage the trade-off between function and cost. Accordingly VE and VA have an important role in the efforts to attain the target cost. Cooper and Slagmulder (1999) point out that Japanese VE programs do not strive for minimising the cost, but for achieving the target cost. This approach is different to the Western one that tries to reduce costs to an unspecified minimum. VE can be defined as:

“An activity to design a product from different angles at a lower cost by reviewing the functions needed by customers.”

(Sakurai, 1989, p 44)

Monden (1992) points out that both the purchasing department and the suppliers can be involved, and subsequently play an important role in the VA and VE processes (Monden, 1992). The difference between VE and VA is at what stage of the product’s life-cycle they are conducted (Ansari et al., 1997, Monden, 1992, and Monden and Hamada, 1991). However, there
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seems to be a lack of common definitions. According to Sakurai (1989), VA and VE can have the same meaning:

“VE (which is sometimes called VA since it is essentially a value analysis activity) is conducted differently in different companies”

(Sakurai, 1989, p 44)

Sakurai’s description can be compared with the definition of Ansari et al (1997):

“Value engineering occurs at the design phase for a new product, while value analysis typically occurs after production has started.”

(Ansari et al., 1997, p 129)

Ansari et al’s definition appears to be more commonly used and accepted. It is also in line with the definitions by CIMA (1996, p 34):

“Value engineering. An activity which helps to design products which meet customer needs at the lowest cost while assuring the required level of quality and reliability.”

“Value analysis. A systematic interdisciplinary examination of factors affecting the cost of a product or service, in order to devise means of achieving the specified purpose most economically at the required standard of quality and reliability.”

Sakurai (1996) and Tani (1994) distinguish between three types of VE based on different stages of the development of the product: Zero look VE, First look VE and Second look VE. Zero look VE (marketing VE) refers to the early stages covering the concept creating processes. First look VE (development VE) aims at cost reduction at the development stage and the Second look VE (product VE) is used to reduce costs at trial production stage. The relationship between TC and VE is based on the latter being one of the more important keys to effective product development in reaching the target cost (ibid.).

While VE focuses on (cost) improvements that address basic functional changes in the new production stage, VA focuses on (cost) improvements that require design changes (Monden, 1992). Monden and Hamada (1991) who refer to VA as “Kaizen costing”, define it as follows:

“Kaizen costing is the system to support the cost reduction process in the manufacturing phase of the existing model of product.”

(Monden and Hamada, 1991, p 17)
According to the definition, VA (Kaizen Costing) refers to the accumulations of small improvements rather than revolutionary innovations (ibid.). The focus is on reducing cost through more efficient production, compared with VE that reduces cost through more efficient product design (Cooper and Slagmulder, 1999).

Monden and Hamada (1991) distinguish two kinds of VA. One is the activities implemented to improve the performance when the actual cost is higher than the target cost. The other comprises activities implemented continually every period. Cooper and Slagmulder (1999) present a similar distinction between product specific and general kaizen costing. The purpose of product specific kaizen costing is either to reduce the cost that initially was above the target, or to reduce costs due to price reductions of the product.

Functional analysis is a concept closely related to value engineering and value analysis. In the literature, functional analysis is usually dealt with as internal processes. For example, Yoshikawa, Innes and Mitchell (1989, p 15) describe the functional analysis process as “a group activity involving about six employees from different departments”. Even if functional analysis in the literature has an internal focus, it can probably, as the target costing process, be extended outside the boundaries of a single company. Therefore it can be a relevant tool for IOCM. CIMA (1996, p 29) defines functional analysis as:

“An analysis of the relationships between product functions, their perceived value to the customer and their cost of provision.”

Functional analysis highlights the relationship between the feature, the function and the design driven cost (Ansari et al., 1997). The relationship between the customer features and the product function can show a considerable complexity. Ansari et al (1997, p 53) point out three types of relationships between features and functions: firstly “indirect relationships” when it is difficult to tie a certain feature to specific functions, secondly “many to one relationships” when many features are related to one function and thirdly “one to many relationships” when one feature is served by several functions.

Occasionally, the term functional cost analysis is used to further highlight the importance of the function related to costs. In functional analysis, different functions related to the different parts of the product are the cost objects. Accordingly the product concept, after being approved, is decomposed into the functions and the related allowable costs (Ansari et al., 1997). Further, the functions can be broken down into so called functional family trees. During the work, the function (that is a verb) rather than the name of the detail is used, e.g. “make mark” instead of “ballpoint pen”
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(Yoshikawa, et al., 1989). The function, that appears to be more abstract than attributes, is defined as “a representation of the product in terms of the service potential which it offers to the customer” (Tanaka, Yoshikawa, Innes, and Mitchell, 1993, p 57). In this way, the design of the product can be more customer-oriented (ibid.). Customer-orientation should be even stronger if the customer is involved in an interorganizational cooperation (ibid.), especially during the early phases of the product’s life-cycle.

In order to make the functional analysis meaningful, the costs have to be attributed to the functions. Then the financial consequences of different alternative functions are calculated. An important provider of the cost data for functional analysis can be the cost system as well as cost tables (Yoshikawa, et al., 1989). (Cost tables are presented in section 2.3.2.1).

2.3.1.2 The target costing process and interorganizational cooperation

For Sakurai (1996) the main goal of target costing is to reduce the total costs and still maintain the quality. Occasionally the goals can also be extended to include strategic profit planning, which is based on the integration of information regarding marketing, engineering and production (e.g. Fischer, 1995). In this discussion Sakurai does not explicitly include the role of the supplier. However, considering that Sakurai bases the book on companies mainly from the Japanese automotive industry, a possible explanation can be that the goals include the functions rather than the organizational units of both the buyer and the supplier. Koga (1999) singles out two forms for the interaction of TC during the earlier stages. Firstly, the interaction increases in the product design department with an increased focus on the future manufacturing costs by using, among others, different types of cost estimations and cost tables. Secondly, the interaction occurs between the product development department and other departments inside and outside the traditional boundaries of the company. The second type of interaction, according to Koga, is crucial for target costing. When it occurs, the boundaries between organizational units could be less important than in more conventional and traditional (non-integrated) buyer-supplier relationships.

TC is relevant for this thesis since it relates to and involves the supplier. The importance of the supplier’s role is often stressed in literature (see a few quotations below), but it is not dealt with at any larger extent. One important exception is Cooper and Slagmulder (1999), who deal with TC in an interorganizational context based on a number of case studies of leading Japanese companies.

A number of different perspectives can be used and traced when costs are decomposed into discrete elements. The most common are the value
The value chain perspective focuses on where in the chain the costs occur (Ansari., p 46). Strategic cost management (Shank and Govindarajan, 1993), that is closely related to and based on the value chain perspective and its structure, can be seen in the traditional approach to TC (Ellram, 2000). The purpose of these perspectives is, among others, to reduce costs both within and outside the company’s boundaries (e.g. Ansari et al., 1997, Sakurai, 1996). These quotes below demonstrate that TC should have a scope beyond the boundaries of a single company.

“An optimized supply chain is one of the most critical elements in attaining target costs.”

(Ansari et al., 1997, p 86)

“The primary objects of cost reduction in target costing are direct material costs and direct conversion costs.”

(Sakurai, 1996, p 52)

“Diffusing target costing throughout the value chain involves creating non-traditional relationships among the participants in the value chain.”

(Ansari et al., 1997, p 83)

The target cost of the product is usually first broken down into main functions and secondly into components. It is the decomposed target cost of the component that becomes the purchase price for the buyer and the selling price for the supplier. The interorganizational use of TC creates three types of interfaces, between customer and top firm, between top firm and supplier and between supplier and raw material supplier (Cooper and Slagmulder, 1999).

Besides the place where activities are performed in the supply chain, the TC literature also deals with the time when certain activities are conducted. TC is normally regarded as a process running over a certain period of time. Since it is closely related to the life-cycle of the product, different tasks are performed at different stages of the TC process. Accordingly, the TC process has been described on the basis of what is performed at certain stages of the product’s life-cycle (e.g. Sakurai, 1996, Ansari et al., Fischer,
1995 and Cooper and Slagmulder, 1997). There are a number of ways to divide the process and the steps can vary depending on the way they are classified, and probably also on the empirical data used for the classification of the different stages. Each stage has its own characteristics, tasks, functions involved, goals, time frames, market connection, etc. Some of the steps include contacts with the suppliers. The cooperation with the supplier at each step has different goals, deals with different activities, includes different functions and is based on different types of information at different stages of the product’s (project’s) life-cycle. In order to achieve a higher degree of precision when describing the cooperation with the supplier, the cooperation can be divided into different stages based on the TC process. However, a majority of stage models do not deal explicitly with the supplier relationship or purchasing (Ellram, 2000). One of the few examples in the literature that explicitly focuses on TC and its role for purchasing and suppliers is Ellram’s (2000). Ellram bases her model for supplier cooperation on a “classic approach to target costing”, which is based on common stage-models (Ansari et al., 1997 and Cooper and Slagmulder, 1997). The difference between the classic approach to TC and Ellram’s (2000) is that the latter moves the focus from the internal process of TC by highlighting the role of the purchasing function and indirectly that of the suppliers. Therefore certain activities of the TC process with a pure internal focus are less detailed in Ellram’s model compared to, e.g. Fischer (1995) who places the emphasis on the internal planning functions. It is worth noting, however, that even if the focus is partly moved towards the purchasing function and related areas, TC is not studied from the perspective of the supplier. Ellram studies how the focal company, the buyer, through its purchasing function, interacts with the supplier and not, for example, how the supplier tries to interact during the TC process.

The different stages of the supplier cooperation in a TC process, as proposed by Ellram (2000), are presented in the table below. Ellram makes a distinction between target costing process and target costing activity. The TC process can involve the whole life-cycle of the product, whereas the TC activity only deals with step 5. The TC process is an integral part of the larger process of developing a product, but it can also aim at improving existing products and processes (ibid.). (PMS refers to purchasing and supply management and activity refers to the step in TC process).
Table 2.2 The target costing process focusing on the purchasing function (Ellram 2000, p 44)

<table>
<thead>
<tr>
<th>PMS Involvement</th>
<th>Activity/step</th>
<th>Data sources</th>
</tr>
</thead>
<tbody>
<tr>
<td>Identify suppliers</td>
<td>Identify characteristics of the product</td>
<td>Market research</td>
</tr>
<tr>
<td>Approach suppliers</td>
<td></td>
<td>Competitive intelligence</td>
</tr>
<tr>
<td>Prequalify suppliers</td>
<td></td>
<td>Internal development</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Customer demands</td>
</tr>
<tr>
<td>Limited</td>
<td>2. Establish target selling price</td>
<td>Customer negotiation</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Customer input resource</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Competitive market pricing</td>
</tr>
<tr>
<td>Limited</td>
<td>3. Determine target cost</td>
<td>Target profit based on:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Management requirements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Strategic plans requirements</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Market conditions</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Management approval</td>
</tr>
<tr>
<td>Provide historical data</td>
<td>4. Cost breakdown to detailed level of</td>
<td>Historical data</td>
</tr>
<tr>
<td>Provide supplier cost estimates</td>
<td>component</td>
<td>Supply management input</td>
</tr>
<tr>
<td>Begin supplier negotiations</td>
<td></td>
<td>Supplier input</td>
</tr>
<tr>
<td>Supplier identification</td>
<td>5. Target costing activity</td>
<td>R&amp;D input</td>
</tr>
<tr>
<td>Supplier qualification</td>
<td></td>
<td>Engineering input</td>
</tr>
<tr>
<td>Work with supplier on cost estimate</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Work with suppliers on alternatives</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suppliers negotiations</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Manage supplier relationships</td>
<td>6. New product roll out and continuous</td>
<td>Market search</td>
</tr>
<tr>
<td>Work with suppliers on improvements</td>
<td>improvements efforts</td>
<td>Customer demands</td>
</tr>
<tr>
<td>Build cost reduction commitments into</td>
<td></td>
<td>Competitive pricing</td>
</tr>
<tr>
<td>long-term agreements</td>
<td></td>
<td>New technology development</td>
</tr>
<tr>
<td>Research competitive supplier pricing,</td>
<td></td>
<td></td>
</tr>
<tr>
<td>service and quality</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Table 2.2 indicates that the role purchasing and suppliers play is more intensive than it is presented in the traditional TC literature. It also indicates that different information is used at certain steps of the TC process. The supplier can be involved in step 1 as a part of the supplier selection process. Ellram (2000) stresses that this step is more important if the product or technology is unique or the time is critical as the buyer will then have to rely
on the supplier. The buyer puts together certain teams that are not responsible for the daily purchasing but rather dedicate their attention to product development and TC process. Step 2 and step 3 mainly focus on the demands of the customer and the requirements of the management, so normally there is no PSM involvement in those steps. In the fourth step, the target costs are decomposed in different ways to the component levels. In many cases the costs can be broken down into categories/functions (e.g. engine, interior, chassis, etc) and then further subdivided into component level. The decomposition is conducted by product design teams. The buyer can also choose to bundle the component target costs into fewer and more aggregated target costs. This will give the supplier more freedom (Cooper and Slagmulder, 1999). It is important that the component level target cost is achievable, and accordingly knowledge about the suppliers is useful. Cooper and Slagmulder (1999), briefly present four ways of obtaining information about the economics of the supplier: receiving the suppliers’ early price estimates, obtaining cost information directly from the supplier, obtaining indirect cost information, and use of historical trends. Since the decomposition of the target cost determines the price, it is a critical issue and is surrounded by intensive negotiations (ibid.). Further, at this stage the company is more concerned with products with a significant economic impact, i.e. high volumes or high price per unit (Ellram, 2000). Another aspect of cost estimates, mentioned by Ansari et al (1997) is the possibility to estimate costs in an accurate way depending on the various stages of the product life-cycle. At earlier stages it is more difficult to estimate costs and a lower degree of accuracy has to be accepted. Ansari et al (1997) do not discuss this as an interorganizational issue, but related to the discussion, it can probably be important for the buyer-supplier relationship. Step 5, called the TC activity, entails, according to Ellram (2000, p 44), “the heart of the target costing process”. The fifth step is also the most time-consuming and resource-intensive activity of the TC process. (When describing this fifth step, Ellram focuses on products and suppliers with which the buyer has a high degree of involvement. Cooper and Slagmulder (1999) also mention that certain components are bought with legislated target costs, meaning that there is no negotiation between the parties.) In larger organizations, teams with a number of different functions from both the buyer and the supplier are organised. During this process, cooperation between the companies can be very close. One basic idea is that cooperation increases the chance to reach the target cost. This can be achieved by applying techniques such as QFP trade-offs (discussed in more detail below), interorganizational cost investigations or concurrent cost management (Cooper and Slagmulder, 1999). The challenge for both parties is that:
“Price reductions must take place to meet the target without compromising the integrity of the product or the profitability of the supplier.”

(Newman and McKeller, 1995, p 13)

During the fifth step, the costs are estimated several times and compared with the target cost. In Japanese companies, the costs are normally estimated and reported at formal milestone meetings with senior management (Koga, 1999). Koga presents two types of processes of calculating the costs, cost estimation and cost revision. Cost estimation is formally related to the project plan and includes presentations for seniors and other employees. While cost revision is easier to carry out and mainly deals with changes, cost estimation requires a total recalculation of the costs. Cost revisions are therefore more frequently used, especially during the later part of the design stage (ibid.). Koga does not mention whether or how these two processes are used in an interorganizational context. However, he maintains that the latter part of this step is intensive and there is also a strict deadline when the design is frozen. The reason for this is that production engineers start designing the manufacturing processes and then the assembly lines, manufacturing tools, etc., are structured based on the design of the product. Changes to the product design after it has been frozen could therefore cause costly alterations to production lines, etc. (ibid.). If the target cost has not been met, the sixth step can be intensified by actively monitoring the supplier’s cost and performance. From the supplier’s perspective, the TC process presented above includes three main steps: the supplier selection process (step 1), the target costing activity (step 5) and the continuous improvements during and after the start-up of the full-scale production (step 6). The three steps can also require an active role of the supplier and also substantial information sharing.

2.3.2 Cost tables, disclosed cost data and open books

Cost tables, disclosed cost data and open books have one thing in common: they all focus on the supplier’s costs from a buyer’s perspective. They are not separated from the TC and VA mentioned above, but are rather helpful tools for the interorganizational cooperation within the relationship between the supplier and the buyer in which TC and VA can also be used.

2.3.2.1 Cost tables

Cost tables are today normally computerised databases developed in order to support decisions related to projecting costs and what-if analyses. Yoshikawa, Innes, and Mitchell (1990) describe cost tables as:
Cost tables were originally prepared for estimating the cost of direct material to be used for purchasing support. Hence they have an interorganizational origin. Today, the use of cost tables is extended to a decision support system based on different production activities both by the buyer and the supplier (ibid.). As an instrument for estimating costs, the cost table is an important tool for companies using target costing (Sakurai, 1996). Cost tables include data on direct cost (e.g. raw material) and conversion costs (e.g. overhead costs such as depreciation on new investments) (Sakurai, 1996). They can contain very specific information regarding both the buyer's and the supplier's manufacturing processes (Ansari et al., 1997). Major cost drivers are identified and documented (ibid.), and conventional allocation bases (e.g. direct labour) are common (Yoshikawa et al., 1990).

There are two major types of cost tables, the approximate and the detailed (Yoshikawa et al., 1990). Tani (1994) uses the notions of functional cost tables and engineering cost tables, although with almost the same meaning. The approximate cost tables are used in the earlier stages of product development while the detailed cost tables are employed for production cost management and purchasing (Yoshikawa et al., 1990 and Tani, 1994). In many cases not only the price but also the cost structure of the purchased parts is important. The cost tables used for purchasing can be differently developed depending on the needs. In some cases it is enough to approximate a reasonable price as a point of departure in the negotiations. In other cases, cost tables can be used as a tool for the purchasing department to reduce costs by the supplier (ibid.). Cost tables can also be used as a tool to show the supplier how much more effective it is to use the latest and most suitable production equipment (Yoshikawa et al., 1990).

It is worth noting that cost tables normally supplement the conventional product costing system rather than replace it (ibid.).

### Disclosed cost data, cost split-up and cost breakdown

Disclosed cost data is not a technique but rather a name for different kinds of more specified costs. The terms cost split-up, disclosed cost data and cost breakdown are all used alternatively for the specified costs that are presented in a certain form designed by the buyer. Occasionnally the term cost breakdown is also used for the process when the target cost is broken down on component level. The cost breakdown is then conducted internally.
by the buyer). Also the term cost analysis is occasionally used to show the supplier’s costs to the buyer in a certain form (e.g. Baily, 1987). It is difficult to draw a clear border between disclosed cost data and the other two tools in this section. Disclosed cost data refers to different kinds of costs and related process data from the supplier that are shared with the buyer. The term disclosed cost data is used by Munday (1992 a) when describing what kind of information the supplier is required to provide the buyer with. The information required is often expected to be presented in a certain form. Cooper (1995) and Baily (1987) describe the same type of phenomena and refer to it as cost breakdown. The supplier has to present cost data in certain categories based on certain requirements. For example, the depreciation has to be calculated in a certain way that is decided by the buyer and the profit margin is set at a certain level. A survey by Munday (1992 a) shows that this procedure is common. As with cost tables above, the information can be used to provide feedback to the supplier on how to reduce costs and squeeze the profit margin.

“[…] there may be some concerns that the supplier cost data could be used by the OEM to squeeze profit margin and enforce price decreases.”

(Munday, 1992 a, p 246)

2.3.2.3 Open books

In a close relationship, the cost data can be used to capture effects through at least two organizations rather than just one, since activities in one organization can cause costs in the other. Therefore Tomkins (2001) suggests that cross-firm effects should be taken into account. Open books, also called open book accounting and open book policy, require the supplier to give the buyer access to the accounting data in the company (Ellram, 1996). The cost data can be shared both upstream and downstream (Christopher, 1998). Carr and Ng (1995) distinguish suppliers on a continuum from those who are “totally open book” to “down right awkward” in giving information. Cooper and Slagmulder (1999, p 106) present similar notions, “partial open book” and “full open book” policies when discussing how much cost data the supplier is willing to give the buyer. The purpose of the open books approach is for the buyer to help the supplier to identify critical areas and to cooperate in order to reduce costs in such areas. According to a supplier quoted in Carr and Ng (1995, p 360) “Toyota and Nissan reduce cost by eroding our cost” rather than “reduce costs by eroding our margin”. The open books approach is therefore a way of working together with different types of cost data, rather than presenting or calculating it in a certain way. For Christopher (1998), open book
accounting can be seen as a “manifestation of this move towards transparency” (p 235).

“Open book accounting is a strategy that leads towards cooperation between firms situated in a supply chain, and this information is used to influence the flow of products and services between the firms in question.”

(Mouritsen, Hansen and Hansen, 2001, p 225)

In highly competitive markets, such as the automotive industry, the pressure for cost reduction is hard and continuous. There are at least two slightly different and complementary ways to reduce costs. In the first, according to Fitzgerald (1996), the supplier often lacks the knowledge and resources to reduce costs. It is then possible for the buyer, with resources and knowledge, to reduce costs for the supplier and thereby create a win-win situation. In the second, the buyer, according to Carr and Ng (1995), gains access to “the books” and the buyer and supplier can work together in order to reduce costs by identifying and implementing cost reduction programs. The role of the purchaser in the second way is more focused on cooperation, while in the first way the purchaser has resources and knowledge and is more of an external consultant. The analysis is often done by a group of people from both the buyer and the supplier to create idea generation and feedback (Ellram, 1996). The purpose of this approach is to analyse the costs for improvements rather than determine a reasonable price level (Ellram, 1996). In this situation, according to Munday (1992 b), it is possible that the supplier has to change his present costing system to be able to present more accurate, detailed and suitable cost data.

“The provision of detailed financial information to a new external source may entail a complete revision of the ways in which cost data is collected and analysed within the supplier.”

(Munday, 1992 b, p 35)

2.3.3 Quality-function-price trade-off

Quality-function-price (QFP) trade-off is a concept mainly described in a number of case studies by Professor Robin Cooper in collaboration with others. (Koga, 1999 uses the term QFP analysis). The case studies are normally based on Japanese companies (Cooper, 1995, Cooper and Slagmulder, 1997 and 1999 and Cooper and Yoshikawa, 1994 a and 1994 b). QFP trade-off is a model of how a company tries to survive and find ways to negotiate or, in other ways, to please the buyer in terms of quality, target price and functionality (Cooper and Yoshikawa, 1994 a). In the QFP trade-
off, *quality* is defined as conformance to specifications, *function* is defined by the specifications of the product and includes a number of different aspects. The *price* is defined as the selling price for the supplier (ibid.) and includes all costs such as investments, production and marketing (Cooper and Slagmulder, 1999).

Since QFP trade-off provides three different main dimensions, it can be used as a tool in the negotiations between the buyer and the supplier. They can also reduce the impact of the target price since the three dimensions can be varied (Cooper, 1995). This increases the chance to come to a solution that can be profitable for both the buyer and the supplier. It is also worth noting that there are certain limits of the three dimensions: for example there can be a maximum price for a camera, a car model, etc. The area that is within the limits is referred to as “the survival triplet” or “the survival zone”. The optimal trade-off between the three dimensions gives the highest product profitability (Koga, 1999).

Koga (1999) suggests that in many cases the QFP analysis should be modified by replacing the quality with lead time. The reason is that in many cases the company has to develop the product faster than competitors in order to gain advantages on the market and the lead time is an important aspect to consider. The quality, in a many cases, is a basic requirement rather than a variable to negotiate.

In Cooper’s cases, QFP trade-offs are often combined with sharing of production information and are used as a tool for pricing and profit sharing, as well as information sharing with other suppliers/competitors (ibid.).

There are two other techniques partly similar to QFP trade-off: interorganizational cost investigations and concurrent cost management.

When interorganizational cost investigations are applied, the supplier gets more freedom to redesign the component, in some cases to such an extent that changes in the buyer’s product are necessary. This way of working requires a closer cooperation. According to Cooper and Slagmulder (1999), there are four key factors for a successful interorganizational cost investigation: high value and benefit from redesign, manufacturing activities are divided between at least two firms, a stable cooperative relationship and the use of network protocols (an interorganizational incentive system).

In concurrent cost management, the supplier is involved in R&D from the very early stages of the life-cycle of the product (Cooper and Slagmulder, 1999). This method is normally applied when a main function is out-sourced. The advantage of a concurrent cost management process, compared with the other techniques above, is that the supplier can influence the product design at an earlier stage when there is still time to make essential changes. According to Cooper and Slagmulder (1999), the procedure can be carried out in two main ways, parallel or simultaneous.
The difference between the two is the level of independence given to the supplier. Parallel engineering means that the supplier is provided with detailed information at the beginning of the project and he then develops the component (function) in a relatively independent way. In simultaneous engineering, the cooperation also starts early but is carried out jointly by engineering teams from both parties.

2.3.4 Minimum Cost Investigations

Minimum Cost Investigations (MCI), like QFP trade-offs, are mainly discussed by Professor Robin Cooper and co-authors. The concept is based on studies of Japanese companies (Cooper, 1995, Cooper and Slagmulder, 1997, Cooper and Slagmulder, 1999 and Cooper and Yoshikawa, 1994 a and 1994 b).

MCI, as a concept, covers the phenomenon of multilevel supplier meetings when the parties from different companies in the supply chain jointly investigate how the product can be designed so that it can be as effective as possible for the whole chain. In Japan MCI are initiated when one firm in the supply chain is not able to meet the target cost. The purpose is to find ways of reducing the costs of the supply chain through cooperation. During this work the cost data, among other things, is known to the entire supply chain. The top or leading company therefore has an important role as it negotiates about the profit margin not only with its own suppliers, but also further upstream (Cooper, 1995 and Cooper and Yoshikawa, 1994 a).

The major difference between MCI and QFP trade-off is the presence of more than two companies involved in the investigation.

2.3.5 Differences between the presented concepts

As mentioned above, there are no clear dividing lines between the presented techniques. In some ways, the techniques lack commonly accepted definitions and in many cases they are used to support other techniques: for example cost tables can be used as a support during the target costing process. This section, explains how these concepts are employed in this thesis and how they can be related to the supplier’s product costing.

1. The target costing system is normally initiated and run by the buyer. The broken down target cost in the relationship is also supposed to be the price for the supplier. Target costing is a process of working that can include the other techniques presented in this chapter.

2. Open books (open book accounting) mean that the other party, to a various degree, gets access to different types of cost data such as the
accounting system, the product costing and its assumptions like cost allocation, underlying data, standard costing, budgets, etc. The concept open books is a way of working or a policy under which the supplier opens up the information the buyer requires.

3. Cost tables are developed and used in the buying company in order to estimate the costs of the purchased goods. The cost tables can also be used in dialogues with suppliers. What is significant for the cost tables is that the costs are calculated by the buyer.

4. Cost split-up is a form or report based on the supplier's costs. While the buyer designs the categories into which the costs should be split-up (divided), the supplier calculates the costs according to the buyer's specifications. Since it is related to the costing system, it could influence the design of the costing system.

5. QFP trade-offs, interorganizational cost investigations and concurrent cost management represent, in this order, an increasing degree in which the supplier is involved in modifying or developing the component. QFP trade-offs combined with interorganizational cost investigations offer the possibility of more fundamental changes of the design of the component. Initiating interorganizational cost investigation might also result in the modification of the end product (Cooper and Slagmulder, 1999). Concurrent cost management means that the supplier begins earlier during the life-cycle of the product. This method is normally applied when the buyer out-sources a function or group of components. Apart from the techniques compared, Cooper and Slagmulder discuss “chained target costing”. Chained TC means that TC of the buyer and supplier is linked on component-level. This means that the buyer’s TC sets the target cost (price) of the supplier. In this cooperation the buyer establishes the main features of the conditions of what should be delivered (ibid.).

2.3.6 IOCM and interorganizational cooperation

This section deals with the conditions under which certain IOCM are used and how they can be employed in different ways in different relationships. The use of different IOCM techniques can reduce the costs in relationships. To establish and maintain a relationship causes costs. Establishing and using various IOCM techniques is also costly. Therefore different IOCM techniques are related to the way the supply chain is organised.

“All the interorganizational cost management techniques described in this volume rely heavily on cooperative relationships between the buyer and seller.”

(Cooper and Slagmulder, 1999, p 96)
If coordination and cooperation with suppliers are important, so is their organization (Ansari et al., 1997). A supply chain can be classified in a number of different ways, e.g. supply risk, the impact on financial result, ongoing or one-time, arm’s length or close, degree of interdependencies and involvement in R&D.

Due to the increased demand for coordination, synchronisation and interaction, the number of suppliers is often reduced. The disadvantage of reducing the number of suppliers is that reliance on a single supplier is increased. In order to reduce the number of suppliers, they can be grouped in different tiers depending on how many steps they are from the market maker (e.g. Ansari, et al 1997). The first tier suppliers can provide the market maker with key technology and are responsible for design and manufacturing of group components (Christopher, 1998). A critical issue is the out-sourcing of the function-related development. In order to reach the target cost, one of the key issues is productive communication at early stages of the product’s life-cycle (ESI - Early supplier involvement, Newman and McKeller, 1995, Christopher, 1998, Ellram, 2000).

"The ideal situation for target costing is a supply-chain-wide effort that includes value-engineering, value analysis and early supplier involvement" (Ellram, 2000, p 47)

In many cases, it is only one first tier supplier providing each function (e.g. a car seat) (Womack et al., 1990). The first tier supplier in turn out-sources the manufacturing of components to the second tier supplier (Ansari, et al., 1997 and Cooper and Slagmulder, 1997). The result of this way of organising the supply chain is that each company deals with a relatively small number of suppliers (Christopher, 1998).

According to Cooper and Slagmulder (1999), IOCM can reduce costs in three different ways in the relationship. Firstly, it can support the buyer and seller to design a product that can be manufactured in a cheaper way. Secondly, the cooperation can reduce the costs of the on-going manufacturing. Thirdly, it can make the relationship as such, i.e. the interface, more efficient. The potential to reduce costs in these three areas depends on the level of the supplier and accordingly different IOCM techniques are applied (Cooper and Slagmulder, 1999).

Cooper and Slagmulder (1999) have identified four different levels of buyer-supplier relationships: common suppliers, subcontractors, major suppliers and family members. Depending on the supplier’s level, the IOCM is designed and applied in different ways.

Common suppliers make more or less standardised products. The same or similar products can be provided by a number of other companies. The degree of cooperation to reach synergies is low for common suppliers. The
price is of great importance along with timeliness and quality, among other things. The buyer’s target costing plays an important role in determining the price it is willing to pay. Alternatively competitive bidding is applied. The buyer simply uses the price to determine whether a supplier is willing to cooperate (Ansari et al., 1997).

Subcontractors are involved in the product after it has been developed. The buyer designs the component and the supplier is instructed on how to manufacture the product. The relationship between the subcontractor and the buyer is based on a degree of cooperation higher than that with the common supplier. The goal is to use QFP trade-offs in order to produce a component at a lower cost. The QFP trade-off can in this case reduce the buyer’s pressure on the supplier (Cooper and Slagmulder, 1999). Further, the target costing systems of both parties can be linked and chained target costing can be applied.

The major supplier is involved in the design phase after the product has been conceptualised. It is then left to the supplier to design and manufacture the product. The interaction between the major supplier and the buyer may include possibilities to make major changes and even redesign the function. This kind of activity requires a high degree of interaction between them. The IOCM techniques employed are mainly chained target costing related to QFP trade-offs and interorganizational cost investigations. This means that the competitive pressure of the market is applied on the supplier, whereas the interorganizational cooperation is still relatively limited.

The family member has a high degree of freedom when it comes to designing major functions of the product. The cooperation between the buyer and the family member starts early in the product development process. In today’s car industry, for example, the supplier plays an important role in the development of functions, such as suspension, braking systems and engine management systems (Christopher, 1998). The family member needs to understand and adapt to a large extent to the buyer’s demands (Ansari et al, 1997). In this relationship, an open book system can be used and tied to different kinds of cost saving and profit sharing (e.g. Womack et al., 1990) and the concurrent cost management (Cooper and Slagmulder, 1999).

Cooper and Slagmulder’s (1999) categories are based on a number of different aspects that are put together in one dimension to demonstrate how the different IOCM techniques are applied depending on the type of relationship. The IOCM techniques applied are in line with the type of buyer-supplier relationship in the sense that in a cooperative relationship, techniques that apply also involve a high degree of cooperation. The main underlying factor appears to be related to supplier’s role in the development,
Literature review

research and other pre-production activities of the component. This is also in line with Ansari et al (1997), who divide suppliers into five groups based on R&D they conduct (customized goods, design-provided custom goods, design-approved custom goods, design approved ordered goods and commodity).

In general, characteristics of a close relationship, as discussed above in this chapter (trust, commitment, information sharing, dependence, power etc), are treated as underlying factors usually either dealt with rather superficially (e.g. Ansari et al., 1997 and Cooper and Slagmulder, 1999) or not at all. Further, the characteristics are usually related to the specific conditions of the supply chain, such as the increased dependence when applying JIT or the information exchange related to the product during its life-cycle (Ansari, et al 1997). This underlines the theoretical base and categorization of interorganizational aspects of IOCM being derived mainly from supply chain management and the value chain. The relationship with the supplier is referred to as “extended enterprise” (Ansari et al., 1997, p 83) or “single piece flow” and “extended just-in-time factory” (Cooper and Slagmulder, 1999, p 83).

Ellram (1996) divides the aspects of supply into two main categories: (1) the nature of the purchase and (2) the type of relationship sought with the supplier. The first dimension refers to whether the purchase is on-going or one-time. The second dimension stands for arm’s length relationship or strategic alliance. From the two dimensions, Ellram identifies four types of purchased commodities:

1. Low impact – arm’s-length and one time buy
2. Leverage – arm’s-length and on-going buy
3. Critical projects – strategic alliance and one time buy
4. Strategic – strategic alliance and on-going buy

1. At the low impact purchase, the supplier’s price rather than costs is in focus, since it is faster, simpler and more objective (ibid.). Even if the financial impact of the product is low, it can still be beneficial to compare prices between different alternatives and suppliers. The approaches recommended are different kinds of comparisons, such as the market, indexes, benchmarks, or competitive bidding.

2. In the leverage purchasing, it can be preferable to analyse the supplier’s costs to ensure that one pays a “fair” price. The reason why it is worth spending more time and effort on the supplier and its costs is because the goods purchased are expensive or the supplier is important for reasons such as providing a strategically important component. However the cost analysis is only useful if the cost data is
used for negotiation of a better price, using alternative sources or producing the goods in-house (ibid.). The analysis of cost relationships requires that the supplier provide appropriate cost data and the buyer has the competence to analyse the costs.

3. The critical project is an infrequent purchase which deals with a larger amount of money, such as production equipment or an information system. For this type of purchase, the total cost of ownership should be regarded. The reason is that a large part of the costs are not related to the purchase price, but rather to factors such as maintenance or repair costs.

4. The strategic purchase means that an important component is purchased on a regular basis and that the buyer wants a long-term relationship with the supplier. The techniques are more refined and require more effort and time. They focus on both the buyer’s and supplier’s process to achieve long-term improvements. Ellram suggests the use of techniques such as open books, target costing analysis and total cost of ownership analysis. She shows (1996) that cost analysis and price analysis can supplement other techniques but should only be used with caution as they can undermine the relationship.

In comparison with Cooper’s and Slagmulder’s (1999) categorisation above, Ellram’s model underlines three aspects worth noting. Firstly, she suggests that the IOCM normally has its point of departure in the purchasing company. (Ellram calls the techniques “Purchasing cost management tools”). Secondly, due to the broad purchasing focus, she covers a wider range of purchased commodities than what is normally discussed in the IOCM literature. In the IOCM literature, the main purchase appears to be components related to the sold product, normally in an environment of new product development for commodity manufacturing (Nicolini, Tomkies, Holti, Oldman and Smalley, 2000). Thirdly, the underlying factor of the type of buyer-seller relationship can roughly be divided into two main categories, the purchased component or the supplier. The component refers to its characteristics per se, as well as its economic impact on the buyer. The supplier means characteristics of the supplier per se such as certain competence or aspects of the relationship, such as information exchange or trust. The relationships and boundaries between the two categories, the product and the supplier, can of course be unclear and involve mutual dependencies.
2.3.7 Comments on cost allocation and profit sharing

There are two aspects that appear to be important and critical for the relationship and IOCM, the supplier’s cost allocation carried out by both the buyer and the supplier, and the profit sharing between the buyer and seller.

It is possible that the supplier allocates costs to provide data that is useful in the interorganizational cost management processes. The cost allocation should be of importance since it is not only used by the buyer, but in some cases also by the supplier’s supplier. The fundamentals of cost allocation are well-represented in the traditional costing literature, but they are hardly mentioned when it comes to interorganizational use. Thus a new type of users may be involved, along with more future-oriented decision situations like calculation of the economic effects on different design solutions. The overhead costs and their allocation are probably of great importance since they can be used for rationalisations in different ways.

The other aspect worth mentioning is profit sharing. Discussions of profit sharing in the traditional costing literature mainly focus on the internal transfer pricing issues (Tomkins, 2001). The purpose of internal transfer pricing is to create an administrative structure with incentives regarding internal coordination. From the point of view of the whole supply chain consisting of separate companies, the issue is similar. The price between two companies is the transfer between the buyer and the supplier and it does not directly impact the cost of the integrated supply chain. However, just like the internal transfer prices, the external price is a strong incentive for a certain behaviour since the single firm is also driven by self-profitability. Accordingly, the price is an important tool for external coordination. Most likely, the incentives related to price (and revenues) are even stronger for two separate companies than for two business units within the same company. It is therefore important to design the incentives for the supplier chain to gain constant improvements and price reductions (Newman and McKeller, 1995). The economic incentives include shared cost reduction or a reduced price that increases the buyer’s sales for the benefit of both parties (ibid.). The sharing of benefits creates incentives for the less powerful firm to cooperate, while the powerful firm will be willing to share benefits if this improves the efficiency of the cooperation (Cooper and Slagmulder, 1999). Another benefit briefly reported by Cooper and Slagmulder (1999) is that the supplier can have an advantage when competing for new projects. If the supplier has a reputation for being a good supplier, it can still win a project (or a part of it) even if another supplier provides a better offer.

Interorganizational cost management is based on close and open cooperation. One potential tool in the cooperation is the costing system and
other kinds of cost data from the supplier. If the supplier opens up, a win-win situation can be created based on improvements and mutual adaptation in different ways. Ellram (1996) writes about open book, which is considered to apply to close cooperation between the buyer and the seller.

“This (open books) contrasts to opening the supplier’s books for purposes of cost analysis, where the costs are merely verified for reasonableness, rather than improvement.”

(Ellram, 1996, p 17)

As mentioned above, the price reduction in a close relationship should be based on the cost reduction achieved through cooperation and not by squeezing the supplier’s profit margin. Newman and McKeller (1995) say it is easier to reduce the price when there is a long-term relationship and both parties have an interest in the success of the final product.

“The effort of convincing the supplier of the need to reduce price is made somewhat easier in an atmosphere where loyalty to the customer is paramount.”

(Newman and McKeller, 1995 p 14)

An interesting question is whether win-win situations and cost-based pricing are contradictory or whether cost-based pricing is applied when the supplier opens the books. If cooperation results in a bigger pie, both parties may want to have a share. But the pie may be so big that the sides may overlook arguing about how to share it. The situation is rather similar to the famous prisoner’s dilemma with an obvious risk of opportunistic behaviour. There is more anecdotal evidence, mainly from the automotive industry, that closer relationship can lead to reduced profit margins and even to losses in some cases (Lyons, Krachenberg and Henke, 1990).

2.3.8 IOCM and traditional product costing – concluding remarks

There are a number of differences between the traditional “intraorganizational” product costing and the IOCM techniques. Traditional product costing has focused on providing costs to set prices and cost control of production stage of the life-cycle. Further, the traditional cost management “ignores external environment” (Ansari et al., 1997, p 17). This can be compared with the key issue in IOCM, which takes market demand as its point of departure. The market connection is applied on the whole life-cycle of the product, particularly in the early steps. Due to the increased degree of automation and shorter life-cycles, reducing costs before the start of production is likely to become more beneficial and important (Berliner and Brimson, 1988 and Fischer, 1995). When the degree of automation
increases, a main part of the costs are determined during the planning and design stages and they are fixed once the production begins. Due to the brief life-cycle of many goods, it has become more important to launch a competitive product to the market. Any errors in product cost, quality, etc, can be hard to correct (ibid.). The main tool of IOCM appears to be TC. As mentioned above, a main characteristic of TC is that it is future oriented (Kato, Böer and Chow, 1995). This distinction is of course rather rough and there are probably a number of exceptions where traditional costing is used for more future-oriented decisions (Koga, 1999).

The discussion above renders four aspects worth noting:

(1) The pressure of TC and IOCM is put on other functions (inside and outside the company) than the traditional management accounting that mainly focuses on internal costs caused by existing products. Inside the company, the pressure of the market is on the R&D functions are related areas.

(2) TC is used as a tool for pushing the competitive pressure on the suppliers further upstream (e.g. Cooper and Slagmulder, 1997). It is achieved by setting a component target cost which the supplier has to meet. This might be valid under conditions related to chained target costing, where the supplier is offered only limited possibilities in modifying the design of the component, but probably to a lesser extent in more developed relationships. The fact that the supplier can be involved in the VE process (e.g. Sakurai, 1996) implies that the supplier is not just a passive price taker, but can also take part in the development and pricing of the component.

(3) TC and IOCM, as presented in the literature, focus on a certain project, product, etc. and do not deal with factors outside the specific product.

“Target costing adopts a relatively narrow this-product-this-generation view that sometimes has to be adapted to fit circumstances.”

(Cooper and Slagmulder, 1999, p 112)

This means that cooperation from a TC perspective is partly transactional, or at least it is not relational in its view of supplier relationships, which is often mentioned as a key factor for supply chain development. However the transaction within a TC cooperation seems to be going on for a longer period of time such as in the automotive industry.

(4) When a great deal of R&D is involved, the TC process can be more beneficial.
2.4 Research questions

This section deals with three research questions based on the literature review above. The research questions are those the thesis attempts to answer.

1. The use of product costing and other kinds of cost data in the relationship

In interorganizational decision-making, significant cost and revenue consequences can occur. From a costing perspective the consequences of a closer relationship are almost unknown. As discussed in chapter two, the cost data can be useful for understanding the underlying cost and revenue implications in the interorganizational cooperation (Ellram and Feitzinger, 1997).

"Obtaining information on the cost structure of the supply chain members to best assess trade-offs is a growing trend, but still relatively uncommon in practice."

(Ellram and Feitzinger, 1997, p 15)

How costing is used, or functions or roles of accounting in general, can be viewed in several different ways (Mellemvik, et al., 1988). The most traditional way of describing how costing is used is probably the different decision situations which are supported by product costing. When the supplier and the buyer use product costing for common decision-making, it is a new or untraditional situation from a costing perspective. The first research question is: **What kinds of decisions are made when the supplier's product costing and other types of cost data are used in the relationship between the supplier and the buyer?**

2. The design of the supplier’s product costing and other types of cost data for interorganizational cost management

The literature review presents a number of tools for IOCM that can be applied in a close relationship between a buyer and a supplier. Although the role of the supplier is often underlined, a vast majority of the IOCM tools in the literature take their point of departure from the buyer’s perspective. Even if the IOCM focuses on the buyer, it will most likely have an impact on the supplier and its product costing and vice versa. The second research question therefore is: **How are the supplier’s product costing and other types of cost data designed for interorganizational cost management?**

The second research question is linked to the first in the sense that the decision situations are linked to IOCM. The first question deals with
3. Changes of the supplier’s costing system due to the relationship with the buyer

In the traditional mainstream literature, there are a number of factors that are supposed to influence the design of the costing system. Some of the most common factors mentioned in the costing literature are: the manufacturing process (automation, type of product, etc) (e.g. Deakin and Maher, 1987), the level of competition (e.g. Khandwalla, 1972), size (e.g. Samuelson, 1990) and line of business (Innes and Mitchell, 1989). When two or more companies cooperate, a number of new costing situations occur. Further, the buyer is an untraditional and eventually important user of the supplier’s product costing. The external user may be so influential that the supplier considers to change its present routine costing in order to adapt to the buyer’s direct requirements but also because of the new decision situations in which the costing system can be used. The third research question is: Has the supplier changed or seriously discussed changing its costing system because of the relationship with the buyer?
3 Research method

This chapter consists of a number of sections on different issues regarding the case study method. Each section is divided into two parts, one general part dealing with the issue as treated in literature and one specific part presenting how the issue is handled in this thesis.

3.1 Case studies in management accounting

During the 1970's and 1980's a number of changes took place which influenced the practice of management accounting (Ferreira and Merchant, 1992). At that time knowledge about the use and design of management accounting in practice was fairly limited (Drury and Tayles, 1995). Kaplan (1986) even claimed that knowledge of management practice for many academic researchers was based on textbooks mainly written during the 1960's based on NAA reports (National Association of Accountants) from the 1950's.

"Unfortunately, management accounting cannot be included, with other social sciences, as having an accumulated body of factual knowledge."

(Kaplan, 1986, p 432)

Knowledge about accounting practice was considered to be “abysmally poor” and “anecdotal” (Anthony, 1989) and the theory was mainly grounded on neo-classical economics from the 1960's (Scapens, 1994 a). This situation called for more empirically based research.

"The idea that there is much to be learnt by studying practice is one that currently finds a lot of support in the literature."

(Spicer, 1992, p 2)

In order to develop more knowledge about the state of management accounting in practice, survey studies were conducted in many western countries. Some reasons for the emergence of the surveys are “The Relevance Lost-debate” (e.g. Johnson and Kaplan, 1987) and “The gap” between the conventional wisdom of management accounting and the suggestions from the anecdotal empirical evidences (Scapens, 1990 and
By using the surveys, a general knowledge about practice could be created.

“At first, surveys were used. But it was soon realized that they can give only a very superficial view of management accounting practice and that more intensive fieldwork and/or case studies were required.”

(Scapens, 1990, p 229)

Based on the surveys, Drury and Tayles (1995) proposed similar views when discussing how the management accounting research could continue to study practice. Later, when case studies were used to a larger extent (Lukka and Kasanen, 1995), different tracks have been identified, one focusing on the organizational context and the other on technical and functional aspects (Ahrens and Dent, 1998). Accordingly, when developing empirically based knowledge in accounting, a number of different methods can be applied (e.g. Spicer, 1992). Depending on the research question, different methods are recommended.

“No serious student of science is so presumptuous as to postulate the method for conducting scientific research.”

(Kaplan, 1986, p 433. The bold “the” is italicized in the original text)

However, it is worth noting that there are no clear-cut boundaries when different research strategies are to be used (Yin, 1984). Instead the chosen research strategy is often a trade-off between case studies, larger samples or other types of methods. Even if the chosen research method is a trade-off, it is still, according to the literature, more appropriate to use certain research strategies depending mainly on the type of research question. Since a case study is a close examination of practice, it offers the possibility to expand the research beyond the formal parts such as techniques and systems. The case study approach can therefore contribute to an in-depth study of the organizational environment in which the techniques are embedded (e.g. Scapens, 1990 and Kaplan, 1986). A detailed case study offers the possibility to present management accounting in action rather than what Hägg, Magnusson and Samuelson (1988, p 535) refer to as “technical isolation”. The focus of the object(s) in their entirety rather than on parts abstracted from their context is one of the key characteristics of case studies (Hägg and Hedlund, 1979). The ambition “to get what is really going on” (ibid., p 137) also means that the boundaries of the cases are questioned during the process of collecting data. Accordingly a case study has the advantage of

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1 It is worth noting that the Scandinavian research in management accounting has a long tradition of detailed cases and case studies (Hägg, Magnusson and Samuelson, 1988).
presenting a more holistic approach with the possibility to reach a higher degree of internal validity.

There are a number of notions that are related to case studies in management accounting. Notions such as field studies, field research and qualitative research commonly refer to studies of management accounting in their context. The notions are briefly discussed in order to clarify their meanings. A case study is often referred to as an intense examination of a single entity embedded in its context. Kaplan (1986) uses the term field study for cross sectional case studies in which a number of variables are compared, whereas Scapens (1990) claims that a case study can be about a single company or a number of companies. Ferreira and Merchant (1992) present a similar view arguing that the number of cases is not a main concern for the field researcher and therefore it should not be used as distinguishing feature. According to Spicer (1992), the two differences between field research and case studies are the depth of the study and the comparison between different units (cases). Firstly, field research and site visits can be defined as short descriptive visits to the unit whereas a case study involves a far more intensive and detailed investigation. Secondly, when several units are involved, there is a difference between the two approaches. A case study would first analyse the data from each embedded unit and then compare the patterns between the units. The result of a multiple-case study would be based on the embedded data in each single case. When it comes to field research, the focus would be more on the unit of analysis and less on the specific context and no formal attempts are made to relate the embedded data to the single context of the case (ibid.).

Regarding the distinction between quantitative and qualitative studies, case studies are often related to the latter. However a case study can be conducted on both qualitative and quantitative empirical evidence (e.g. Kaplan, 1986, Ferreira and Merchant, 1992 and Yin, 1984). The reason is that the term qualitative research refers to the type of evidence and not to the type of research design.

Further, case studies can develop different types of knowledge, i.e. have different purposes (e.g. Yin, 1984 and Hägg and Hedlund, 1979). Scapens (1990) and Spicer (1992) outline a number of different ways through which case studies can develop knowledge regarding management accounting practice:

- Descriptive case studies are used in order to describe the techniques, systems, etc. in practice. The objective is to present one or several descriptions of practice (Ferreira and Merchant, 1992, Spicer, 1992 and Scapens, 1990).
• Illustrative case studies are used to show some kind of innovation of practice (Scapens, 1990). This type of case study implies that there is something special or superior with the presented case(s).

“When interested in forecasting which way the thundering herd is going, we don’t ask the bull in the middle.”

(Kaplan, 1986, p 446)

• Experimental case studies can be suitable in order to learn more about changes or recommendations (Scapens, 1990). The nature of an experiment is based on changing one or several factors in order to study the effects. Since it is difficult for the researcher to control the company with the only purpose to generate theory, it probably has to be used mainly when a change also can be favourable and already is planned by the company.

• Exploratory case studies – a case study can be used in order to explore certain areas in practice. The intention is often to generate ideas and hypotheses for later use (Spicer, 1992). The exploratory case study is normally an early step on the way of creating knowledge regarding a certain area (Scapens, 1990).

• Explanatory case studies can either be used to inform non-empirical research or directly explain the phenomena in practice (Spicer, 1992 and Scapens, 1990).

According to Scapens (1990), there are no sharp distinctions between the classifications above, instead it is the intention of the researcher that determines the classification. Depending on the purpose of the study, the type of case study and research design will differ. According to Yin (1984), case studies should be used mainly for answering “how” and “why” questions. These questions can be used at different stages of the development of knowledge. There are a number of examples in the accounting field when case studies have been used for early development of hypotheses, that later on have been subject to testing theory (e.g. Foster and Gupta, 1990). Though used for different purposes, case studies are often recommended mainly at early stages of the creation of knowledge due to the possibility they give to closer examination as well as a holistic approach. The motive for using case studies is the limited prior knowledge to use as a basis for the study, or maybe that the existing concepts, classifications, and structures are not appropriate (Ferreira and Merchant, 1992). Otley and Berry (1994) are of the same opinion.
Research method

“Case studies appear to have a number of potential roles to play, but the central role seems to be that of exploration.”

(Otley and Berry, 1994, p 46)

From that point of view, the main role of case studies is induction rather than the later stages, which focus mainly on deduction and hypothesis testing based on existing theory.

As discussed above the choice of research method is a trade-off between pros and cons, and therefore it is not obvious which research method that is the most appropriate. For the purpose of this thesis it would be possible to apply a case study approach, a survey or a combination. A combination of case studies and surveys would probably be useful, but it is not practically feasible. Instead the case study method has been applied, for the following reasons:

The first and main reason is that there is little prior knowledge about product costing in an interorganizational context. A good start for theory development is therefore a number of rich descriptions of the phenomena. The descriptions can be useful building blocks for further research, e.g. classification, modelling, and hypothesis-formation.

The second motive is the complexity of the interorganizational cooperation. The frame of reference shows a considerable complexity of interorganizational relationships that also includes social aspects. A case study cannot cover the entire complexity, but a number of case studies would probably be more appropriate than a survey when there is limited previous knowledge and a complex context.

The third motive is the possibility to work in a more interactive and tentative way both between cases and between theory and the cases. A survey would be very definite from the beginning while the case study alternative is more flexible. This way of working is described in further detail below.

3.2 To generalise from case studies

Even if a description is interesting in itself, it can also be possible to extend the results to a more general level. If the intention with a case study is to generalise, it appears reasonable to discuss the possibilities to draw more general conclusions. But Lukka and Kasanen, (1995) stress that this is usually not done. They write about case studies in accounting:

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2 The notions related to complexity in this chapter represent a structure of a number of (inter-) related aspects.
“As far as generalizability is concerned, further discussion is usually omitted. Accounting researchers are clearly uncertain whether they should be satisfied with the current situation or not.”

(Lukka and Kasanen, 1995, p 77)

According to Lukka and Kasanen the meaning of what is often referred to as “theoretical” or “analytical” generalisation is somewhat unclear. This could be one reason for avoiding the discussion. When discussing generalisation, Lukka and Kasanen define it in a broad way:

“By generalization we mean the derivation of and argumentation for conclusions covering many or all cases of a certain type based on one or more observations of the real world.”

(Lukka and Kasanen, 1995, p 72)

This means that empirical generalizations are inductive. One problem related to this issue is the assumption that the future corresponds to the past, which is also seen as a major problem in the philosophy of science (ibid.). There is accordingly a problem that the basis of generalizations is related to the specific time and space, whereas the generalizations are seen as trans-temporal and trans-spatial. Therefore the advantage of case studies, being able to present the context, is also a disadvantage since the context is particular and then the findings are based on the specific contextual conditions. Certain conditions that are specific for the cases in this thesis, and accordingly limit the generalization are discussed in chapter five. The presentation of some of the specific conditions highlights the trans-temporal and trans-spatial basis of further discussion.

Another problem with generalization in social science is the partly unpredictable human behavior. Therefore, it is generally accepted that the lawlike generalization does not exist in this strong form, but could rather be seen as regularities in segments of time and space or likelihood of particular occurrences in a population (Ryan, Scapens and Theobald, 2002). The problems associated with generalization have also led researchers to avoid the term and instead use notions such as “transferability of findings” between contexts (ibid., p 150).

Lukka and Kasanen (1995) argue that the results from a case study can be generalised in a number of ways: to build up argument that the results can be found in other cases, to transfer structural similarities outside the studied cases, to find a widely valid way of describing a phenomena, or to find the real mechanism producing the phenomena. What they have in common is that they all bring the findings from “raw observations” to a
level of “meta-observations”, including discussions that the results could be found or be meaningful outside the specific case(s) (ibid., p 78).

How far it is possible or appropriate to go from a pure description to a general level depends among other things on the type of purpose (type of research question). Pure exploratory studies are close to a description, and the researcher then partly leaves interpretation and analysis of the data to the reader (Wigblad, 1997). Depending on the type of study conducted, the underlying logic of generalization differs. Wigblad (1997) distinguishes between two logics of generalizations, causality and pattern. Causality focuses on reducing the complexity. To a large extent the reduction of this thesis will be in the descriptive part and closely to the empirical data. This increases the level of abstraction by highlighting or isolating certain aspects and relationships and then trying to explain them with what can be seen as a first step on the way to develop general theories. The pattern mode on the other hand increases the complexity and tries to understand the phenomena in its context(s). This means that the theory is applied to a new context (Ryan, Scapens and Theobald, 2002). In this thesis both ways of reasoning have been applied in the sense that the pattern serves as a basis for causality and the explorations as a way to explain the practice.

3.3 Limitations, critique and problems with case studies

As other research methods, the case study approach has its disadvantages. One obvious indicator is the limited number of case studies conducted, or at least published in well-known journals. A study published in 1983 by Klemstine and Maher (through Kaplan, 1986) shows that out of 642 articles in the most respected Anglo-Saxon journals only 32 are based on field research or personal observation. The fact that case studies in the accounting field are rare compared to other disciplines appears a bit peculiar. Unlike many other disciplines in social science, the outcome of accounting in practice leaves an extensive trail, namely the reports. In many cases the data collection should be easier than in many other social science disciplines that only rely on direct observation, subjective evaluation and other forms of data collection (Kaplan, 1986).

So why are there so few case studies published? Hopwood (1983) suggests that the focus of academic reward system pushes for speedy and voluminous research has given the field-based research a marginal role. Other reasons are the need for high degree of commitment between the researcher and the object and difficulties of getting access (Hopwood, 1983).
Scapens (1990) outlines three difficulties facing the researcher when using the case study approach: (1) difficulties to draw boundaries around the case both in time and space, (2) interpretation of a socially constructed reality, (3) and the ethical issue between the researcher and the subjects.

Other problems with case studies are that the conclusions and the results can be unconvincing even if the descriptions are interesting (Otley and Berry, 1994). The problem includes the collected and presented data and the connection between the presented data and the conclusions. The methods of collecting and presenting the data are less well specified in case studies and there are few rules and procedures to guide the researcher (Hägg and Hedlund, 1979). Further, the conclusions are normally described but the way to arrive at them and the bases for deriving them are often weak (Ferreira and Merchant, 1992). The problem and the difficulty the researcher faces is how to clarify the research process to the reader so that he/she can judge the basis for the data presentation and the conclusions. Miles and Huberman (1984, p.16) explain the issue as follows:

“One can not ordinarily follow how the researcher got from 3,600 pages of filed notes to the final conclusions.”

Ferreira and Merchant (1992) put forward two arguments regarding data collection and presentation. When the researcher presents the data, the aim is to make them look structured and elegant. The logic of presentation can be in strong contrast with the iterative trial-and-error process of data collection. The recommended way to deal with the problem is to disclose the research process and motivate major choices so that the reader can follow the same way as the researcher throughout the whole study. Frenckner (1986) describes the chain of motives as “mark path with paper strips”. It is recommended in order to show the reader the alternatives and the logic of the chosen one. Motivating the choices will most likely make it easier for the reader to judge the study.

The sceptics further declare that case studies in accounting have had varied focuses and that the theory building or accumulation has been limited (Otley and Berry, 1994). One reason for the scepticism can be the researcher’s different epistemological basis (ibid.).

In order to make this study more convincing, some of the problems and limitations will be discussed and thereby made explicit. Scapens (1990) presents three difficulties, already referred to above: (1) drawing boundaries in time and space, (2) the interpretation of a socially constructed reality and (3) the ethical issues.

(1) Even if the study takes a holistic approach, there has to be a focus as it is impossible to include everything. There is a clear trade-off between how wide and how detailed the study should be. In this thesis the research
Research method

questions and initial research design is based on the frame of reference. Regarding boundaries in time, there is less support in theory. Interorganizational relationships are constantly developing. The main focus in terms of time during discussions is the last five years and when a particular project is discussed, later projects are chosen. Most likely the older the project, the less influence a certain event has on the present situation. There is, however, an obvious problem related to the interorganizational cooperation compared with the accounting part of the cases. The accounting part is relatively easier to deal with since reports, instructions, etc. are saved making it possible to see the original documents, systems etc. The interorganizational cooperation has to rely mainly on the discussions with employees and how they understand and experience the situations.

(2) The interpretation of a socially constructed reality has been dealt with in two different ways in order to present a more inter-subjective view of the case. The first is the use of different sources, which in some cases partly overlap each other. The same method is employed with interviews. Different interviewees are asked the same types of questions and the same issues are discussed. The second way is to let the staff at the company read earlier drafts of what is written in order to prevent misunderstandings, etc. It is a good sign that the people at the company think it is a correct description.

(3) The ethical issue is difficult. The question is how to deal with obtained information that can be harmful to individuals in the company or to the specific company at large. Since many of the questions could be sensitive, this issue could be problematic. One way of reducing the problem is to keep the company anonymous. But this is a partial solution since the buyer and seller will still know who the other party is. There is also the risk that the most interesting information is the most dangerous to spread, e.g. if or how the supplier tries to be opportunistic or manipulates cost data in order to gain advantages in the negotiations. In this situation it is not possible to write that it is confidential since it could seriously damage the relationship between the buyer and the supplier. After the study was conducted, the ethical side turned out to be less complicated than expected. There were three types of information the companies did not want to give:

- Detailed information regarding the buyer and supplier
- Certain facts and costs
- Strategic issues

The detailed information about the supplier or buyer was not particularly sensitive. It was out of respect that one did not want to spread information
about the other party. For example one supplier did not want to show blueprints of a new concept car developed by the buyer. Later when visiting the buyer's plant, the buyer had no problem showing the blueprints. The detailed information also includes taking copies of reports and other types of documents provided by the buyer. It was allowed to see and discuss them.

Certain facts refer to numbers from different types of information systems. Examples include the exact amount of sales to a certain buyer and the exact overhead rates.

The strategic issues were mainly related to new products that had not yet been launched or larger investments in manufacturing technology.

3.4 Research design and collection of data

3.4.1 Theory and case studies

As discussed above, case studies can be used for different theoretical contributions, i.e. purposes. Naturally, the role of theory varies depending on the theoretical contribution of the study. This section discusses the role of theory in early stage research as that is most relevant to this thesis.

In most cases a basic frame of reference is necessary in order to direct attention and support to focus and structure the empirical inquiries. When it comes to classifications and descriptions, the situation is similar to the famous question of what came first, the hen or the egg? Careful descriptions are important in order to modify or create classifications, but classifications are on the other hand important for systematic descriptions. Kaplan (1986) distinguishes between two different types of descriptive activities. The first that occurs before the classification and the second that occurs afterwards. Accordingly there are two major situations when the existing theory is used, before the fieldwork and after the fieldwork. Without theory before the fieldwork, the data would only result in empirical findings without any meaning (Kaplan, 1986). It is important to note that observations can never be free from theory since the observer influences the studied phenomena (Otley and Berry, 1994).

As discussed above, the case study approach often has a more holistic approach and may even be a bit less structured or “loose”. The theoretical base is important, but so is the possibility to collect data in a more tentative way in order to explore new phenomena that can be of interest. The research design leads to a situation in which there is a trade-off or balance between open-mindedness and focus. Even if a more open approach is chosen, numerous researchers still recommend that the initial and modified theoretical positions should be explicit (e.g. Otley and Berry, 1994).
Research method

After the fieldwork, the theory and the researcher’s prior understanding plays an important role in modifying or creating new theory based on the empirical findings.

“The case study therefore provides a vehicle by which theories can be generated and modified in the light of data.”  

( Otley and Berry, 1994, p. 47)

It is worth noting that the theoretical contribution is not something that is discovered but rather an invention or construction by the researcher (Kaplan, 1986).

Theory is used in line with Kaplan’s (1986) two roles discussed above. The first is related to the work before the data collection and includes stating the more precise research questions and guiding the initial data collection in order avoid what Kaplan (1986) refers to as “wander around aimlessly looking for observations in the world”. To guide the collection of data include that theory is used to decide what types of cases to look for. The second role is to relate the empirical findings to the existing theory. In both roles, the theory is recommended to be as explicit as possible regarding the important choices, even if it is almost impossible to avoid implicit pre-understanding. Furthermore, the theory is used interactively together with the data collection. The interactive (and tentative) way of working between theory and cases is described in further detail below.

The literature review is built up on three basic areas, the product costing, the interorganizational theories and IOCM. For the product costing and interorganizational theories, a number of different perspectives could be used. The motive for using a traditional and technical mainstream approach to product costing is mainly that it is probably the most common view (e.g. all the surveys conducted in the last decade). Case studies are criticised for using different focus and accordingly making theory building more difficult. Thus there is a point in making it easier to relate it to other studies and also create a building block for future research. When it comes to the interorganizational theory, the focus is wider. A number of characteristics of a close relationship are chosen and discussed, but when collecting and analysing data also other aspects of the cases are considered.

My personal pre-understanding of related areas is based on a licentiate thesis published in 1998 (Nilsson, 1998) that partly deals with the interorganizational product costing. Brief and exploratory, the licentiate thesis’ initial aim was not to deal with interorganizational issues. Besides the licentiate thesis, I have experience from management accounting consulting in manufacturing industry, in many cases subcontractors. This has given a general insight into the situation for this kind of companies. This perhaps increased my chances to get access to the companies. One of the
interviewees said when I mentioned that I had experience from consulting “Well that is good, then you know what is going on in the real world”. Also the other two companies responded in a positive way when I mentioned my previous experience from practice.

### 3.4.2 The chosen cases and data collection

In this thesis three cases are studied. The motive for choosing several case studies is mainly the possibility to analyse each single case and as a second step conduct comparisons. Therefore a synergy effect can be achieved. The analysis is based both on the specific conditions of each company and comparisons of the cases.

The reason for choosing three cases is the necessary trade-off between the depth and time of each case and the benefits of having a larger number of cases for comparisons.

The initial literature review clearly indicates that different companies have different relationships. The ambition is therefore to conduct three case studies with an increasing degree of closeness. According to the literature the most intensive information exchange and the most developed IOCM techniques can be expected in the closest cooperation. The three cases are chosen for the purpose of studying three different types of relationships the suppliers have with their buyers. The first is relatively simple, the second is more developed and the third is the most developed. Accordingly the choice is made on the basis of expected type of relationship. As discussed in the frame of reference, the economic incentives are probably one of the main reasons for a close relationship.

Further it is worth noting that the thesis focuses on the interorganizational product costing from the supplier’s perspective. The focus on the supplier’s situation is the point of departure of the thesis (see chapter one and research questions in chapter two). This does not mean that similar issues from the buyer’s perspective are less relevant or interesting, only that they are not dealt with in this thesis.

The IOCM literature states that more developed IOCM could be seen when costly products with a high degree of R&D are produced. Therefore the type of product was used as a way of estimating the type of relationship that could be expected. This is certainly a simplification of how to judge a close relationship, but still serves as a first way of selecting the participating companies. For the sake of comparison and analysis of pattern, certain aspects of the cases are similar, including choosing companies from the

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1 In this thesis, the time aspect of each case can be regarded as a part of its depth, since the cases have been studied retrospectively rather than longitudinally.
Swedish automotive industry. Apart from the type of relationship, a number of practical aspects are considered such as access and closeness to Jönköping. Accordingly three companies are chosen mainly on basis of the products they develop and deliver: S1 - relatively simple and cheap metal products, S2 - load carrier systems for private cars and S3 – gear shift systems. S1 is expected to have the most distant relationship and S3 the closest. (The names are abbreviations of Supplier 1, 2 and 3. The corresponding buyers are named B1, B2 and B3 for Buyer 1, 2 and 3.)

S1 is a relatively small supplier. The products are rather simple in terms of R&D and treatment and a large part of the manufacturing costs consist of raw material. Each order also deals with comparatively small amounts of money. S1 has a long common history with the buyer and the buyer has been very influential for the development of S1.

S2 develops its own products directly for the consumer market as well as selling parts to many of the large car manufacturers in the world. The products for the car manufacturers are developed for a specific car model. S2 has a significant experience from working with the buyer.

S3 manufactures a number of different products for the automotive industry. S3 has extensive research competence and also a significant knowledge about the preferences of the end customer. Cooperation between S3 and the buyer involves a number of different aspects and significant coordination over the company boundaries, including suppliers of S3.

The first company, S1, participated in a previous study (Nilsson, 1998) and was therefore familiar. The two other companies were chosen in the light of discussions with the official in charge of company contacts at JIBS (Mats Dahlin) and discussions with colleagues and other contacts in order to get a brief overview of the company. After S2 and S3 were recommended, I tried to find out more about them from their homepages, financial statements and the database Affärsdata at the JIBS library. After deciding about the companies, S2 and S3 were contacted with a letter briefly describing the study. A few days later I contacted them for an appointment. The appointment was to find out if they were willing to participate and provide access but also to obtain more knowledge about the company to determine whether it would be fruitful to continue. Before starting the interviews, I found it suitable to contact all three companies to see whether they were interested in participating. The main reason was that the choice of a company was partly based on the characteristics of other companies. The aim was to find three companies which would be fruitful to compare. The three companies that participated in this thesis were the first to be chosen. Although the managing directors were not present, the companies' participation were approved by them, so that I had the permission to
interview the employees and to encourage them to speak more freely. The buyers were contacted via the supplier who recommended the person to contact.

S1 was contacted by phone since we knew each other from the previous report. After the three companies agreed to participate, we immediately signed agreements of confidentiality under which no information based on what I gathered should be spread without the company’s prior permission. This was a direct requirement from both S2 and S3. The reason is that this kind of information deals with issues that can seriously harm the company in the customer relationship, cause a general bad-will and competitors can obtain critical information. In order to create a more generous and open atmosphere I tried to show clear intentions to give something in return to the participating companies. There are two main reasons for this. Firstly, it builds trust and confidence. Secondly, the interviewees are busy and it takes time for them to be interviewed and to proof read. To know that they would get something in return would make them more positive to participate and me. The incentives, according to the companies were to get an outsider’s view through comments, discussions, etc. offered by the author. However, it should be noted that the companies’ agreement was also out of favour to the author and Jönköping International Business School. The fact that all three companies gave a more or less unlimited access to their relationship with their main buyer, indicates that the relationships are harmonious, rather than conflict oriented.

One advantage with case studies is the possibility to collect a number of different types of data. (e.g. Yin, 1984). These different data collection methods or sources include: review of reports and documents, interviews, direct observation or participation and questionnaires (Otley and Berry, 1994). Any of these sources can be used as a sole basis for a study. The main reason for using a combination of sources, even if it “…imposes a great burden…” (Yin, 1984, p. 97), is that a kind of triangulation can be achieved (data triangulation), which provides multiple measures of the same phenomena (ibid.). Another reason is that it can save time for the interviewees if they provide written material.

The main data sources in this thesis are: semi-structured interviews, open discussions, direct observation (meetings, manufacturing plants, discussions, etc) and review of reports and other written material. Questionnaires were excluded since only a limited number of people were involved in each case. On the retrospective part, for natural reasons, observations were not conducted. In many cases people were also interviewed over the phone if they had been interviewed before. The phone interviews normally dealt with quick queries. All interviews were recorded and after that typed out.
Research method

The data collection started during the spring of 2000 and continued until the end of 2001. As mentioned above the three cases were approached in a parallel way rather than first finishing one before starting the other. The reason was to compare certain explored aspects in one case with the others. Due to my previous knowledge about S1, the initial more general discussions were not necessary and it was therefore approached in a different way. The data collection regarding S2 and S3 was conducted in two steps, an initial semi-structured way and after that a more exploring way based on the findings in the previous step. After the initial meeting when the companies agreed upon participating, the data was collected in the following order:

1. Initial design meeting with S2
2. Initial design meeting with S3
3. Semi-structured interviews of S2 and S3
4. Discussions with S1
5. Continued discussions with S2 and S3

The initial design meetings with S2 and S3 dealt with how to structure the first step of the data collection, the semi-structured interviews. At S2, I met the accountant and at S3 I met the marketing manager. I then explained in detail what I was going to do, how I would prefer to collect data etc. Together we drew a plan on whom I was to interview, in which order, what type of information I could obtain from different types of sources, etc. The contact person introduced me to the interviewees who included accountant/controller, the key-account manager, the marketing manager, the purchasing manager, the buyer, two persons from the manufacturing department (one dealing with development and one dealing with quality/logistics). Apart from these persons, I also met a person whose position was shared between S2 and B2 (the buyer of S2). He also organised an extensive trip to show the plants of the buyer of S2 and S3. Related to the company visit, I interviewed a purchaser.

The bulk of the semi-structured interviews with S2 and S3 were conducted between May and November 2000. The interviewees mentioned here were chosen based on initial discussions of what I was interested in. That interviewees turned out to be of similar positions at both S2 and S3 is a coincidence. The initial list of interviewees was discussed during the interviews in order to find out if it would be fruitful to add extra persons to the list. It is worth noting, though, that the managing director and the vice managing director have not been interviewed. Almost all the interviewees of S2 and S3 claimed that the excluded persons did not deal with such level of details.
The semi-structured interviews lasted between 2 to 4 hours each. The interviews were both in person and over the phone. The personal interviews took place at the company plants. The interviews were conducted with a number of focuses and points in mind. The issues to be discussed were sent to the interviewee in advance in order to enable him or her to get prepared and the same document was used as a checklist during the interview (see appendix). The main way of collecting data was the interviews. Together with the controllers/accountants/CFOs, the key-account managers and the marketing managers other sources were used. The accountants presented a number of documents, Excel files, reports and hand-books related to both the routine costing and non-routine costing. The marketing manager and the key-account manager also used documents in the discussions, usually the key account manager presented more detailed pictures and reports. Apart from documents the interviewees demonstrated products/components, manufacturing departments, prototypes etc. This type of presentations mainly gave a general understanding of certain issues of the entire company. For example when writing about product costing, it can be valuable (and interesting) to know how the product looks and roughly how it is manufactured, treated, difficulties in the development etc. Certain types of documents were copied or borrowed, while others were just presented as examples. The interviewees never read the exact printouts of the interviews, mainly because it would be too time consuming.

The discussions with S1 were different since I had knowledge about the company and its situation since (Nilsson, 1998). The discussions therefor dealt with mainly two areas: Firstly, the relationship in a more focused way and secondly, issues brought up in the other two cases.

After the initial semi-structured interviews, I continued with more open discussions based on the previous data from all cases along with further reviewing of the literature. At this time the discussions were focusing more on questions like “why” rather than the initial “how”. The result of this way of working is that a certain body or bulk of data is collected based on the initial literature and another part of data and literature is dealt with in an alternating and searching way. An example of this is how the cost data was used. It turned out that pricing and related issues were some of the more important situations and also relatively complicated, whereas the on-going cost reduction turned out to be of minor importance. It was then reasonable to continue studying the pricing in order to find out more. (It is worth

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4 The main reason is that this thesis was initiated in the beginning of 1999 and since then some rather dramatic changes have taken place in the field of interorganizational relationships and IOCM.
noting that the absence of a certain phenomena in a case can also be interesting).

The tentative way of working was conducted between the cases and/or over the time. Even if thorough and extensive discussions and interviews are conducted, certain issues might not be mentioned or might be seen as unimportant by a respondent. Later, during discussions with another company an issue might surface that has not been discussed or mentioned in previous cases. The two possible reasons are that either the particular phenomena could not be found in the previous case or the respondent did not mention it. When this situation occurs, the first company is contacted again and asked about the issue. By collecting data this way, the three cases are subjected to similar questions and discussions in order to make the comparison more fruitful. One such example is the pricing decisions. This appeared to be a main issue in all three cases, but S3 also presented some pricing issues related to R&D not mentioned in the other cases (nor in the literature). The previous companies were then contacted again in order to find out how they dealt with the particular issue.

The other tentative way of working was related to time. During the interviews and the discussions a number of issues were discussed. At several occasions it happened that later when the discussion was printed and read certain answers seemed to be contradictory or gave rise to new questions that ought to be followed up. The reason these issues arose following the interviews is that it was hard to grasp all data immediately and that the answers required a systematic and careful review and comparison with previous answers, reports, protocols, system descriptions, etc. For example when a CFO presents the costing system he has been working with for many years, it tends to go relatively fast. Since the interviews are recorded and complemented with reports, system descriptions etc. that were not a problem. The problem was that it could be difficult to be able to immediately relate what was said to previous discussions and documents.

Once the data was collected, and a first draft was completed I gave a final seminar (June 2002) with two opponents (Associate professors Christian Ax and Jan Greve). Before the draft of the thesis was distributed, the companies read the entire manuscript in two steps. The first step dealt with the empirical chapter and the second with the analysis and conclusions. There were two reasons for this procedure. Firstly, it was a requirement from all the participating companies that they should have the right to read before it gets public and secondly, it was in order to hear their view of the thesis. The last draft (this version) was also sent to all involved companies in order to get final comments and permission to publish the results.

The way of collecting data described above has at least two implications that the reader should be aware of. Firstly, the description is not entirely
separated from theory but has rather been developed in a parallel way. Secondly, it is not possible to entirely separate the description from the author due to the unstructured and semi-structured parts of data collection, such as informal discussions and group discussions. Accordingly an identical replication would not be possible.
4 The companies

This chapter deals with the empirical findings. The companies are anonymous since that was a condition for their participation in the study.

4.1 S1

4.1.1 Introduction

The first company, henceforth referred to as S1, is a small subcontractor studied for a previous report (Nilsson, 1998). But the description here is partly different since the present thesis has a partly different focus. S1 is a small mechanical industry, which is 100% owned by a mother company with a portfolio of similar companies. The ownership situation influences the management accounting of S1 as it has to report to the owners. However, the mother company can also support S1 as a speaking partner (Nilsson, 1998). In 1998 S1 had 79 employees and a turnover of 86 million SEK.

4.1.2 Historical background

S1 was founded in 1945 by three companions. Right at the beginning the automotive sector was the main market, mainly because of the owners’ keen interest in cars. From the start, the focus was on distribution and manufacturing of components for the automotive industry. The products were relatively uncomplicated metal parts like number plates and fastening equipment, e.g. tube clamps.

The business grew steadily. The number of employees increased and the company built a larger factory and also moved to a larger building. During the 1960’s, S1 became a subcontractor to B1, one of the major companies in the Swedish automotive industry. In the beginning of the 1980’s, the present managing director was recruited at the same time as the mother company bought the whole of S1’s stocks. In those days, S1 had 50 employees and the turnover was 31 million SEK. (After the collection of data the company group was sold).
4.1.3 S1’s organization

S1 operates in two areas, manufacturing and distribution (trading). The manufacturing part makes fastening equipment mainly for the automotive industry. The trading department is a trading department that distributes vehicle products to wholesalers. Apart from minor administrative tasks, the two functions are separated from each other regarding organizations, staff, premises, buildings, staff, purchasing, budget, etc. Since it is specialised in distribution and is a separate entity of S1, it has been excluded from the study.

According to the organization map, S1 has four functions and departments:

- Accounting, finance and administration
- Marketing
- Production
- Trade

4.1.3.1 Accounting, finance and administration

The department has five full-time employees. The main functions are accounting, bookkeeping, accounts receivable ledger, accounts payable ledger and personnel management. Besides, the financial manager is also responsible for the administrative part of the ERP system (enterprise resource planning - a computer system). The daily work with the ERP system is divided between the accountant and the production planning function. The ERP system has five different parts that are connected to each other:

- Order/purchasing
- Salaries
- Optional functions
- Finance
- Manufacturing/planning

The hardware of the information system is based on a central computer, AS 400, and a number of PCs. The software is a modified standard system. The financial accounting program has the possibility to include codes used for management accounting like responsibility control, budgeting, etc., and for simplifying administration like sales within the company group and exports.

S1 reports to the company group in a detailed report (15 pages) every month. The report is then compared with the budget. The reason for this
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detailed procedure is that the company group is listed on the stock exchange.

4.1.3.2 Marketing

The marketing department is separated from the trading department as mentioned above. It works with a relatively small number of important buyers mainly from the automotive industry. It only sells products manufactured by S1. The trading department focuses on the retailers of the automotive industries and has a large number of buyers (e.g. Mekonomen). The products sold by the market department are divided into a number of categories (the relative part of the turnover is within the parenthesis):

- Rubber clamp (25%)
- Tube clamp (13%)
- Cross clamp (1%)
- B1 (45%)
- B1’s competitor (2%)
- Subcontracting (12%)
- Other (2%)

The table above mixes customers and products. The reason is that S1 designs its market report as it was first adopted when the information system was implemented and afterwards no one cared to change it. Eccentric pressed sheet metal and extrusions in various quantities constitute the bulk of B1’s purchases.

In the last five years, the market of S1 has changed in two ways:

- Harder competition.
- Higher requirements from the larger and more important customers. The requirements concern price, quality, delivery procedures and common information systems. The delivery procedures include certain requirements regarding packing, batch sizes and delivery precision.

The marketing department does not deal with marketing in a traditional meaning, but rather keeps up contacts with the existing buyers. When buyers require something, S1 is there to help. In this sense S1 can be considered to be a bit passive since it does not actively seek new customers. In order to develop the market, the marketing manager has made an effort to get more orders from the existing buyers and to visit exhibitions in which there is a demand for S1’s competence. The two main ways of competing on the market are:
Flexible manufacturing of shorter batches of pressed metal components
Manufacturing of own tools

The reason that S1 wants to specialise in shorter and flexible batches is mainly that it fits the manufacturing technology and that the level of competition is lower. The tool manufacturing is important for S1 for two reasons. Firstly, S1 is seen as a competent tool manufacturer and is therefore profitable. Secondly, many of the buyers, and especially B1, regard the in-house tool manufacturing as an advantage since it reduces the risks for delays and other types of production problems.

B1 is the largest and most important customer of S1. B1 is also different compared to the rest of the market in several respects. According to the marketing manager, the most important characteristics of B1 and the rest of the market can be summarised as follows.

Working with B1:
• The cooperation is very systematic.
• It gives prestige.
• The customer specific costs are smaller (related to turnover).
• B1 is more involved in “internal aspects” of S1 mainly related to manufacturing such as quality and timeliness.

Working with other buyers in the rest of the market:
• The risk is smaller since each single customer is less important.
• It is easier to motivate higher prices because of higher costs for handling.
• It is often easy to get smaller contracts after the initial purchase.

When cooperating with B1 it is also considerably more important to be consistent, because of the high costs involved even for minor changes. For example, the marketing manager says that it costs B1 around 200,000-300,000 SEK to change the component identification number.

Knowledge about competitors is fairly limited because S1 finds it difficult to obtain information. The competition varies with regard to products and the size of a specific order. For larger quantities of standard components the increased competition seriously reduces profit margins.

The selling process can be divided into two different types: S1 makes an offer or maintains already existing contacts. When S1 makes an offer, the process almost always follows the same procedure:
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1. An enquiry for offers is received. The question is usually relatively detailed and involves expected quantities, blue prints, etc.

2. The marketing manager takes an initial look at the enquiry and assesses whether it is feasible and interesting for S1.

3. The production department takes a closer look and estimates the time, material and tools that are needed.

4. The tool department calculates the cost of the tools.

5. The production department calculates the costs based on time, material, machine and subcontracting.

6. The marketing manager estimates whether the calculation is reasonable and also looks for alternatives. At this stage, the expected output quantity and the cost of the tool are important.

7. The offer is submitted to the buyer.

The tools are usually customer- and product-specific and can rather costly (150 000-300 000 SEK). The routines regarding the tools differ between different customers and orders. In some cases the tools are bought by the customer. Other customers pay indirectly for the tools offering a higher price per unit. It also happens that customers bring their own tools that have been bought and used by a previous supplier. There are two reasons why the supplier prefers to buy the tools separately. First, if a customer legally owns the tools, they cannot be used for other customers without permission. Second, the tools are expensive from a financial point of view. Both parties usually prefer that the buyer acquires the tools separately.

Approximately 30% of the enquiries for offers result in an order. Though this has decreased in the last few years, the reason is not very clear. The effective time for preparing an offer is approximately 1-2 days. Since it requires a substantial amount of work, the cost is estimated at 5,000 – 10,000 SEK per offer.

With a developed product and an on-going customer, the selling process is less complicated. Then the involved parties usually have a discussion once per year for deciding quantities, batch sizes and the price. The possibility of a change in agreements is normally limited and the accepted motives also vary.

4.1.3.3 Production

The production processes have been developed from the originally manual production technology. The tools at that time were simple and relatively cheap. The development and growth of today’s production has been achieved gradually with no revolutionary changes. Many of the products that were sold to the automotive industry during the 1970’s are similar to the products that are sold today. The three largest changes in the last thirty
years, according to the production manager, are: (1) the increased automation with pneumatic machines during the seventies, (2) the quality improvements during the eighties and nineties and (3) the MRP system (manufacturing resource planning) for planning the manufacturing processes during the nineties.

The quality improvements were a result of direct requirements and cooperation with B1. Apart from the general quality across operations, the cooperation with B1 has mainly focused on improvements of deliveries and a common information system. The production manager sees B1’s requirements as very positive since they support S1 to improve the technology that is also useful in the relationship with other customers. Further, the production manager claims that the requirement of a certain aspect, e.g. quality, usually comes from B1 first, and then similar requirements come from other customers later.

The production department is organised into three functional departments plus one for shipping, deliveries and logistics and a person who is working with quality and ISO 9000 documentation. S1’s departments are:

- Manufacturing
- Rubber Clamps
- Tool and Construction
- Planning and Shipping

The Manufacturing Department has 34 full-time employees. Its main functions are: (1) receiving and controlling material, (2) the workshop and (3) assembling. The products are mainly pipe clamps, cross clamps, a large part of the products for B1 and subcontracting. Since this department makes thousands of articles that are made in different ways, it is not possible to describe the manufacturing process since it differs depending on the manufactured product. The equipment used includes:

- Automatic presses – six automatic eccentric presses, the set-up time can be considerable.
- Welding – five working stations for welding. They are both manual mig-welding as well as programmable welding robots.

A main part of the machines is relatively flexible, in the sense that it can be used for manufacturing a large variety of different pressed products. In order to make a specific product, the machine is often combined with a specially constructed tool.
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A production order can be treated in all the machine groups. Most of the production orders are treated in one to five different operations. It is also common that the final product is assembled from different components.

The Rubber Clamps Department has five full-time employees. The products made are covered with rubber, which makes production more difficult. The equipment in this department is considerably more complicated. It is mainly constructed and built by the tool department at S1. The advanced machines are also used for marketing in order to show the competence level of S1. The machines are pneumatic and totally automatic. In one operation the product is treated in 10 to 15 steps. Each machine is developed for a certain type of product, which also makes it more difficult to set it up for another type of product (minimum 2-3 days). At the moment, there are ten machines in the department.

There are naturally a number of differences between the Rubber Clamps Department and the Manufacturing Department. In the former, the product is first developed and then the machine is adapted to produce it. In the latter, the equipment is considerably more flexible.

Tool and Construction Department is organised together since the competence for manufacturing tools and design products is similar. The department has six full-time employees. The main tasks of the department, apart from constructing, are to:

- Make new tools
- Maintain and modify existing tools
- Manufacture and modify the machines in the two other departments

In some customer relationships S1 is directly required to build its own tools, since it is considered to be more reliable in product deliveries. The manufacturing process in the tool and construction department is different in that it needs more craftsmanshift. The equipment includes a number of smaller drilling machines, milling machines and a spark machine.

Planning and Shipping Department deals with the logistics. The main tool for planning of the production is the MRP system, whose cornerstone is the structure. The structure is a computerised sheet in the MRP system, which describes how the product should be manufactured in the most efficient way. The main purposes of the structure are:

1. Furnishing a basis for the manufacturing, planning and ordering
2. Providing data for the product costing

The structure is saved in the computer system and every component that is manufactured by S1 has one. Since a product is usually built up by a number
of different details, the structures are constructed in a hierarchy, with the so-called sub-structures. Every structure has data regarding

- Material type and expected quantity
- Operations in different machines, expected time, quantity of degree of manual support, and set-up time
- Subcontracting – the kind of subcontracting (e.g. surface treatment) and its cost

The basic quantity in the structure, regarding the material for example, is hundreds. The reason is that the production volume is usually rather high while the data or amount per single unit rather small. All the data in the structure is based on estimation. The estimated standards are normally not verified or followed up because of lack of meters for the machines.

4.1.4 Product costing at S1

S1 uses exclusively full costing. The usual cost object is the single order or job. S1 has two different models for calculating the cost, one for stock valuation and one for internal purposes such as pricing, profitability analysis, etc. The only difference, though, is the calculation of the interest rate and the depreciation.

The structure of the costing is similar to the recommendations in the Uniform principles of full costing. The structure of the costs is shown below:

- Direct labour
- Direct material
- Receiving and handling costs
- Machine costs
- **Subcontracting**
- Manufacturing costs (sum of the costs above)
- Indirect administration costs
- Indirect selling costs
- Full cost (sum of the costs above)
- Profit margin
- Recommended selling price

**Direct labour** includes employees working with a manual machine and those watching and serving the automatic machines. Each employee is usually responsible for two or three machines. The calculation of the amount of working hours is then based on a ratio. If for example an employee is responsible for three machines, the number of working hours
will be multiplied by a 1/3. The amount of time will then be multiplied by
the standard hourly rate and then assigned the production order (cost
object).

The cost per hour is the average salary for the union contract employees.
The hourly rate includes the social costs and an efficiency factor. The
efficiency factor is calculated by comparing the number of hours from the
salary system with the number of produced hours according to the
aggregated number of structures in the MRP system.

The number of hours required for a certain operation is estimated when
one plans the production on the basis of the number of hours a certain
operation will take. In most cases, the data are already stored in the MRP
system in the structure. The direct labour of a production order is therefore
based on standards of both quantity and price.

**Direct material** deals with the cost of the material for the order. The
quantity estimated beforehand and the valuation are a version of present
value based on the price S1 had to pay the last time.

**Receiving and handling costs** are the overhead costs that are caused
by handling and storing the direct material. The main costs are salaries for
purchasing and storage staff, a part of the rent, insurance and interest rate.
The indirect material costs are allocated to the production order by using
the standard cost of direct material.

**Machine costs** cover more than just the cost of the machine per se.
They are also used as an allocation base for the rest of the manufacturing
overhead costs. Consequently, the calculation of the machine cost has two
different parts: the cost estimate of the machine and the rest of the
manufacturing overhead costs. Almost all machines that are used have a
cost per hour. The cost of the hourly rate is calculated by adding the cost of
capital and depreciation. The sums of these costs are divided into the
estimated number of hours that the machine will be used for the year. The
variable costs for the machine, e.g. electricity and service, are included in the
cost pool for the rest of the manufacturing overhead costs.

The cost pool for the rest of the manufacturing overhead costs includes
salaries for supervisors, the building and other costs associated with the
manufacturing process (e.g. maintenance, electricity and computer system).
The costs are allocated to the production order by first allocating them to
the machines with the allocation base calculated above. This means that an
expensive machine will get more of the costs of the manufacturing
overhead costs. The machine hours are also used for allocating S1’s entire
cost of capital and depreciation. The total depreciation is the same as that
which is used in the external financial reports but certain adjustments are
conducted once per year. The cost of capital is only calculated for the
machines based on an estimation of the market value of the machines.
Indirect administration costs include costs for general administration and selling costs. The main part of the costs are salaries for sales staff, salaries for administration and management, general costs (cars, travels, telephone, offices, etc.). The cost pool is allocated to the production order with manufacturing cost as the allocation base.

There are a number of reports that S1 uses on a regular basis. There are large possibilities to generate reports from the ERP system. This part will only deal with the reports that directly use data from the product costing system or provide data for the product costing. The most important reports that are related to product costing are following up costs, comparisons with the financial accounting, profitability analysis of product groups and profitability analysis of customers. At the moment S1 is not able to analyse variances on each single order since the machines are not equipped with measuring devices for measuring and registration of time on order level. It is possible to measure how long time a machine has been used, which then can be compared with the aggregated figures from the structures. It gives an indication of how well the structures in total match the work carried out.

Product costing is used in a number of different ways by different employees. According to the management director and the accountant the most important areas are:

- Pricing – estimation of prices or offers
- Stock valuation – valuation of different inventories
- Profitability analysis of customers and product groups

Depending on the position in the company, the employee uses the costing for different purposes. According to the management director, pricing is the most important. The price is almost always based on the full cost even if one sometimes has to adjust the calculations. The main reason for using the costing for pricing is that one knows that all the costs will be covered at the end of the budget year.

The accountant also uses the costing for stock valuation. He finds this important since it is required by the company group but it is not a reason for considering changes or improvements of the existing costing.

The profitability analysis is normally calculated on a weekly basis by the accountant, the marketing manager and the managing director. Normally the report is used to see if there are any significant variations compared with the budget. The profitability of the customer is based on the full cost of the product and what types of products the buyer has purchased.

Other ways of using the product costing are:

- Providing data for reporting to the company group
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- Following up different costs and variance analysis
- Periodical income statements and balance sheets
- Sourcing decisions
- Long-term decisions regarding markets and products

4.1.5 The relationship with B1

This part will describe certain aspects regarding the relationship between S1 and B1. Firstly, the requirements of B1 will be described. Secondly, certain characteristics of a close relationship will be dealt with.

4.1.5.1 B1’s requirements of S1

As mentioned above, B1 is the most important customer. B1 does not only purchase a large part of the goods produced by S1, it also supports S1 in different ways.

B1 is working actively with developing and evaluating S1 as well as other suppliers. The most important factors when S1 is evaluated are:

- Quality and quality systems
- Cost level
- Common information system
- Financial situation
- Ethics (safety and environment)
- Less reliance on B1

B1 requires that S1 is certified according to the ISO 9000 standard. Apart from that B1 conducts its own quality analysis.

B1 normally requires S1 to reduce the price by a certain rate on a yearly basis. The price reduction is based on an estimation of how much it should be possible to reduce the costs.

S1 and B1 use a common information system for both administrative as well as logistic tasks. The main purposes are to reduce costs and to secure deliveries on time. As a part of the information system, B1 uses certain indexes to evaluate the precision of the deliveries.

There are two reasons why B1 requires a strong financial situation. The first is that if S1 went bankrupt, it would seriously hurt B1 since S1 would not be able to deliver the components. The second reason is that B1 wants S1 to be able to invest in the best manufacturing technology.

B1 requires S1 to act in an ethically correct way. This includes safety for the employees and care for the environment.
B1 does not want S1 (or other suppliers) to be too dependent on B1. Many of the components that B1 purchases have a life-cycle that is similar to the products that B1 manufactures. There is therefore a risk the supplier is not suitable for delivering new components for the new product.

The relationship between S1 and B1 is described below mainly in the light of the factors dealt with in chapter two.

4.1.5.2 The relationship between S1 and B1

As indicated above in this section, B1 has a special role for S1. The two companies have done business together since the 1960's and over the years B1 has been an important partner for improving S1 in a number of key areas. This section presents characteristics of the relationship between the parties.

S1 and B1 communicate regarding short-term details as well as long-term issues, e.g. the future role of S1. In the short-term, cooperation is mainly focused on issues regarding the existing products and also on preparing offers for new products and tools. When it comes to the existing products, the main issues are deliveries and quality reports. The discussions regarding new products are normally relatively uncomplicated. B1 usually presents an initial blueprint of the component and the related products, then S1 looks at them and tries to suggest one or several solutions that are presented to B1. The communication between S1 and B1 is conducted mainly by staff with positions such as salesman and constructor from S1 and purchaser and constructor from B1.

Apart from the product-related consultations, there are also discussions concerning the whole company. The most important issues discussed are information and manufacturing technology (including delivery precision), quality and environmental impact. In these areas B1 has been the first and influenced S1 on a strategic level. In most cases, the results have been achieved through discussions and understanding of each other’s situation and not through hard negotiating based on power asymmetries. Further, a large part of the communication is formalised using forms, measurements etc. This has led to S1 formalising its own internal documentation in order to meet the requirements of B1.

As part of the communication, B1 regularly evaluates the suppliers in order to improve and communicate future expectations. The procedure is the following. A team from B1 visits S1 and other suppliers. These visits and evaluations have a very special focus such as logistics or quality improvements. These improvements support not only the single product, but also developing the supplier and indirectly the relationship. S1 regards this type of support as important and valuable.
There are also occasions when S1 is invited to larger information meetings to listen to the future life of supplier to B1. The information then mainly deals with vision and strategy rather than technical details.

One of the most significant adaptations is the administrative work. According to the marketing manager, a supplier in the automotive industry more or less automatically becomes more structured and systematic when it comes to the quality of documentation. A large part of the documentation concerns the quality work, so that S1 can be more professional and systematic. B1’s requirements include that the reporting procedures are done in a certain way. For this purpose S1 has invested in software.

Quality work, including definitions and improvements of processes and procedures, according to the marketing manager, are the most important of adaptations. In order to meet B1’s requirements, S1 has employed staff working with both quality and equipment. S1 conducts the quality control, but the way it is done - routines, equipment, etc.- is developed jointly with B1 which has a considerable experience in that area.

S1 has invested in the relationship with B1 in two different ways. When it comes to "softer" social investments, they focus not only on knowing each other but also on knowing each other's technical and logistic needs. To know each other makes cooperation easier since one particular person in one of the companies can easily and directly contact the relevant person in the other company without going the formal way. The technical and logistic knowledge is important. The constructors from S1 learn about the problems and the needs of B1 in order to meet the requirements in a more effective way.

The tangible investments of S1 in machines, equipment etc. are not usually unique for the requirements from B1 but can also be used in other relationships. The machines, according to the production manager, are relatively universe in the sense that they can be used for a relatively large number of different products.

The other part of the tangible investments is related to the capacity. S1 has invested in a certain level of capacity, which is based on the expectation that B1 buys certain quantities.

The only relationship-specific tangible investment is the tools for the eccentric presses. The tools are normally custom made for a special product but B1 always buys them separately. According to the management director of S1, despite being high and expensive, the requirements of B1 are also understandable and well motivated.

Commitment is based on the good functioning of the relationship. B1 actively evaluates the relationship. Therefore the communication about commitments is very explicit and controlled and is not developing by
coincidence. The purchaser at B1 cites the following as the most important requirements:

- A well developed quality system
- A shared information system
- Delivery and logistic systems
- Less dependence on B1
- A positive development of the price also based on open costs

Commitment is to a large extent based on the ability of S1 to perform in accordance with these five points.

**Trust** is closely related to the information exchange and to the understanding of the needs and requirements of B1. If S1 clearly knows what is expected, its attitude is that it has to meet the requirements. In this case B1 clearly communicates what is expected. When that is done, the attitude from S1 is that it will do everything to solve the task and potential problems.

"If I have promised something, I will do everything to keep that promise."

The key account manager

Trust is something that has been developed over the time. At the moment, the marketing manager thinks that there is a high degree of mutual trust as regards the willingness or attitude that the other party will not intentionally behave in an unethical way. According to the marketing manager, B1 has a reputation among suppliers for being an ethical and trustworthy buyer.

The other side of trust is competence, i.e. the other side’s capability to fulfil the expectations and promises. This type of trust is developed both by studying the output (i.e. is S1 performing as promised) and by interaction regarding certain issues. One important way of creating competence trust is to keep the time schedule for the product development. Others are the time of delivery and quality. Trust is also developed by company visits. B1 goes to S1 and studies the systems, procedures, etc. These visits not only focus on control. The purchaser at B1 mentions the following objectives:

- To get a general impression of what is going on among its suppliers.
- To come with suggestions regarding rationalisations.
- To control the competence of the supplier (S1).

The marketing manager of S1 also claims that in some cases B1 makes mistakes with its delayed answers, blue prints, etc. There is however a
general understanding that sometimes errors occur and then they need to be solved as smoothly as possible rather than resorting to lawyers or courts.

B1 is a very important buyer, not only because it purchases 45% of the annual production (turnover), but also for other reasons. The high percentage of the turnover creates a significant dependence on B1 especially in the short-run. In the short-run B1 is dependent on S1 since delayed or defective products would be a catastrophe for B1 as they may lead to a halt in production. In the long-run there is lesser mutual dependence. The dependence of B1 on S1 in a long-term perspective is relatively slight since B1 owns the tools and there are a number of other suppliers that quickly can continue the production with the existing tools. The dependence of S1 on B1 is also relatively small since the production equipment is very flexible and therefore easy to use by other buyers.

Both parties declare that the mutual dependence is too high. B1 is very explicit that it does not want its suppliers to be too dependent since this also puts it in a situation where, at least ethically, it bears some social responsibility. B1 occasionally evaluates the suppliers and one of the criterion is that the supplier should not be too dependent on it. If a supplier sells for more than a certain percentage of its turnover, it is considered a minus in the evaluation process. From S1’s point of view, it is obviously a risk to be so dependent not only on one buyer but also on one model of vehicle or even order. When the next model of the vehicle is developed, it is not certain whether the technology that S1 has will be appropriate. Both parties try to ensure that the dependence is not used as a tool in order to get a better position in negotiations.

The power B1 obviously enjoys has an implicit impact on the discussions about price and related issues. It can be said that B1 uses its position as a big customer to ensure that S1 works in a way that is expected. The marketing manager says that the requirements are normally reasonable and that B1 does not feel that S1 abuses its position as a large buyer.

S1 is occasionally compared with other similar competitors. The comparison includes the cost data that is presented to B1. The comparisons have shown that the difference in the costs presented is usually small when the underlying aspects (technology, size, etc.) are similar. In some cases, the dialogue with B1 is very open regarding the cost structure of a presented product. This is usually the case on larger orders and if there is a big difference between different offers. Occasionally the difference in offers between competitors can be significant, but the marketing manager thinks there are other aspects behind the presented data than costing (i.e. financial consequences). Some reasons can be, to increase the market share, over capacity, etc. The presented data are then displayed to achieve a market advantage rather than to show the economic consequences of the specific
order. Since S1 has a good relationship with B1, it may happen that B1 comes back to S1, after looking at all the offers, and says something like, “ok, you will get the job, but you have to adjust the costs”. When the discussion comes up and the costs are presented, it can be focused on a certain type of cost or operation, e.g. machines or material.

The degree of opportunism is low from both parties, according to the marketing manager. The reason is that the production process is usually relatively transparent and therefore the possibilities are limited for S1 to hide something in order to get an advantage. The general approach in the negotiations, according to both the purchaser at B1 and the marketing manager at S1, is that one should be honest and that both parties should be satisfied. This does not exclude hard negotiations mainly regarding the initial offer and price development for the coming years. Further, it is not obvious that S1 will get all the orders from B1 that could suit its technology. This of course increases the pressure on S1.

4.1.6 Cost data in the relationship between S1 and B1

4.1.6.1 The use of cost data between S1 and B1

The main part of the cooperation between S1 and B1 is usually carried out as a project dealing with a specific product. The exchanged product is usually organised as a project to a specific car model assembled by B1. According to the vice-managing director, the efforts to reduce costs increase the larger the project. When projects are very small, the costs and prices are not discussed to any considerable extent. When the project is large, it usually follows a certain routine procedure according to the following steps:

There is a question from B1 with a preliminary blue print of the product. Occasionally, B1 presents a target cost whereas in other cases S1 is asked to hand in an offer. Every so often, S1 is also asked to specify the costs in a certain form, a cost split-up as a part of the offer.

1. The constructors at S1 take a closer look at the blueprint from a technical viewpoint, e.g. material, allowances, etc. and as to whether it is “manufacturable” at a reasonable cost. When a target cost is specified, it becomes the goal that has to be met.
2. The constructors often come with suggestions for changes in order to reduce the costs but usually not the function of the product. The reason is that the constructors at B1 are not as knowledgeable as counterparts in S1 on how to manufacture the product with S1’s equipment.
3. S1 can, at this stage, present a number of suggestions with different price tags and leave the decision to the purchaser at B1. The different
The companies may vary regarding design, surface treatments, precision allowances, material, etc. However the discussion is normally not about different functions, but rather how the problem can be solved in the cheapest way. During these meetings the price is based and sometimes specified with costs from S1’s product costing system and other types of calculations. These kinds of discussions are considered to be very valuable for both parties. The communication at this stage is very open and does not follow certain formal channels. During these meetings there is normally a small group of people from both companies or occasionally only the purchaser and the marketing manager.

4. A formal offer is presented, negotiated and an agreement is signed. In the agreement there can be clauses that regulate the price of various quantities, material and surface treatment. There are also agreements regarding yearly price reductions. The product costing can be used to decide or motivate a certain cost reduction.

5. Production and deliveries start. After the production has started, there are normally yearly price negotiations. There are though explicit expectations from the beginning that the price should be reduced. Occasionally there can be changes regarding the product, e.g. different ways of manufacturing, other delivery procedures and different material. During the on-going production, the price can also be renegotiated depending on changes of the market price of certain raw material or large variations of sold quantities.

The form that is presented to B1 is structured in a way that meets its requirements. It contains some general information as well as a split-up of material and the conversion costs:

**General information**
- Quantity per year
- Batch size
- Cost per unit

**Cost split-up**
- Machine costs
- Material
- Salaries
- Social costs
- Indirect administration and profit
- Total cost/price

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Besides presenting it in this formal way, cost data is exchanged during the discussions regarding the construction phase (point 2-4 above). Here the discussions can be more informal and with more interaction, such as “if you want the product like this, it will require an extra operation that will cost 16 SEK per unit. Do you think it is worth the money?”. When the costs for the cost split-up and others are calculated, numbers from the routine costing are used but are often adjusted in order to be more correct. This type of discussion can occur not only when a target cost was initially set, but also if the offer appears to be too expensive even in the absence of a specific target.

It is worth noting that in many cases B1 is not interested in more detailed cost data than the price/full cost. There is simply a cost/benefit approach from B1 that it is not worth the effort when it comes to smaller projects since there are other areas where more money can be saved.

In many cases the cost split-up or other types of data are not presented to B1. The developing process is relatively simple and in many cases the costs are only used once for some minor changes. It is therefore not possible to describe how the costs are normally presented during a project. Instead the situations in which the costs have been shared during the last years will be described.

The product costing and the reports based on it are used in four different ways:

1. Choosing the supplier and evaluating the offer
2. Negotiations and offering
3. Improving the manufacturing, administrative and purchasing processes
4. Development and changes of product and deliveries

1. When S1 is asked to hand in an offer, it occasionally includes a specification of the costs. The costs are specified in a certain form, i.e. a cost split-up. Based on the offer and the presented costs, S1 can be chosen as supplier of the product. B1 can also evaluate the offer and, based on the costs, require S1 to reduce them. The costs can also, at this stage, serve the purpose to motivate the price. The price could appear high for B1, and then S1 can use the costs to show why they are at a certain level.

2. During negotiations, B1 requires S1 to present the costs or specify certain costs. To present the cost structure as demonstrated above is not common, but it is usual to specify certain costs. If the discussions come to a dead-end, i.e. S1 cannot sell the products at the price that B1 is willing to pay, the parties study together the possibilities of changing the product in order to make the deal profitable for both parties. The changes can include different methods of manufacturing and different design. Occasionally B1
The companies has also supported S1 to find cheaper raw material. The amount of time that B1 is willing to spend depends on the size of the order. This type of price negotiations can occur both during the early steps as well as the on-going production.

3. The interorganizational role of the product costing for improving the manufacturing or administrative processes is less tangible. In these situations, the role is to show whether a cost is too high. Accordingly, it directs attention to the fact that something perhaps could be done to produce the product in a cheaper way. The role of product costing in this situation should not be over-estimated since it is not done on a regular basis. Occasionally, B1 supports S1’s bid to find cheaper direct material after reviewing the specified costs and finding out that the direct material seems to be too high.

4. S1 is occasionally invited to B1 in order to get an understanding of the function of its products. The purpose is to provide S1 with insight into the function of the product so that it can try to give the same function but at a lower cost. One example is when B1 specifies a certain allowance that requires one type of manufacturing operation. When S1 finds out later that the allowance for the function is not necessary, the product can then be manufactured in a cheaper way. B1 requires S1 to share this type of cost reduction. Cost sharing is not formally regulated but negotiated when it occurs.

4.1.6.2 Changes of the costing system

When it comes to changes of the routine costing, the influence of B1 appears to be rather limited. B1 has not given S1 instructions on how to calculate the costs. Neither are the cost specifications supposed to be based on certain ways of calculation or underlying routine costing. Even if S1 is not forced by B1 to change the routine costing, it is still influenced indirectly in the respect that the costs are requested and reported to B1.

Since product costs are used in the relationship with B1, S1 finds it important that the information is correct. This issue has been discussed both in S1’s management group as well as in less formal groups in the company. There has been a growing interest in costing issues on the part of the marketing manager, constructors and the production manager. The increase in interest has led to frequent critique and suggestions on improvements. The problem of showing the product costing to B1 is that it provides a picture of how costs are caused in S1. If that picture is incorrect, the pricing and other factors in the discussions can be incorrect and as a result the product costing might not be taken seriously.

The discussion about changes of the routine costing has just started and therefore there is no existing evidence of actual changes. However the
discussions can be regarded as serious, in the sense that they have taken place at formal meetings with S1’s management group.

There are two improvements that S1 wants to achieve by these efforts. The first is to allocate the indirect costs as “good” as possible in order to present them in a trustworthy way. The second improvement is to achieve and show some kind of cause and effect relationships in order to find out what causes the cost. Several people in the management group have expressed that the machine costs are too high. This does not only include the calculation of the machine costs per se, but also the fact that other indirect costs are allocated with machine hours. Accordingly, several problems are experienced, i.e. that the cost of a machine hour as such is high, the allocation is too rough and does not show a clear relationship between cause and effect.

Since the product costing is used externally, it is regarded more important than if it had only been used within the S1. When the product costing is only used internally, S1 can compensate with experience for aspects that one knows are not considered by the product costing. A clear example is when S1’s vice-managing director makes an offer knowing that products that are treated in certain ways cause more costs than the product costing shows. He then can adjust the offer based on experience in a way that would not be possible if product costing were used externally.

4.1.6.3 The attitude to presenting cost data
S1 shows B1 the routine costing, but the purpose is mainly to get an overview and an understanding of how S1 usually calculates its costs. The routine costing surfaces together with a number of other issues during company presentations.

It is not possible to make a clear statement about S1’s attitude in this issue. The reason is that during the interviews a number of pros and cons were mentioned. The attitude can be seen in a number of different ways. It can be related to a general or specific relationship. It can also relate to current information sharing or potential risks and benefits due to increases or changes in information sharing.

The marketing people of S1, the marketing manager and the vice-managing director are very positive to calls for transparency in terms of cost data. The reasons are mainly that this, in the longer run, will improve different internal processes of S1. The marketing people stress that cost data is and could be further used to spread knowledge between the two companies to improve the manufacturing technology, the R&D activities and the administration. The logic is that the cost data provides the buyer with information regarding certain processes and the buyer is then able to recognise areas that can be improved. This has already been experienced at
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several occasions. The marketing people therefore want to see a higher degree of sharing of cost data on a more systematic and regular basis.

S1’s financial manager thinks that if S1 is going to get more benefits from opening up the costing system, then the product costing has to be more refined. If the cost data would be more adjusted for cost reduction, it could be a valuable tool for cost reductions and efficiency improvements. A similar view is mentioned by the vice-managing director. He believes that the cost data should be “better” because he thinks that cost allocation is not precise enough, leading to arbitrary effects. Since cost allocation is too arbitrary, it would not be taken seriously if B1 would go deeper in the underlying calculation. Another problem related mainly to the allocation of indirect costs is that due to the lack of insight into the manufacturing process of S1, the costing becomes too important. The effect has been that the product costing shows one thing whereas the experience says something else. This is mainly a problem when the products are manufactured in smaller batches or are treated in a number of different operations. If the costing is not shown to B1, S1 can compensate for the costs that are caused but are not covered by the product costing. Here the seller will face a potential danger if the relationship is more distant or if the buyer lacks insight.

Another reason for hesitating to share cost data is that the expected profit margin will be highlighted and discussed. The risk is that cost data could reduce the price. No one thinks that B1 would abuse cost data by immediately reducing the profit margin below a reasonable level. Instead some claim that it could be a slower long-run process. The marketing manager also believes that the total result of sharing cost data would be beneficial, in the sense that S1 would maybe get a lower price on the orders to B1, but on the other hand the improvements would also be useful in other relationships, and there S1 could keep the cost reduction.

4.2 S2

4.2.1 Introduction

The second company, S2, is a larger subcontractor more geared towards the automotive industry, when compared to S1. S2 is owned by a mother company, a company group with a similar type of production. The industry group is owned by a company with several different businesses in its portfolio. Apart from the sister and mother companies, S2 has a number of mainly selling companies and production plants in other countries. There is some cooperation between the sister companies, mainly regarding R&D and
marketing. In addition to shared activities, a minor trading takes place between the companies.

S2 develops, manufactures and markets load carrier systems for cars. Its range, among other things, includes load carriers, roof boxes and accessories for transporting bikes, skis, snowboards, canoes and surfboards. The products are sold to distributors and car manufacturers as options or mounted directly on the car in the factory. The marketing manager says that the main goals in the development of the products are security, perfect fit and simplicity to handle.

4.2.2 Historical background

S2 was founded in the 1940's and manufactured relatively simple wood and metal products. During the sixties it started focusing more on today’s products, such as different kinds of car rack systems and cross bars. The car rack systems can be combined with a number of standardised accessories, e.g. ski boxes and bicycle holders. During the 1990’s, a period of continuous growth began and turnover has since then surged 500%. S2 has had more established international contacts since the 1980’s. The turn over today is approximately SEK 500 million.

4.2.3 S2’s organization

S2 is organised in a number of different functions. Between the functions, there is an open and informal cooperation. Therefore it is not always possible to determine which function or task belongs to which department. The main departments, according to the organization scheme, are:

- Open Market
- Original Equipment Market (OEM)
- Production
- Quality
- Information Technology
- Research and Development
- Logistics and Staff
- Accounting

4.2.3.1 Open Market

The department has 16 employees and sells via wholesale dealers or agents to the end customer. The turnover of this business is approximately SEK 400 million and the number of contacts/buyers is around 100 including
agents. It has an established relationship with the agents. Exports generate 95% of the turnover. The selling process is relatively uncomplicated since S2 has a standard range of products. The agent orders the number of products he/she wants and S2 ships the goods. Since the products are season-dependent and standardised, S2 manufactures and stockpiles the goods throughout the year. By working in this way, S2 is also able to meet the orders very quickly. Occasionally S2 also accepts custom orders. The pricing of standard products is based on the market price in the different countries. The price is usually set once per year. The role of the product costing for pricing is limited due to the market price. On this market S2 considers itself as the world leading manufacturer.

4.2.3.2 Original Equipment Market

Original equipment market (OEM) is also a business area with its own market organization. It is dealing directly with car assemblers. The market in many respects is different from Open Market and functions separately. This thesis focuses on the OEM due to the close relationship between the OEM department of S2 and B2. OEM focuses on the automotive industry and the turnover is approximately 100 million SEK. The OEM cooperates with many large car assemblers in Europe, Asia and the USA. Compared to the Open Market, the selling procedure and the relationship with the buyers is different because the buyers always purchase custom products and in many cases the product has to be integrated in the buyer's assembly line.

The OEM products are either sold as original options in car shops under the name of the assembler (as original option) or are, in many cases, delivered to the assembly shop (the line) for mounting on the vehicle when built. There are also a number of semi-options, i.e. products that are not standard equipment for a specific model but are still mounted directly on the production line because they have been ordered by the customer. S2 has, when it comes to products, a considerable knowledge about the market in terms of end customers. This knowledge is considered as valuable for B2 and the other OEM customers. S2 has three company groups buying the main part of the OEM products and B2 is owned by the largest of those three. According to the marketing manager, the relationships vary with the different OEM buyers. The marketing manager calls the relationship with many other OEM buyers “a traditional buyer and supplier relationship”, while their relationship with B2 is the closest and most open. The marketing manager affirms that the relationship between S2 and B2 is “extremely close”. In its relationship with B2, S2 can work smoothly in a cross-functional way over the company boundaries while with many other buyers the relationship and contacts are carried out in a more formal and official way.
S2 is a single source supplier to B2. In the last two years one of S2’s employees has been permanently working at B2’s plant. S2 has a key account manager who is responsible for the contacts with B2. The key account manager has a technical background and significant experience in manufacturing and cost estimation. He says that the most significant changes in the relationship over the last years are the increase in the information exchange, the decrease of time from idea to finished product and a stronger focus on price/cost reductions.

Besides revenues, the marketing manager thinks that S2 gets a number of intangible benefits of the relationship with B2. Improved quality, support to find cheaper and better suppliers, continuous productivity and efficiency improvements and prestige are the most important ones.

Due to the nature of products, two requirements are not negotiable, namely delivery on time and quality of the product. If the products are not developed when the production of the new car model starts or the deliveries are not on time, there will be a risk of stoppage in the entire production. Quality errors can be expensive and also dangerous particularly if the product does not meet the standards according to the stress calculation. The participation of B2 engineers in the development of special test equipment that simulates the vibrations of a certain car model serves as an example of the importance of quality. Accordingly, S2 can conduct the quality testing before B2 has finished the development of the car.

Every order is a project that lasts for a period of normally three years of development and then a number of years of production. The OEM is organised with a number of key account managers responsible for the relationship with a single buyer or a group of buyers. The key account manager coordinates the different functions within S2 in order to face the customer with the adequate competence for the specific activity. B2 has a purchaser who is responsible for the relationship. The purchaser can use a number of specialist teams for different tasks, depending on the issues under discussion.

The normal way of working around a project can be categorised in different ways. The employee working full-time at B2’s plant describes the process in chronological order. Firstly, the concept is discussed along with evaluating the supplier. Secondly, the product is developed and designed. Thirdly, the first trial production tests are carried out in order to test equipment etc. Fourthly, full speed production begins. The way the project is carried out is further elaborated below in order to describe the role of product costing.
4.2.3.3 Production

The production department has a close relationship with both marketing departments, development and quality departments since a large part of the construction and R&D is organised in projects that involve staff from several departments. The way of organising the R&D has become more important in the last few years due to the shorter life-cycles of many products. The conversion value of S2's products is relatively low since it actively works with subcontractors. The most important functions that are outsourced include grinding, surface treatment, plastic details, component lacquer and aluminium details. The ski boxes, one of the most famous products, are standardised and bought from another plant.

In general, the OEM buyers have higher requirements than the Open Market customers. B2 has played an important role as a driving force of improvement of the production department due to its increasing and changing product requirements. Though B2 has been the main drive for improvements, other OEM buyers have increased their demands. The requirements have been in the areas of length of life, resistance, deliveries on time as well as design and the time to develop products. Some of the requirements are frequently measured as a part of an index used for evaluation purposes.

As mentioned above, the relationship between S2 and B2 is different compared to many of S2's other OEM buyers. The requirements are not only communicated as goals for S2, but also used as a means to achieve these goals. The goals support the cooperation between S2 and B2 and knowledge regarding each other's situations is therefore continuously transferred between the companies. Due to the cooperation, the two parties argue that the chances to reach the goals increase and the risk of mistakes and unpleasant surprises diminishes.

Production is organised into five different functions and departments:

1. Stock of finished goods
2. Production components
3. Production of finished products
4. Quality
5. Production technology

(1) Stock of finished goods deals with stock-keeping, shipping and handling of all S2's finished products.

(2) Production components build tools for the different types of presses. The tool manufacturing uses the latest design and milling technology. The department has a number of highly automated presses, generally considered to be “the heart” of S2's production. The presses are of different models.
Some are relatively automatic eccentric presses, but there are also highly
automatic rapid presses, which are more like a complete line built in single
machines. Staff tasks are mainly to serve and watch the machines rather
than manual work. The manufacturing process is close to process
manufacturing due to the long series of products treated in the same way.
The tools are normally bought by the OEM customers while the Open
Market Production uses its own tools.
(3) Production of finished products puts the different components together
and then packs them. Assembling has recently been reorganised and is today
a more vertically oriented process with a number of connected work
stations. The packing is highly automated with a number of modern packing
machines. In total there are 95 employees working in shifts at the
department.
(4) Quality is an internal production department that controls and improves
the whole manufacturing process from the subcontractors until the
products are shipped to the customer. There is also another quality
department directly subordinated to the managing director.
(5) Production technology mainly designs the tools and coordinates the
interplay between production and construction units.

4.2.3.4 Quality
The quality department has seven employees and is responsible for the
quality of the products leaving the company, testing new products and
different kinds of quality certificates. The work with quality certificates has
increased in the last years due to the new quality standards, e.g. QS 9000
applied by both S2 and its customers. S2 is at the moment certified
according to ISO 9000 and works on other types of certifying standards.
This department is also responsible for testing and taking care of
reclamation and complaints. Further the department has a number of
technicians working to develop the quality of the subcontractors. The work
with the subcontractors is considered a more effective way as S2 goes to the
source of the problem instead of just sitting in its own factory and
controlling the products that are coming in. According to the key account
manager this way of working S2 saves both time and money for both
parties.

4.2.3.5 Information technology
Information technology has five employees. The department is responsible
for the whole computer system, including hardware. Accordingly, there is
no split between the administrative and the production/technical parts of
the system. The computer system is based on an AS 400 with a traditional
ERP system (Movex).
4.2.3.6 Research and development
Research and development has 23 employees. The department works closely together with product managers at the Open Market and OEM departments. Cooperation is necessary because the marketing departments have a substantial knowledge regarding the buyer's preferences. The cooperation makes the knowledge available to the R&D and enables it to design products in order to meet the buyer's demand. The work is oriented towards developing new products for customers on the Open Market as well as working closely with a specific buyer. The way of working in the OEM department in comparison to the Open Market is rather different since the products for the Open Market are universal whereas for the OEM the cooperation aims at developing a product for the requirements of the particular buyer.

4.2.3.7 Logistic and staff
The logistic and staff department has 16 employees and has two main functions. The logistic part is considered very important, especially for the OEM customers who purchase the products to be mounted on the vehicle on the production line. Logistics works with purchasing, planning and deliveries. Accordingly, the department is responsible for the whole flow of components, from ordering the purchased goods, subcontracting or internal planning to shipping to the buyer. S2 has long-term relationships with its suppliers and many of them are located in the same geographic area. Cooperate with the suppliers and developing relationships with them are considered to be important tasks for S2. The staff part of the department deals with traditional human resource issues, e.g. salary negotiations, training, etc.

4.2.3.8 Accounting
The accounting department has two main functions, financial accounting and management accounting. Financial accounting has four employees and deals with book keeping, accounts receivable, suppliers ledger, etc. Management accounting is focused on budgeting, product costing, and capital investment estimates. The mother company of the company group handles the financial issues.

4.2.4 The product costing at S2
The product costing at S2 has two main cost objects, the product and the project. As in S1, the MRP system is based on structures which play an important role in the practical daily work with the product costing. One of
the important purposes with the MRP is to provide data for the product costing. The structure is the cornerstone of the MRP system since it provides the data that is used for the calculations. The structure contains data regarding:

- Material type and quality
- Expected time for different operations in different machines, including set-up time
- Subcontracting, type of treatment and expected cost

In the product costing, the costs are structured in a traditional way:

Direct material
Direct labour
Indirect material
Indirect manufacturing costs
Manufacturing costs (sum of the above)
Administration overhead costs
Full cost (sum of the above)
Profit margin

Direct material is based on standard price and standard quantity according to the structure. The standard price is updated continuously throughout the year by using the last rate at which S2 bought the material. Direct material also includes subcontracting. The quantity is standard and the price is based on price lists that are normally updated once per year.

Direct labour is based on a standard price and a standard quantity of the salary for the staff working with the machines. The quantity takes into account that one person works with more than one machine. This is handled with a ratio in the structure. The amount of the salary includes social costs.

Indirect material covers the costs for purchasing and costs for storage. They include costs for salaries, storage facilities and equipment. The costs are allocated to the product by using the direct material.

Indirect manufacturing costs include the factory building, supporting department, machines, and energy. All costs are initially collected in one overhead cost pool. Then they are allocated to the product with direct labour of the whole production.

Administration overhead costs cover the costs for the administration and general management. They include salaries and other costs such as computer systems, office buildings, etc.
According to the controller, the main situations in which the costs are calculated are:

- Pricing
- Profitability analysis
- Variance analysis
- Rationalisations

The pricing is calculated for a number of different components of a project. It can be the total project but also a single unit. When there are larger projects, normally the marketing department, constructors and controller calculate the costs together.

The profitability is presented each month under formal conditions in the management group. Apart from that, a number of persons calculate the profitability for certain products, markets or if there is reason to believe that something should be checked up.

The variance analysis is related to the budget. The variance analysis is regarded as one of the main tools for cost control.

Rationalisations are normally estimated by the production and construction department together with the controller. If it is a matter of larger projects, it is handled by the management group.

4.2.5 The relationship with B2

The relationship will be described according to the factors identified in the frame of reference. Since the findings in some ways may appear surprising, it is interesting to note that all the interviewees from both companies had the same or similar opinion and described the aspects in similar ways.

The cooperation and communication between S2 and B2 goes on continuously from the early stages involving concept, research and development to marketing and production. This way of cooperating decreases the risks of misunderstanding and requires mutual trust and openness. The relationship with B2, compared with other OEM customers, is more oriented towards cooperation and problem-solving. Both parties actively work to solve the specific problem. The common goal of the joint work is to be efficient and to reach the targets, since both companies realise that they have to sell the products in order to survive. The main reason for this effective way of cooperating and communicating is the sound social climate between single individuals in both companies. The good social climate though is not a coincidence but something that both parties are working on. For example, if a person does not fit in, he or she is replaced.
and if a new employee joins the team, he or she is actively introduced to the other party and the way of working, both from a technical and social viewpoint. A main part of cooperation is accomplished through teams from both companies. The functions of the team from S2 differ. Depending on issues faced at the time, these functions may be related to project management (key account manager), marketing, quality, production technology, logistics, research and development (testing and prototypes) and purchasing. The team from B2 can have the following functions (depending on the situation): purchasing (financially responsible), construction, purchasing and purchasing technology, production technology (layout in the assembly lines) and purchasing calculation (cost estimation of the direct material, conversion costs and tools). The teams have regular meetings both at S2 and B2.

After the first version of the case study was written and sent to both parties, they both and independently of each other said that the cross-functional interorganizational cooperation should be further underlined since it was regarded as a very important way of working to solve problems and reach common goals.

The level of communication between the two parties appears to be substantial. Both emphasise that the relationship is more open than normal for similar situations. The discussions start at an early stage and follow the progress of the project. The information exchanged is further increased through the S2 employee stationed at B2. Both parties have one person responsible for the relationship and then specialists from both are picked for special tasks. Both parties confirm that there are no secrets in their dealings. Information flows freely between them and each claims that it regards the other as transparent. Depending on the phase of the project, different kinds of information is shared. The communication does not have to go the formal way, instead both parties contact the “right” person directly and the relationship seems to be informal. The only information S2 is not willing to share relates to the competitors of B2.

The adaptations are limited on both sides. S2 is highly specialised towards the automotive industry in terms of competence, supplier relationships and production but only very few adaptations are related to B2.

According to B2, they have not adapted to S2 on company level. On product level, there is of course adaptation both ways.

The tangible relationship-specific investments are limited. B2 pays for the tools and other kinds of specialised production equipment, e.g. mounting equipment. S2 invests large amounts in developing the product but it is paid indirectly by B2 on the price per unit, and if the quantity decreases the costs will be covered. S2 always invests in certain types of
The companies

softwares, such as CAD or logistics, etc, that are specific for B2 or other buyers. These types of investments are necessary for the cooperation with B2 as well as other buyers.

There are considerable intangible social investments in the relationship. These are made in order to learn about the other side’s needs and organization and to get to know each other in order to simplify the cooperation.

There are also investments in mutual knowledge about each other. B2 is very systematic in the beginning of a new project. Certain teams evaluate the competence of the supplier. Later on in the project, B2 invests a lot of time on product development and development of the production of S2 particularly regarding quality, logistics efficiency and production technology.

**Commitment** seems to be both informal and formal. Certain aspects are presented and agreed upon based on written documents such as contracts. During the cooperation a number of issues are dealt with in a more informal way.

Since S2 is classified as a single source supplier, it is clear to see that B2 has committed itself to S2.

The high degree of **trust** is one of the most significant characteristics of the close relationship between S2 and B2. Both parties of the relationship use the word “partner” when talking about the other. Both focus on problem solving and making progress rather than trying to gain advantages in future negotiations.

B1’s purchaser contends that S2 takes its responsibility very seriously and its concern normally goes beyond formal obligations. S2 strives to make the relationship work as good as possible for both. Further, S2 is considered trustworthy in the sense that it really has the intentions to fulfil the agreements and does not try to cheat B2, e.g. during price negotiations. The openness towards the other partner can also be seen as a sign of trust. The key account manager, for example, has key cards which give him access to a main part of the facility (including the R&D departments) at B2. B2 has almost total access to the production plant of S2. The person employed by S2 and placed at B2’s plant is also employed part-time by B2. That could certainly cause considerable loyalty problems if the parties do not trust each other.

The trust seems to be mutual. S2 has a great deal of trust in both the competence and the intentions of B2. Occasionally, S2 receives a larger part of cost reductions than it has the right to under the contract because both parties find it moral or “right”. At several occasions S2 has discussed and informed B2 about potential cost reductions and accordingly let B2 share the benefits.
Both parties affirm that their trust is, to a large extent, based on personal knowledge. They say that since they know each other well both on a social and professional level, they can trust each other's intentions and competence.

Both parties claim that a low level of mutual dependence can be detected in the long-run since both parties can find alternative suppliers or buyers. In the short-run, B2’s dependence on S2 is very high since the production line would stop if S2 does not deliver. In the long-run, it would be easy for B2 to find another similar supplier. Even if B2 is the largest buyer, S2 would survive if B2 chooses another supplier. In the short-run, there would be excess capacity, but the production capacity could be used for other customers and similar products.

Due to the low degree of long-term dependency, the ability to (ab)use power is relatively limited. None of the interviewees said the other party tried to gain power in order to abuse it later during the cooperation. Both sides agree that none of them has tried to force the other to do things against its will. Price negotiations and requirements for yearly price reductions can often be hard but they are still seen as reasonable. According to the marketing manager, this is the way it works in the automotive industry and therefore S2 does not feel like B2 uses its position to squeeze it too hard. There is also a common understanding in the industry that hardly any company can make over-profits.

**Competition** in the industry against both S2 and B2 is claimed to be high. In Sweden, S2 has one main competitor with similar competence and products. Apart from the Swedish competitor there is local competition all over the world.

S2 has never had contact with the Swedish competitor and has never got any detailed information from B2 regarding the competitor.

According to the marketing manager, the high degree of competition has spurred the relationship towards a higher degree of cooperation to make the relationship more efficient and reduce costs so that both can gain a reasonable profit. The high competition also forces S2 to constantly improve and reduce costs. Failing to do so, there is a significant risk that S2 will be replaced by a more efficient competitor.

Both parties underline that there is a low degree of opportunism. They mention two reasons for the lack of opportunistic behaviour. First, they know each other and each has a considerable knowledge about the other. Since the parties know each other, the relationship is not only based on two companies as such but also on the individuals. Both are personally proud of keeping promises and acting in an ethical manner. When asked to comment on the issue, the key account manager said, “I don’t cheat a friend”.
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The second is the insight both have into each other’s business. The two-way flow of information makes even a potential attempt to act opportunistically considerably more difficult.

The low degree of opportunism should not be mixed up with the fact that both parties have significant commercial interests in the relationship. “No one at the meetings doubts that we can have conflicting interests in some issues” the key account manager asserts.

4.2.6 Cost data in the relationship between S2 and B2

This description is mainly based on the development and production of rails and crossbars for one of B2’s latest car models.

4.2.6.1 The development of the project

Year 0

The basic concept of the car model is developed and at the same time presented to S2 and eventually its competitors. The main design and features of the car are then more or less established. At this early stage, S2 also gets certain estimated targets regarding the cost per unit from B2. The design department of S2 immediately starts working on the first design and prototype of the rails. The work involves the outside, (how the rails should look) as well as how the rails can be attached to the body of the car and how the rails and the crossbar fit together. This work takes approximately one month. S2 presents the initial suggestion along with the cost estimation for the project for the purchasing and the design department of B2. Based on the presentation, B2 chooses a supplier with the intention to maintain the relationship for the rest of the project. The supplier evaluation concerns both the offer and supplier evaluation visits.

The cost estimation is based on certain assumptions regarding quantities per year, prices/costs for certain functions and necessary investments. It also covers the whole estimated life-cycle costs of the products. At this early stage, it can be relatively rough but still it is based on an estimate of how each detail will be manufactured, the type of material, surface treatment as well as tool costs. The first cost estimation is not based on the costing system of S2, but rather on experience and other types of data. According to the key account manager, there is a substantial experience in the area of cost estimation. S2 at this stage of the project makes a sensitivity analysis regarding different quantities since the quantities differ more for optional parts than other products delivered to the production line.

Parallel with the initial cost estimation, S2 assesses the “internal” profitability in order to calculate pay-off time of the investment in R&D and overhead costs. The internal profitability estimations are more focused on
budgets and action plans for different functions in the company. Adhering to the production schedule is very important for keeping the budgets. This is mentioned a number of times during the discussions. If a department is behind schedule, more resources are provided to enable it to catch up since missed deadlines are under no circumstances accepted. The key account manager is responsible for both the internal and external cost estimation.

*Year 1 - 2.5*

Throughout the project, the key account manager continuously presents the developed and changed cost estimations for S2’s management group. For meetings with B2, S2 develops two or three different alternatives of design features and costs. The costs related to the new design are constantly discussed and ways are sought to reduce the costs for the material and components. The key account manager states that it is also very important to estimate the costs correctly regarding the different concepts that are presented even at the early stages, since the cost estimation is used as a basis for further discussions regarding changes in material, surface treatment and other features. Incorrect cost estimations may complicate the process since it is used in an accumulative way in which the result from one step is used as an input and the basis for the next step towards a finished product. Changes of the costs can be motivated with changes in the features of the product and related methods of manufacturing. The key account manager holds that it is very important to continuously update and discuss the cost estimation in the light of the changes in design, to control the budget and optimise the value. The conditions under which costs are presented and discussed can partly be divided into two different categories, the total and the detailed. The total cost discussion is related to the time-plan and is therefore relatively formal. Then the total cost of the product and project is presented in a cost split-up. At this stage, the cost split-up is usually more detailed at this earlier during the project. The detailed cost discussion deals with a certain function or attribute. In this situation, the conditions are less formal and usually only the costs related to the attributes and manufacturing step are discussed. The level of detail regarding types of costs and components varies.

Although the product might seem relatively simple for an outsider, the parallel cross-functional and interorganizational work creates considerable complexity with a number of “loops”. The complexity increases when tools are developed and the cost has to be estimated depending on the features of the product. During the later meetings cost estimations are more carefully designed and detailed. The cost estimations change as a result of the alternations in the features of the product.

Cost estimations are part of the project description, which also includes features and time plans. The costs presented by S2 for B2 in cost split-up,
The companies

follow a certain form that is designed by B2. B2 does not have access to the costing system as such, but rather receives reports regarding the different alternatives of the project. The main reason is that B2 wants the cost data to be presented in a certain way that also can be used for comparisons between different suppliers. B2 is not interested in total access to the costing system. This type of comparisons would be far more complicated if every supplier presented the data in a different way. In the project plans, the information is very detailed and includes, among other things:

- length of life of the tools
- assembling capacity
- estimated development costs
- material costs and weights (for the material clause)
- purchased components
- packing
- rejections (internal)
- overhead costs (manufacturing, administration and development costs)

The cost of purchased material and components is approximately 50% of the full cost of the product. As a result, a lot of attention is paid to how to reduce those costs without changing certain features.

The normal procedure is that B2 pays for the tools. Since B2 has paid for the tools, S2 is only allowed to use it in production for B2. In some cases the tools are useful also for other customers. Then the costs for the tools are shared between S2 and B2. In some cases when the development costs are relatively high, S2 and B2 share the costs for the development in order to reduce the risk of quantity variations for S2.

At this stage, S2 also conducts its internal cost estimation and profitability analysis. The internal estimation uses the same assumptions and accordingly the same costs but they are presented in different ways. It is mainly the non-manufacturing overhead costs that are dealt with in different ways. B2 does not accept high administrative percentages, since then S2 is not considered as efficient as it should (or could) be. The way S2 calculates the costs is never questioned by B2. The internal cost estimation is also presented by the key account manager and discussed a number of times by B2’s management team. The profit shown internally is the same as the profit presented to B2. B2 does not have an explicit profit margin but it implicitly accepts a profit in the range of 6 - 9%. On smaller projects or orders, B2 is willing to accept higher profits, while on larger projects the profit margin is reduced.

*Year 2.5 - 3*
While S2 develops the products, B2 starts designing and building the production lines in order to have everything finished on schedule. S2 then delivers small batches of the products to B2 in advance, so that B2 can test and develop the production lines before the start of the high volume full speed production. B2 also demands S1 (and other suppliers) to finish the development and be ready for production a number of months before the high volume production starts. A delay at this time of the project would be very expensive. B2 estimates that a one-minute delay due to a halt in production line costs approximately 300 000 SEK.

When the development phase nears its end, there is a considerable amount of final testing taking place before the technical and commercial parts are approved. At this time of the project the costs are carefully calculated and presented in detail. The production process of S2 is described in terms of what is done and the cost of the operation. The costs are broken down into two main dimensions, the specific detail and the type of cost (material, labour, etc).

Finished product and start of production

Once the product is ready and production starts rolling, a number of factors change on a yearly basis. They are: (1) price reductions, (2) material price and (3) the quantity. (1) S2 is expected to be more effective and able to reduce costs by a certain percentage (normally around 2%) on a yearly basis. In some cases S2 manages to reduce costs more than expected, enabling it to keep that over-profit if it is at a reasonable level. If S2 manages to reduce costs more dramatically, the reduction is shared 50/50 between them. Usually it is seen easier to reduce costs during the first years of production. (2) Since the cost of material is a substantial part of the full cost, price fluctuations in the market price of the material influence the total cost. Therefore the price is adjusted up or down according to the market price for materials such as aluminium. Material fluctuations are regulated with contracts and are adjusted on a yearly basis. (3) With the start of a project (product) the quantities per year are estimated and become a part of the agreement. If the quantities are above or below certain levels, the price and the costs are discussed. The discussions also consider the possibility of S2 buying cheaper material if the quantities have gone up.

During this stage of the project, B2 continues visiting S2 providing advice on how to improve the production processes, mainly regarding logistics and quality. When the production of the new product starts, including the initial tests of production orders and the full speed production, specialists from B2 participate in order to support efficiency improvements. At this stage the data that has been used as input for previous discussions and cost estimations are evaluated and tested. The staff from B2 has total access to production department and production process
The companies

plans. The key account manager says that the cost data plays a minor role in reducing costs since the specialists working on the shop floor have a good overview of the manufacturing process.

The costs that can be reduced at this phase are mostly related to changes of the features of the product rather than increased productivity. Changes reducing costs are normally shared 50/50 between S2 and B2. At the earlier design stage B2 bears all the cost reduction if it initiates the improvements or cost reduction. It is worth noting that occasionally S2 receives a part of the cost reduction even if it has no right to under the agreement, in order to motivate and keep up the relationship.

4.2.6.2 Interorganizational presentation of cost data

The costs are often presented in certain forms for purchasing functions of B2. A team from the purchasing group calculates and estimates the level of the presented costs. The estimation includes tools, direct material, indirect manufacturing costs and indirect non-manufacturing costs. The main source for benchmarks of what is a reasonable cost is based on general experience, insight into S2 and knowledge regarding companies with a similar structure, product size, etc. If the costs exceed certain levels, S2 will be considered not being competitive and accordingly the inefficiency has to be addressed and taken care of. This information is valuable for S2 since it indicates areas with a potential for improvements, which is beneficial for other relationships, products, etc. The key account manager has a high degree of trust and confidence in the purchasing group due to their skills, experience and understanding of S2’s situation. In this kind of situation, there are often trade-offs between function and price. The key account manager maintains that the B2’s purchasing group also has a high competence and cross-functional knowledge compared to some other buyers. This knowledge makes the cooperation work smoothly and more efficiently. In some other relationships, the buyer often claims that a certain product is too expensive merely because he or she does not know about how previous decisions have locked costs of the product or tool into a certain level regarding a certain finish, level of precision, etc. The way of working between S2 and B2 is therefore a bit different when compared with that between S2 and other buyers. In the relationship between S2 and B2, there is a high degree of knowledge and understanding of the other party’s situation. When the costs are presented, they are evaluated in order to find slack or alternative ways of manufacturing. They are also presented in a detailed way. If B2 claims that something is too expensive, the matter is taken seriously by S2 as it trusts B2’s competence and intentions. In some other relationships there is more focus on the zero-sum negotiation. Whatever offer S2 gives, the buyer claims that it is too expensive and that the costs/price has to be reduced.
This behaviour is perhaps due to lack of cross-functional knowledge or intentions to take a larger part of the profit. When S2 wants to know why it is too expensive, an issue which is considered important in the relationship with B2, it normally does not get a satisfying answer. The key account manager calls the latter type of buying “horse dealer behaviour”. He says that the relationship-oriented way of purchasing is more efficient for the buyer since it creates knowledge, which also reduces the risk of paying overprices. The product costing in the close relationship obviously can answer the important question of why and not only how much.

4.2.6.3 Internal and external profitability - implications for the product costing

The product costing system of S2 is the basis for both the internal and external cost calculation. It happens frequently that the calculated cost of a product is too high compared to expectations and what would be accepted by B2. When this problem arises, the key account manager can do two things: (1) Go through the project as such, e.g. the features of the product and production methods in order to reduce costs. In this situation all sorts of data are examined and evaluated in order to reduce the costs according to the costing system. (2) The second thing the key account manager can do is to go through the way costs are calculated, which is based mainly on the routine costing.

The key account manager mentions two consequences that have occurred due to the mismatch between the presented costs (internal and external) and the routine product costing system:

(1) The single cost calculation is adjusted to fit the conditions of the specific situation. The costing system cannot properly show the cause and effect relationship between a certain aspect and the cost. Therefore, the cost estimation is adjusted in specific situations such as synergy effects and different kinds of data that provide the input in the cost estimation.

(2) The costing system for routine costing as such is questioned for being too general and therefore unfit for the specific situation. There have been internal discussions on whether the costing system can cover economies of scale, or the costs of package offers, etc. These types of discussions have been more general in the sense that the purpose is to make changes or develop guidelines or principles for the costing system. This means that certain types of products or situations should generally be calculated in a certain way.

The difference between the two aspects above is that in the first, one makes exceptions in order to show the “correct” cost, while in the second one tries to avoid exceptions by changing the design or use of the costing system.
4.2.6.4 The attitude to presenting cost data

In the relationship between S2 and B2, B2 examines the routine costing of S2. The examination of the routine costing was one of many aspects discussed and evaluated. According to the purchaser of B2, the routine costing is not one of the most important issues when suppliers are evaluated. The purpose of examining the routine costing is not to force S2 to calculate the costs in a certain way, or to force S2 to change the routine costing.

In this relationship there appears to be little or no tension or other problematic issues related to the shared cost data. The attitude can briefly be described as B2 gets the information it wants, and S1 sees no reason for not providing more information. Therefore it could be relevant to look at the motives for this open attitude to sharing cost data.

S2 thinks that the most effective way of sharing the costs is to calculate them and then present them either in a way that S2 finds appropriate for the situation or as B2 wants them. The reason that S2 does not see any point in showing the underlying assumptions of mainly the routine costing is that it will increase the risk for misunderstandings. There are a lot of people involved in the cooperation and each of them could interpret the presented costs in different ways. The misunderstandings would take time and effort to solve, could hurt the good relationship and delay the project. As mentioned above, the time schedule of a project leaves no room for mistakes or problems and the consequences of delays could be damaging.

B2 is not particularly interested in the underlying cost data of S2. As long as B2 gets the data in the form or other types of presentations, it finds it OK.

In general both parties claim that they find the cost sharing useful in the way it is used at the moment. They think that the exchange of cost data has increased the benefits from the exchange process. The key account manager adds that it certainly reduces the possibilities to achieve higher profit margins, though he says that he has never experienced the cost data to be used in a way that he deems unethical. Instead the cost data has been used mainly for reducing the costs and therefore avoiding hard negotiations based on a zero-sum approach. The purchaser of B2 and the key account manager say that negotiations are hard but that the mutual knowledge regarding each other, including costs, has not been abused.
4.3 S3

4.3.1 Introduction

The third company in the study, S3, manufactures a wide range of products for the automotive industry for both trucks and private cars. S3 is owned by a large company group. The turnover for the whole company group is approximately 1 700 Million SEK with an operating profit of 85 Million SEK (in 2000). The company group has 1 315 employees world-wide (at the end of year 2000). It has subsidiary companies and manufacturing plants in a number of countries. It is divided into a number of business areas (BA) mainly in line with its products. The business areas are gear shift systems, clutch actuation systems, seat heating systems, stabilising rods and components. The company group is therefore organised, at least partly, in a matrix with a combination of products and plants. Most plants deal with a large part of the products, though not everyone is organised according to the division of BAs of the company group. S3 deals with most products from the different BAs, but some products are too small to have a separate department.

Some of the products are relatively standardised while others, though adjusted to the specifications of the car assembler, still require limited R&D and are not particularly complex, e.g. containers for cooling systems. Further, some of the products are delivered in a first tier relationship, e.g. gear shift systems, while others are in a second tier relationship, mainly seat comfort components.

The BA chosen is the gear shift systems. The choice is based on discussions with the controller and the marketing manager of the main plant for the gear shift systems, S3. Both ascertain that this BA is the most developed in supplier-buyer relationships.

S3 is the largest production plant in the company group and the main plant for the gear shift systems. The gear shift system division develops and manufactures manual, semi automatic and automatic gear shift solutions for both private cars and commercial vehicles. The latest project is a gear shift system for electronic signal transmission, a so-called shift-by-wire-system.

S3 delivers individual components and complete assemblies of gear shift systems including design, dynamics and electronics which, according to a brochure, “makes S3 a perfect development and manufacturing partner”. The annual turnover from the gear shift systems at S3 is approximately SEK 400 Million. The other BAs are also represented at S3 but the gear shift system is its main product and S3 is the main producer of gear shift systems in the company group. The different products S3 manufactures appear to be rather heterogeneous, but the logic is that all the products require
knowledge and production capacity with regard to plastic. Some metal components are purchased internally from within the company group, but some are bought externally. According to the controller, approximately “half of the turnover is purchased goods or services”. The share of purchased goods and services is a little higher on gear shift systems and bit lower on trucks (exact numbers are confidential).

4.3.2 Historical background

S3 was founded shortly after the Second World War. Like many other companies in the centre of Sweden, S3 started manufacturing relatively simple metal products. Soon after its establishment, S3 started delivering products to the automotive industry. The connections with the automotive industry also spurred S3 to start manufacturing plastic products. In the early 1980’s, S3 was bought by a company that was an important supplier to the automotive industry. The buyer was mainly interested in S3’s competence regarding plastic which at that time was about to replace rubber for certain components such as bumpers. The large buyer also bought S3’s Swedish competitors in certain types of products, which means that even today no Swedish rivals exist in certain areas. After a major restructuring by the owner, S3 was sold to another automotive supplier. After that development, the international expansion became more significant. Apart from the ownership change, S3 has seen no dramatic alterations in the past five years, the controller says.

4.3.3 S3’s organization

The entire company group has approximately 700 employees in Sweden, 470 of them are employed by S3. Of these 160 are white-collar employees and 310 blue-collar employees. During the last 6-7 years, the number of white-collar employees has increased to 160 from 100. The surge in white-collar employees is not only due to growth but also the wider application of knowledge intensive production techniques and R&D.

S3’s organization roughly follows the matrix organization of the whole company group. Each organization unit, which is based on the BAs, has its own R&D, marketing department and production facilities. Besides the BA functions, S3 has a number of common departments:

- Purchasing
- Accounting
- Information technology
- General management
Each BA has a high degree of freedom to run its own business, with its own manager, controller, etc. The division in BAs is not too strict, though. For example, the controller of gear shift systems is one of the key employees regarding product costing issues along with two other controllers at the management team of the company group.

4.3.3.1 Market, products and projects

As mentioned above, S3 is both a first and a second tier supplier. This depends mainly on the type of product and how the buyer wants it. According to the key account manager, the main differences between the two roles are that being first tier supplier normally: (1) gives prestige and it requires more competence regarding (2) coordination and (3) research and development, (4) more contact with needs and wishes from the end customer and (5) the profit margin tends to be larger. The main long-term risk of being a second tier supplier as opposed to first tier is that it creates a gap with the end customer. This means partial loss of the market contact and also reduced chances to influence the assembler due to less contact. When a second tier supplier tries to influence the design, it may hear arguments such as “a very good idea, but it does not fit the specifications that we have from the car assembler”. The differences described here are not always valid, according to the key account manager. For example, it can sometimes be easier to negotiate harder with a supplier than the assembler if one has certain competence. Moreover, being first tier almost always requires global presence. In some cases, the distinctions are blurred between a first and a second tier supplier. In cases when S3 is a second tier supplier, it tries to influence the assembler to require a certain type of product when dealing with the first tier supplier.

When products and markets are discussed, it is important to note that the single project is the most important building block of the cooperation. The key account manager of S3 asserts that the commercial discussions are almost always conducted on project level rather than on relationship level. The project almost always follows a certain car or truck model. The shorter life-cycles for both types of vehicles has made the market more dynamic/unstable. The life-cycle of a private car tends to be 3-5 years whereas that of a truck is 5-9 years. This does not mean the end of the relationship when the project is over. In most cases, it is very difficult for a competitor to take over a customer without previous contacts with the buyer or if the present supplier has a good reputation in the industry. Market reputation is heavily based on reference buyers who assume that if the supplier is good enough for company x, then it is good enough for them. One important factor on the market is how innovative the supplier is.
Another key factor, in the words of the controller is, “the price, the price, the price and then of course the price”.

During the last years, the demand for annual price reductions has increased. Previously it used to be approximately 3 % per year, whereas lately the requirements climbed up to 5% and occasionally even up to 7%. The demanded price reduction might appear high, but then it is worth noting that the reductions include possibilities to rationalise production and change design. The controller estimates that rationalisations can cover 50% of the price reduction and the rest reduces the profit. When a product has been on the market for a long time, the possibilities are however limited to rationalise the production or re-design the product in order to make it cheaper. Normally, the controller contends, the potential to rationalise is largest in the 2nd and 3rd years. After that period, it is more difficult to reduce costs. Moreover, it can be interesting to note that since both the buyer and S3 realise that the required price reduction can be hard, it is important for the seller to get a high initial price. This is part of the negotiations that both parties naturally are aware of. But then there is also a need to consider the existence of competitors who are invited to compete with the initial price. Still the initial price can, partly and implicitly, be based on the explicit future price reductions. Due to the high degree of outsourcing, S3 has to push the pressure further up in the supply chain. To push the cost reduction “up stream” can in some cases be difficult and hit the supplier hard, since it is difficult to reduce costs for a supplier of very simple products. In some cases, S3 had to switch to suppliers in low cost countries in order to keep a product/project.

The market roughly follows the structure of the BAs of the company group. S3 has divided its markets in three areas based on the type of product:

- Gear shift systems
- Seat comfort systems
- Truck systems

The management of the different BAs is located at different plants. BA gear shift system’s management is located at S3 due to the company’s strong focus on gear shift products. S3 is the main plant for this kind of products. The production planning manager says different BAs work in different ways because of the different management and the different nature of the products in terms of the manufacturing process and market conditions. The discussion here mainly focuses on the gear shift system since it is the product that is exchanged in the relationship with B3.

Currently gear shift systems has four main customers/groups of companies (assemblers). In the past few years, S3 has experienced harder
competition and lower profit margins on manual gear shift systems. The reason is that a manual gear shift system requires less technical know how and R&D than the semiautomatic and automatic gear shift systems such as Tip-tronic. Accordingly S3 concentrates on the automatic and semiautomatic systems that require more knowledge and development due to its increased complexity. An interesting point to make is that at the moment it is more the requirements of the final customers that partly hold back the development of gear shift systems. The reason is that customers are in many cases conservative and want a product which feels a bit mechanic rather than a smooth shift-by-wire-system, which, though technically superior, does not provide the same “feeling”.

The market position of S3’s products is exclusive, expensive, high quality with the “right feeling”. Currently S3 does not manufacture electronic parts but still considers it important to have the knowledge both for gear shift systems and the other products. Therefore S3 has a number of engineers specialised in electronics. The gear shift systems BA also produces and sells different types of containers. The containers are mainly sold to one Swedish and one international buyer. It is difficult to increase the market share since the transportation costs increase considerably for longer distances, making it hard to compete with local manufacturers.

The main parts of a gear shift system are:

- gear case – is mounted on the car and is also the skeleton for the different components
- gear lever – every car assembler has its special demands (partly purchased)
- interior of the car – the top of the gear lever and plates (partly purchased)
- electronics – are coordinated with other electronic systems of the car (always purchased)
- mechanic parts – parts delivering the movement of the gear lever to the gear box (partly purchased)

One of the more important philosophies of S3 is to base the gear shift systems, as far as possible, on modules. This means that the same components can be used for different versions of the gear shift system. The module philosophy has a number of advantages: it can be cheaper due to higher quantities, easier to deal with in the manufacturing processes due to the learning effects, the customer can get a larger variety of the same or similar product, etc. In some cases the components can be used for different customers. S3 has also tried to standardise the market by influencing the customer to accept the same frame in which the system is
mounted in the car. The production planning manager affirms that there is still a long way to go though S3 has started the process and achieved some benefits. When the next shift-by-wire generation of gear shift systems is launched, one thinks it will be easier to standardise the product since the gear shift is separated from the gear box and the communication between them will be electronic rather than mechanic. Today, the space in the car is a restricting factor on S3’s ability to design the gear shift system. The gear shift system can also be mounted on the car in different ways which also increases the variety in design.

The **seat comfort systems** has three main products: seat heaters, head restraints and extra seats. They are normally sold to seat producers and accordingly S3 is a second tier supplier. Seat heaters (elements for heating of seat and back) are indirectly sold to almost all vehicle manufacturers and seat producers in the world using seat heating. Head restraints are currently sold to a smaller number of assemblers for whom safety is an important feature of the car. S3 expects a growing market due to the car safety trend in the past few years. The market is forecast to grow even further. Competence in this area is mainly focused on safety and how to construct safe head restraints with deformation zones.

**Truck systems** delivers to two main truck manufacturers, one Swedish and one foreign. The products include gear shift systems and other products made of metal, e.g. stabilising rods, clutch automation and anti-roll bars.

Each of the three BAs presented above has its own market department. The market department of gear shift systems is based on the customer/customer-group. To coordinate the relationship with B3, S3 relies on a key account manager and a number of project managers. The key account manager is responsible for the whole relationship with the company group in which B3 is the largest customer. The key account manager has extensive experience and knowledge regarding B3 acquired from the current and previous positions in other companies. Within each customer account, S3 has a number of project managers each responsible for one specific project. The issues outside the daily work, such as renegotiations, general problems regarding logistics and quality are dealt with by the key account manager.

According to the key account manager, it is important to have a good personal relationship with the staff of the buyer and supplier. The importance of good relationships can be seen in the ways the two parties work together and exert efforts to get to know each other. For example, if a new employee comes from S3 or B3, both parties want him or her to quickly learn to know the persons he is going to cooperate with at the other company. This pattern of cooperation is not laid down in contracts or instructions, but has developed over time. The key account manager has
daily contacts with B3, normally the engineers regarding the technical part, and the purchasing department regarding the commercial aspects. The key account manager strongly underlines that even if there is a good social atmosphere, there is always an emphasis on money and efficiency. It is not a "club atmosphere" in which people from both sides enjoy each other's company for the sake of it. Instead both parties are very focused on improvements and efficiency. According to the key account manager, nobody from either side doubts the reason for the meetings and that their outcome should be increased efficiency. Further, there is no taboo on talking about money, profits, etc. and it is quite acceptable for S3 to make money. The general rule seems to be that S3 should not have higher profit margins than B3, but there are a lot of exceptions to this rule.

4.3.3.2 The production

Interaction with the customers has become more intensive and the requirements have increased in the past few years. The main difference is the increased focus on time and quality which has led to an increased and refined two-way reporting regarding those issues. This type of work is not like a project, but rather an on-going process. Another important difference is the daily cooperation, which has become more structured and formal. Previously, many problems were discussed over the phone, whereas today the same type of issues are more structured with certain types of forms. Another important difference is the way quality problems are dealt with. Formerly, S3 was informed over the phone that a certain delivery did not meet the standards and that it had to be improved. Today, if a similar problem occurs, S3 would have to go to the customers plant, correct the problem and compensate the buyer as defined in the agreement. S3 has not been forced to pay for any production problems at B3 or any other customer. But it has happened that S3 has rushed to B3 to deal with different types of problems. This procedure is of course more complicated when S3 has foreign buyers. When a problem occurs with a foreign buyer, S3 hires a specialised company located close to the customer to solve the issue.

S3 has not experienced any serious consequences due to quality problems, though tolerance appears to be very low. The general approach in the automotive industry in case of quality problems is to put the supplier on an observation list and to rate it according to a certain supplier index. If a supplier performs badly, the customer requires it to implement certain quality programs. (This has not happened at S3). The buyer would also require the supplier to present a plan on how to ensure the problem not to occur again. PPM, or parts per million of manufactured products, is the
measure unit used for quality problems. The goal is 25 PPM. S3 is also responsible for quality of its suppliers towards buyer.

When marketing and the production departments discuss quality at the early phases of a project, quality is not negotiable as other attributes. There are no trade-off discussions regarding the price versus quality. Later during the discussions with a buyer, the quality can be discussed and used to motivate a certain price, for example by saying that: “The reason that our price is 10 SEK higher is that we have a manual quality control stage which reduces the quality risks”. It sometimes happens that S3 openly explains that it will not be able to deal with a certain quality problem at a certain price level but if the customer is willing to pay for product-specific quality controlling equipment, then S3 can use it and reduce risks of further quality problems. The reason for this way of working is that almost all buyers provide S3 with the product-specific manufacturing equipment. At a later stage, when production starts and quality problems could occur, the customer can share the costs of certain extra quality programmes. However, the key account manager underlines that this is not the normal procedure.

S3 has two main production departments, **plastic** and **mounting**. Moreover, S3 buys certain parts from other daughter companies in the company group and the production department sells to other companies in the company group. The main products S3 buys are metal components for different types of gear shift systems. Apart from the components bought within the company group, a number of key products such as electronics and interior parts are bought from external companies.

Production is totally based on customer demands. According to the agreement, certain changes can be done within a certain period of time. The changes can often be substantial and made close to the delivery day/time. S3 does not deliver on a sequence basis, but according to production planning manager the delivery is very close to schedule. Today deliveries are made on a daily basis.

> “Minor changes in the production plans I don’t know until I start working in the morning.”

Production planning manager

The **plastic department** is closely connected to the BA gear though it also delivers components to BA seat comfort and BA truck system. Roughly, the department performs three types of activities: injection moulding, welding and mounting. The largest activity in the department is the injection moulding of a large variety of different technical plastics. The main machines are approximately 40 moulding injectors (25-1000 tons). The products that are welded are normally produced in smaller quantities than
those treated through injection moulding. The small mounting unit mainly mounts components between different production steps.

The moulding injectors normally treat the component in one step, but there are a number of different varieties and combination of products and materials. The product can be delivered to the customer, mounted in-house, or combined with other parts and then mounted or shipped to the buyer.

The main products that are welded are different types of containers. The usual procedure is that the products are first injection moulded and then in the next step are welded together. Depending on the production volume, the containers are either welded or treated in a totally automated process with robots, called “cells”. The welding process can be highly automated or done manually. Normally, the staff takes care of the steps before the treatment (feeding) and after the treatment (cleaning and sorting). The automatic lines only require supervision. In the department the factor of labour is between 0.2 and 1 but in some cases it can go up to 2.0. Currently the department runs three shifts, and the number of employees is around 60.

The mounting department is also called gear shift bars. The main operations are assembling and adhesive bonding of different components related to the gear shift systems. The mounting department has approximately 40 employees. Mounting is highly automated but still some parts are produced manually.

4.3.4 Product costing at S3

The entire company group has a common product costing policy. It is the only method and logic the companies in the company group are allowed to use. The reason for the company wide regulation, in the opinion of the controller, is to have all companies in the group calculating costs in the same or similar way. The main reason for the standardisation of the product costing is to unify the pricing. Common pricing is important since the customers, world over, may encounter S3, and it is essential that the prices (based on costs) are calculated in a similar way. The product costing is formalised and spread in the organization with a detailed booklet (24 pages of written text). It is worth mentioning that the same costing methods are used for all products, even if the product mix appears to be relatively heterogeneous.

In the company group, there are three key persons who are responsible for the policies and calculation manual. They are the two controllers at the head office and the controller at S3 at BA gear shift systems. The specific calculations at S3 with inputs such as times, quantities, prices, type of machine, etc. are usually conducted by a production engineer.
The main purposes of the common calculation models and the booklet are to:

- Secure that the costs of new production orders are calculated in a reliable way
- Analyse products regarding profit, production set-up and sourcing decisions
- Establish common principles in the company group
- Increase the knowledge regarding costing and pricing

The calculation manual also states that the costing model should be used for:

- Enquiries from customers of new products
- Calculation of new products
- Cost effect analysis of proposed productivity improvements
- Analysis of product profitability and cost structure
- Make or buy analysis
- Improving the communication between different functions due to better documentation

The basic philosophy, according to the controller, is to calculate the variable (and direct) costs in a number of steps. The different steps include a certain allocation of indirect costs and accordingly the product costing is not strictly based on contribution margin. The reason why not all costs are allocated to the product is that in that case, the calculated cost will be based on assumptions and estimations which are not correct. The controller affirms that it is easier to communicate and identify and accordingly avoid misunderstandings in the organization if only variable costs are used. S3 wants to avoid different organizational units using product costing based on their own assumptions and estimations. The variable costing is regarded as more “fact-oriented”. The different contribution margins of the product/per unit, (see below, value added, contribution 1 and contribution 2) are used along with the calculation of the project over the entire life-cycle.

Due to the importance of projects that last over a relatively long time period, S3 finds it essential to calculate costs both for the single unit (product), and the whole project. Accordingly the product costing at S3 is conducted in two steps: The first calculates a cost per unit. The second calculates the cost for the whole life-cycle of the product. Both models are presented below. The presentation is based on the calculation manual and discussions with the controller. The calculation manual is designed for the software Microsoft Excel and enterprise system SAP. The models and
calculations are mainly conducted in Excel and then the figures are used during the operative work in SAP throughout the year. Three parts of the calculation manual are excluded: (1) the formal aspects of the forms (product numbers, order numbers signatures, etc), (2) the numbers (specific rates, numbers, etc) and (3) some of the underlying documents in Excel for calculation of exchange rates, etc.

Cost per unit
Sales price
-Purchase
   Direct material
   Sub contracting
=Value added (the difference between sales price and purchase)
-Production costs (Direct labour and other variable costs related to the manufacturing process)
   Forging
   Machining
   Assembling
-Special allocation of scrapping, freight in, special allocations, forge tooling, freight and packaging
=Contribution 1 and contribution margin 1
Depreciation
   Forging
   Machining
   Assembling
Contribution margin 2

The costing method used is a combination between full cost and variable costs. In the table above the costs are calculated in a “variability order” with the most variable costs at the top and the least at the end of the table. The controller mentions that there are two levels of variable costs divided into two groups. The first level is calculated in order to get contribution margin 1, and the second is calculated in order to get contribution margin 2. The main cost that is used, and which the controller calls standard cost, does not include the depreciation.

The sales price is an estimated, calculated or agreed-upon price for the first year. How the price is set and changed will be dealt with under the section about the use of interorganizational cost data.

The purchase costs include purchased products and subcontracting, as well as a rate of allocated costs covering freight. The purchased products include all components and material used for the product. The purchased subcontracting deals with the activities S3 has no capacity or competence to
The companies produce in-house. The material is specified in terms of type, quantity/unit, quantity purchased, price and freight. Throughout the year, S3 uses standard prices and standard quantities. The standard quantities are also used in the SAP and accordingly the needs can be estimated. The normal approach is that the standard should remain unchanged during the on-going budget period/year.

The cost of the purchases accordingly includes a rate to cover the freight either from the general rate from the SAP (that is the normal rate that is used), or a specific rate for the components or material that are purchased. The general rate is based on experience, variance analysis (every month) and special studies and investigations. The general rate is 3-5% of the standard price and standard quantity of the purchases. The specific rate then overrules the general rate. Both rates use the purchase price as allocation base and the rate is calculated on a yearly basis. When a certain type of material is delivered with freight included, no rate is allocated. The cost of the purchases is based on expected prices over the year.

The production costs include two main types of costs, direct labour and “other variable costs” such as electricity, drills, simpler general tools, oils, maintenance of machines, etc. The production costs are first divided into the three cost pools of S3’s production: forging, machining and assembling. The cost pools are the same as the departments. The costs are therefore based on a matrix:

<table>
<thead>
<tr>
<th>Type of cost \ Cost pools</th>
<th>Forging</th>
<th>Machining</th>
<th>Assembling</th>
</tr>
</thead>
<tbody>
<tr>
<td>Direct labour</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other variable costs</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

The next step is to allocate the costs to smaller cells such as machine groups. When this calculation is conducted, the level of detail is higher than it would be when calculated for departments. The calculation is carried out by going through the different types of processes or treatments of equipment. The process is a homogeneous process and can be both a single machine as well as a machine group. The allocation base of the production costs is the budgeted number of machine hours.

The unit used to calculate direct labour is man hours (e.g. 4 people working 2 hours = 8 man hours). Man hours are also used for estimating the labour demands. The direct labour includes all costs directly associated with employees, e.g. social cost, payroll tax, pension, etc. The labour cost is the average of the basic salary, bonuses and overtime. When man hours are calculated, the ratio between machines and employees is considered (e.g. if a
person can work with two machines simultaneously the man hours will be 
0,5 per machine hour for the operation). In order to be more precise, the 
different departments have different costs per hour based on different 
efficiency and different salary. The difference in labour cost per hour is 
mainly caused by the fact that some departments may have up to three 
shifts, which causes a higher average salary than two shifts.

The capacity utilisation is considered both for the direct labour and 
“other variable costs”. The maximum number of hours for certain 
equipment is based on 2 shifts which roughly give 3300 hours. The 
maximum capacity is then reduced with the stoppage time in order to get 
the denominator level at which the costs are calculated. The stoppage time 
includes adjustments, maintenance, break-downs, etc. Direct labour costs 
and “other variable costs” are allocated to the product in two steps. In the 
first step the cost/operation (machine) hour is calculated and in the second, 
the time per product.

Special allocation covers costs considered as variable but not included 
in the production costs. The special allocation includes costs for scrapping, 
some freights, electricity forge tooling and packaging material and out 
freights. Each type of special allocation is estimated and calculated 
separately. Scrapping is allocated to the product with a percentage of the 
direct material. The other costs are in the first step estimated and in the 
second allocated to the product based on the number of products.

The difference between the sales price and the costs in the sheet is called 
contribution 1 and contribution margin 1. Contribution 1 is expressed in 
monetary terms and the contribution margin 1 is the ratio between 
contribution 1 and the sales price.

Depreciation is withdrawn after contribution 1. Depreciation is 
calculated on machine or machine group level, but also larger tools are 
depreciated. No other equipment is calculated. The period of time over 
which the equipment is depreciated depends on the type of equipment. 
However, S3 has a standard period which it normally uses (not declared). 
For equipment that is only used for one project, mainly special tools, the 
cost is divided up into the estimated number of units per project. The value 
used for depreciation is normally the acquisition cost. The costs are 
allocated to the product in the following order:

1. Cost per year is calculated (acquisition cost/number of years).
2. Cost per year is divided by the number of hours the equipment is 
   practically used.
3. Depreciation per product is calculated based on the estimated time the 
   product needs.
To have a “correct” rate, price quantity, etc, the variance analysis is calculated once every month. This assists learning and makes it possible to calculate “better” the next time. It also helps to control the responsibility centres. The most important variances according to the controller, are:

- Efficiency (units per hour of machinery and labour)
- Costs (labour, material and machine costs)
- Scrap
- Freight
- Exchange rate

The data used in variance analysis comes mainly from standard values of the SAP, which are compared to the actual costs.

The main costs that are not included in the product costing, according to the controller, are:

- Management, planning and supervision in the production
- Research and development
- Marketing and administration
- Buildings
- Purchasing

The controller says that 60-75% of the costs are included in the product costing (the exact figure is secret). The rest has to be considered when the required contribution margin is set. During the discussions with the controller on how and why the costs are allocated, problems and disadvantages are also brought up. The first and main problem the controller mentions is the inability of the product costing to meet all the demands of the customer regarding presentation of more detailed cost data. S3 and the customer have different views, when it comes to product costing, how the indirect costs should be allocated. The problem is that the customer expects S3 to adjust and adapt to the wishes of the customer.

The table below presents the product costing per year over the life-cycle of the product of the project (numbers and calculations are represented with X). In the table the profit and contribution of the whole project is the main issue. When the whole project is presented, the contribution in monetary terms is more important than the contribution margin rate in percentage, according to the controller. The contribution is related to the general overhead costs that are not allocated. The types of calculations presented here are put before the management as a basis for pricing.
### Product costing per year for the project

<table>
<thead>
<tr>
<th>Price/unit</th>
<th>X</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Year</th>
<th>2002</th>
<th>2003</th>
<th>2004 etc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Quantity per year</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>

### Sales
- Estimated change in sales price: X X X

### Costs
- Purchase (Direct material and subcontracting): X X X
- Direct labour: X X X
- Other variable costs:
  - Start up costs: X X X
  - Contribution margin 1: X X X
  - Depreciation: X X X
  - Contribution margin 2: X X X

Besides the costs presented above, some costs are calculated on separate spreadsheets. These are mainly costs of capital employed, start-up costs and special allocations. The cost of capital employed is based on a cash flow view and it contains receivables, payables and inventories. The cost of capital is calculated on an aggregated as well as unit level.

The data from the routine costing is used for a number of different purposes. The most important according to the controller, are:

- Calculation of price
- Analysis of variances
- Stock valuation
- Profitability analysis of customers, markets and product groups

The pricing decisions are a main purpose for the product costing. The costs are calculated both per unit as well as project. The prices are usually calculated by the market department. If the costing deals with larger projects the controller also supports the calculation.

Analysis of variances is calculated once per month. This is regarded as a very important incentive for cost control. The calculation and the analysis is conducted by the controller but the reports are used for management meetings and by the company group.
Stock valuation is normally used only for external reporting to the company group and the financial reports.

The profitability is usually calculated once per month. The objects are usually larger projects, product groups, customers and markets. Apart from the formal meeting, the marketing department and the controller also analyse the profitability more frequently.

4.3.5 The relationship with B3

According to the key account manager, S3 and B3 have considerable knowledge about each other, but it is the former which has more knowledge about the latter. The reason is that the R&D and the development of concepts of S3 take place in-house and not at B3’s plant. Therefore, the level of details exchanged is lower than when the teams are located at the same site.

There is a high degree of communication between S3 and B3. The relationship seems to be more formal in the sense that in many cases employees prefer, and are indeed expected to contact the officially correct person in the other company, even if this is not the right person. The production planning manager says that there are two main reasons for the structured communication. Firstly, a large number of people are involved in the project. Therefore the forms of communication have to be organised so that the two responsible persons, the key account manager and the purchaser are able to coordinate the different activities. Secondly, certain information, under quality system regulations, has to be presented in a special way and to a certain employee.

Due to intensive information exchange that has been going on over the years, both sides are involved in each other’s manufacturing and research processes. The key account manager says that B3 has accumulated a substantial knowledge regarding manufacturing technology. Therefore employees from B3 visit S3 in order to support improvements regarding speed, quality and efficiency/cost reductions. This type of adaptation is beneficial to both parties. B3 knows that S3 is doing things in a way that B3 wants them, which reduces risks. The improvements suggested by B3 are in many cases also useful in the relationships with other customers. In the meantime, S3 looks upon visits from B3 as a clear signal that S3 is an important supplier. If S3 were not important, B3 would most likely not spend time and money on supporting it. According to the key account manager this is a sign that B3 is committed to the relationship.

Machines and other manufacturing equipment for plastic production are relatively universal. The machines are combined with custom tools and mounting equipment for the specific product (project). Accordingly the
tools are specific for B3 or other customers. The normal approach is that the tools are paid for by B3. S3 often helps B3 and other buyers to purchase them from the supplier, though the buyer owns and pays for them. It is a kind of adaptation of the manufacturing equipment, though not paid for by S3. The key account manager says it is “theoretically possible but practically impossible” for the customer to take the tools and go to another supplier. This type of agreement is a tradition in this type of industry or as the production planning manager puts it, “one has always done like this”. It is of particular importance for S3 since the tools and other equipment needed to manufacture one product can cost up to SEK 4-8 million.

S3 has invested in a number of information systems dealing with logistics, quality and environmental standards. A main part of this type of investments is specific for the automotive industry and not only for B3 or any other particular customer.

Both companies have put a considerable amount of time getting to know each other both on a personal level as well as on an organizational level. Further B3 spends resources to support the cost reduction programmes and other improvements of S3’s performance. S3, on the other hand, is aware of B3’s demands, requirements, way of working, organization, etc. B3 has knowledge of S3’s capacity, competence and organization. The mutual knowledge is vital for the cooperation.

The two parties have a long common history and significant experience from working together. Both have invested time and money in each other. To build up similar conditions with another buyer or supplier would take considerable time. This indicates that there is a mutual commitment to maintain and develop the relationship. However, it is frequently mentioned that the relationship is based on S3’s ability to present the best solutions. Its long history and other factors mentioned in this section support S3’s attempts to stay competitive and accordingly S3 has a significant advantage.

According to the key account manager, trust is a very important building block in relationships with the customers in general. In the relationship with B3, the key account manager believes that the level and importance of trust is higher than in most other relationships that S3 has. Trust is based on mutual honesty and openness, which, according to the key account manager, makes the relationship more efficient since both parties know that the other party delivers what it has promised. This type of open relationship often leads to better and more efficient solutions than if one party tries to hide certain aspects in order to gain an advantage in the negotiations.

Even if the degree of trust is high in the relationship, not all forms of information are shared. It is mainly commercial information, rather than technical, that is kept confidential. For example, B3 keeps information about prices offered by other suppliers. Meantime, S3 does not inform B3
The companies

about how much other buyers pay for certain products. Further, some types of cost data are not totally open. The reason is that the cost data that B3 requires from S3 is not really reliable since the costing system cannot provide classifications according to the forms B3 provides. For example, S3 cannot tell B3 the profit margin since it calculates it in a way different than B3 requires. S3 on the other hand is open in the sense that it discusses with B3 when its costing system does not fit B3’s forms. B3 accepts the situation.

B3 only has one supplier for a specific product/project. Therefore, in the short-run, B3 is highly dependent on S3 since it would be difficult to change a supplier during an on-going project. It means that as long as a project is going on, B3 has more or less to stick to S3 unless something extraordinary happens. B3 could take the tools and go to another supplier but that would not be financially feasible and it could cause B3 great risks regarding quality and capacity.

In the short-run, S3 is also highly dependent on B3. It would be almost impossible for S3 to find someone else to buy the excess capacity in the short-term. S3’s manufacturing equipment is very geared towards the requirements of the automotive industry. The dependence on B3 is also stronger than other buyers as B3 consumes a large part of the total sales of S3.

In the long-run, the mutual dependence is considerably lower. Today B3 has, besides S3, another supplier with similar competence. They could replace each other in the beginning of a new project.

In the long-run, S3’s dependence on B3 is also lower. It is possible for S3 to find new customers or increase sales to existing customers.

Although it is possible to reduce mutual dependence in the long-run, the key account manager underlines that it is still considerably easier to keep up a relationship than build a new one. If S3 wants to find new customers, it has to be considerably better than the potential customer’s existing supplier. To be superior in order to get new customers, mainly means better quality or lower prices or a special competence. Cost reductions and quality improvements are expensive and would not be profitable compared to keeping the existing customer.

In its relationship with B3, S3 has the advantage that B3 knows what it gets, which reduces the risks regarding quality, delivery precision, etc.

As mentioned above, competition is more critical in the beginning of a project when it is easier for B3 to switch supplier. Currently B3 does not explicitly compare S3 with competitors, but the fact that two competitors have an account at B3 makes the situation different than if S3 were the only supplier. B3 never informs S3 about existing or potential competitors. This, however, does not stop B3 from supporting S3 with knowledge it receives from extensive cooperation with the supply market rather than a
competitor. The knowledge sharing normally deals with issues regarding manufacturing technology, cost reduction, quality and logistics.

The hard competition in the automotive industry forces the buyer to press down the already low profit margins in the supply chain, which is often used as a motive for cost reductions.

The relationship is not always smooth and hard negotiations mainly about prices are not unusual. But the degree of opportunism appears to be limited due to the mutual knowledge, transparency and understanding. Both parties find the other side fair and ethical. S3 also underlines that it finds B3 to be a hard negotiator, but that it is still important to be trustworthy and reliable.

4.3.6 Cost data in the relationship between S3 and B3

4.3.6.1 The development of projects

As mentioned above, the cooperation between S3 and B3 is very structured. The shared projects between S3 and B3 can be of two types, based on an already existing platform or developing a new platform. The steps of both types of projects are described with a focus on the exchange of cost data, along with other aspects in order to explain the situations where costs are calculated and presented.

Start-up – initial concept discussions

During the first stage, S3 and B3 discuss, on a preliminary level, a car model that will be released approximately four years later. B3 works with the model in order to build an early concept. Though the discussions at this early stage are very preliminary, S3 sees in them a chance to be pro-active to increase the chances of getting the project and influencing B3. At this stage, the car is roughly developed regarding, e.g. performance, two or four wheel drive and the main design of the car body. The main issues discussed between S3 and B3 are of course related to the gear box, i.e. number of gears, type of gear shift system and how the gear shift system should be mounted in the car. At this early stage costs are not discussed in more detail.

Development – two types of platforms

Depending on the type of project, the development is carried out in two different ways. If the project is part of a totally new platform, entailing longer mutual commitment, the pattern of work will be more formal than dealing with just an adapted version of existing previous gear shift systems. If the project deals with an existing platform, the procedure is less formal and comparisons with competitors are less explicit. “If we don’t do anything really stupid, we get that type of projects” the key account manager says. With an existing platform, a main part of the design and technology is already developed (together). When a new platform is developed, the work
starts more or less from zero and the two parties have less in common in terms of built-up R&D, knowledge about manufacturing etc. The main difference between the two projects (products) is that the mechanics and the electronics do not have to be totally rebuilt if based on an existing platform. Below both types of platforms are described.

Existing platform
When the project deals with an existing platform, the beginning is less formal. S3 is asked to come up with a solution and an offer. Together with the requirement comes also the target price as one part of many other conditions. Occasionally B3 visits S3 and presents a more settled model with blue prints, suggestions etc. In year 1 the freedom of choice is more limited. “In best cases we just get the frames and a number of goals or requirements regarding certain performance” says the key account manager. The main information that is shared deals with design, position and other data regarding the gear box. The exact blue print of the interior is not yet decided and is not necessary at this stage, according to the key account manager.

The target price is normally based on the previous similar products, but it can be a bit lower. However, it has happened that B3 has calculated it in other ways by B3 and then a larger difference can occur. In some cases when the target cost cannot be met, more dramatic changes are occasionally discussed excluding certain details because of the exceeded target cost. The key account manager stresses that in many cases, and especially at later stages of the pre-production phase, time pressure can be very high. The situation is that one has to choose between too high costs or missing a deadline. In this case one is compelled to choose the former since a delay in deliveries of the gearshift system would delay the release of the car. Under such conditions, S3 and B3 can decide to continue with the project and the target price and, at the same time, agree to work together in order to reduce costs as the project proceeds. Besides its economic benefits, this type of “give and take” discussion is a way of showing that this is a joint project which can strengthen the relationship. Even if this is not the normal procedure, it is still a way of showing the other party that S3 and B3 are partners who also share hard times.

When the offer is presented, S3 has to motivate the new price by comparing it to the target price. Since the target price is based on the previous price, the motives are based on previous similar products. The motives can be presented on a detailed level expressed in the formula:

\[
\text{Target price} + \text{new components} - \text{reduced components} = \text{the new price}
\]
Besides this formula, the price includes the estimated quantity and certain other costs such as tool and equipment.

The same discussions occur when B3 considers a different version of the products such as different material (wood, leather, etc) of the top the gear shift. Here, as the key account manager asserts, it is important that S3 does not use or mix a contribution margin method when discussing the price of different features. If S3 adds a certain feature and just adjusts the price according to the variable costs, this will incur a loss in the long-run because of the price reduction later during the life-cycle of the project.

Since the new prices are calculated on the basis of the previous products, previous prices are important. They do not only generate revenue for the existing product, but are also used as a benchmark for further prices. The costs are normally presented in a form designed by B3 referred to as cost split-up. Sometimes B3 accepts S3’s information in another way since it is aware of the problems S3 faces in filling in the form due to its costing system. Even if S3 does not always use the cost split-up, more or less the same type of information is required. The key account manager is responsible for the calculation and presentation of the costs. When the costs are presented to B3, the way they are calculated can be discussed but as the key account manager says “less than one could expect”. The reason, according to the key account manager, is that the costs presented are reasonable and “honest”. He stresses the importance of presenting honest and trustworthy calculations from the beginning, rather than a first step in a negotiation game or “horse-deal”. When the costs are discussed, it is normally because they are higher than B3’s budget estimates. If they are above the estimated price, S3 and B3 sit down and together try to firstly find out why they are too high and secondly what can be done to reduce them. The normal approach to tackle prices viewed as too high is to sit down together and find out, from a technical viewpoint, what causes the costs, rather than trying to force S3 to reduce the price based on the assumption that it tries to cheat or over charge B3.

When costs of tools and different types of mainly mounting equipment are discussed, they are classified into “new tools” and “carry over tools”. The tools are bought separately by B3 but the purchase is administrated by S3. The reason that B3 lets S3 do all the administration and purchasing is that the latter uses the tools and is responsible for the quality of the products it delivers, says the key account manager. Even if S3 purchases the tools for B3, the price is discussed and B3 often puts pressure on S3 to try to reduce the costs. S3 is not supposed to make a profit on the tools but should get paid for its administrative work. Since the tools are relatively complicated and complex, S3 also has to include a certain amount in the price to cover occasional unforeseen problems. S3 does not always buy the
The companies

cheapest tools but rather gets them from a reliable supplier in order to avoid problems relating to costs, quality and interrupted production. The costs of the tools are specified by the supplier in certain categories and presented to B3. The rate that is added to the cost of the tools by S3 is shown to B3. The rate is not calculated or formalised, but it is rather something both find reasonable based on their experience. The rate is normally between 4% - 9% of the cost of the tool. Occasionally, if B3 finds a certain tool too expensive, specialists from B3 visit S3 and the tool supplier in order to reduce the price. This type of common purchases are not the normal procedure. The key account manager says that since S3 and B3 have gone through the tool purchasing process a number of times, a high degree of trust between them is developed, boosting mutual cooperation.

A new platform

If the project deals with a new platform, S3 and competitors are invited to B3. At B3 engineers and purchasing departments present the project and restrictions regarding the offers from S3 and its competitors. Due to the close relationship between S3 and B3, S3 already knows how the project has developed so far. The suppliers also get a target price that they are required to meet. According to the key account manager, the target cost in this case is a more rough estimation since one does not know how the final product will look, nor has any reference to compare it with.

After a couple of months, S3 and competitors present their solution together with the price for B3. The different competitors present their plans on how to continue if they get the project. At the presentation, a number of B3's specialists in design, purchasing and engineering etc. are present. The initial target cost and offer are one of several tools for selecting the supplier. The key account manager affirms that it is not just the one with the lowest price that will get the project. B3 looks at a number of different aspects including previous experience and reputation. It can be interesting to note that the supplier is mainly chosen on the basis of the function of the gear shift system, namely the mechanics and the electronics. This criterion can be compared to the fact that more than 50% of the cost per unit is often caused by parts related to the design of the interior of the car such as material of the top of the gear shift and other parts visible from the inside of the car. As for the design of the interior part of the car, the degree of freedom is very limited both regarding the design and choice of suppliers. Choosing a supplier is an on-going process. Communication with suppliers deals with either interesting concepts or how a supplier solves certain problems. Normally, the supplier and B3 meet three to six times during the selection phase. Since S3 has an established relationship, it has a significant advantage in the selection process. The costs presented in the offer are partly similar to the cost split-up, but less specified. Normally the costs are
divided into a number of groups based on the main parts of the gear shift system:

Type XX mechanics XX SEK/unit
Type YY electronics YY SEK/unit
Type ZZ plate ZZ SEK/unit
Type AA house AA SEK/unit
Total cost / unit

The key account manager is responsible for the offer, including the calculation of the costs, which are developed together with the development department, the manufacturing department, the marketing department and the tools department. But it is mainly the manufacturing department which calculates the costs. Occasionally, the controller can also be involved as an expert regarding the underlying factors of the cost calculation. The costs can sometimes be adjusted according to the situation once the key account manager and his group have estimated them. The product costing is then used as a basis for the calculation even if the key account manager finds it problematic to set the price due to the lack of allocated costs in the product costing system. The reason that the key account manager is still able to get costs that are usable for the external presentation is that the manufacturing department has a lot of experience and that even new products are not totally new and therefore it is easier to estimate the costs based on previous projects. When the costs are calculated, one often looks at previous models and costs. The previous model can be used a reference or platform on which the costs can be adjusted.

After the initial presentation, S3 can start developing a concept mainly regarding the mechanics and the electronics of the gear shift system. Based on this concept, more commercial information is exchanged. S3 is now required to present its offer. When S3 calculates the first offers, the key information is - apart from the technical data presented above - different from versions of the gear shift system and estimated quantities. One problem is that no one really knows how the finished product will look since it is not yet developed.

“The first offer is based on rather vague foundations and assumptions”

“One can be sure that the first price we have offered will not be the final price”

The key account manager
The companies

"The final product never looks like the one that was used as a basis for the first offer"

The production planning manager

The situation can be a bit tricky in the sense that S3 puts forward an offer on a project, but since neither the gear shift system nor the car are ready, S3 has to present an offer about something they do not know how it will look. From the design of the first prototype (and the first offer) to the final product, the differences can be considerable. It is also important to note that any altering of specifications leads to a change in costs of products, tools and other manufacturing equipment.

Later during the project when the product becomes more and more refined, more detailed cost split-up and other types of cost data are used in order to discuss different attributes, and to get an overview of the different processes and cost drivers. Occasionally, S3 and B3 can also go through certain processes and details that seem to be too expensive. Then costs are calculated for the specific issue discussed.

The direct effect of the presented costs for different processes and activities at S3 is the significant reduction of possibilities to “overcharge” a certain process, component etc. It is also difficult to compensate for certain inefficiencies since the cost of each process is visible. The key account manager underlines that the cost split-up is used as a guide or a tool and not something that always has to be followed. One problematic situation that can occur is once S3 shows a certain cost for a process or overhead etc, it can be difficult or problematic if S3 presents another cost at another occasion. The problem S3 faces is that the presented costs are normally estimated based on experience or investigations. This can make it a bit difficult to motivate changes since one does not have a costing system to support and motivate them in a consistent way.

Another problematic situation occurs when discussing the attributes. If S3 presents certain costs for a certain attribute and B3 claims they are too high and wants to exclude or redesign the attribute, the price is expected to be reduced according to the cost split-up. Accordingly, S3 is, to a certain degree, committed to every single box in the cost split-up. This can be complicated if some costs are based on experience and only some are calculated according to the costing system. The key account manager thinks that this is a problem, but he can also see one positive aspect. The way S3 presently works with the product costing makes the employees think whether the costs are reasonable and not just take them for granted as facts. This, the key account manager thinks, can make the involved employees more flexible and business-oriented instead of becoming slaves to the product costing.
Start of production

As a part of the agreement between S3 and B3, the price is reduced with a certain rate every year. This is negotiated and agreed upon in the beginning of the project. During the discussions regarding prices, the cost split-up and other costs that S3 presents are used as a means to come to an agreement on the price reductions.

The reason for the yearly price reduction is that S3 becomes more efficient and buys cheaper material in order to compensate for the decreasing price. This goal is not always reached and accordingly the profit margin occasionally decreases at the end of the project. If S3 manages to reduce the costs more than the negotiated rate, the common approach is to share the cost reduction between them. The agreement to share the cost reduction is valid both when S3 and B3 come up with the suggestion on how to reduce costs. If one of the parties comes up with any idea how to change the product in order to make it cheaper, the cost reduction is also shared. There is one type of cost reduction that is not shared, and that is when S3 can manufacture the product in a more efficient way caused by only internal factors such as better usage of equipment, simply work faster, etc. This is part of the deal. S3 does not have to hide the cost reductions from B3 in order to keep all of it. Product costing can play an important role when deciding how much the costs are actually reduced and the calculation can also be questioned. The discussions can, according to the product planning manager, be “intensive” and the two parties can face problems to agree. However, it should be noted that such a disagreement regarding the price is rare and occurs only when a large number of factors are involved which makes the situation more problematic to deal with.

As part of the relationship, B3 sends out special cost reduction teams. The teams work together with S3 to find and reduce certain cost drivers. This is totally paid for by B3. The cost reduction teams work together with S3 on specific issues in order to reduce costs, and they can give more general lectures regarding e.g. lean production. The goal, in the words of the production planning manager, is to make S3 a better supplier. There is no direct connection between the achieved cost reduction and the share of the reduced costs S3 has to give to B3. This work is a long-term process and a way to keep S3 competitive in general and be able to match the required cost reductions in the future. In this type of work, the cost split-up or other types of cost data do not play an important role, affirms the key account manager. The product costing, however, can play a role when sharing the cost reduction of a certain improvement. In general, S3 is very positive to this type of visits from B3 because of the improvements, and it is a strong signal from B3 that it wants to work with S3 in the future.
Another way of reducing costs is to redesign the product. The normal approach in the beginning of a project is that the product should last the lifetime of the car without any major design changes. However, occasionally S3 can find better ways of fulfilling the demands of the customer by redesigning the product later during the production phase. The redesign has, according to the production planning manager, become more common in the last years, due to the increased pressure to reduce costs. Since B3 has better knowledge of the rest of the car, it also happens that it suggests how the same function can be achieved at a lower cost. No matter who comes up with the suggestion, costs are normally shared between both parties. When changes are discussed, cost reduction is one of the first issues brought up in order to find out if it is worth to continue working with them. In this type of work, both parties have full knowledge about the conditions and the production planning manager affirms that under such conditions it is very difficult for one party to cheat the other. The work includes the costs for changing the tools, which are closely examined. In some cases, the offer from the tool supplier is presented just to ensure that the costs are what S3 says they are. However this is not very common. The production planning manager says, the trust has been built up during many years of cooperation and during this period S3 has had the chance proving that it is trustworthy both in terms of competence and intentions. It is also worth noting that there are two groups of employees cooperating, the engineers dealing with technical issues and the purchasing/market departments working with the commercial issues. The technical issues normally run very smoothly: “We are working together to solve certain problems” says the production planning manager. The commercial side becomes more complicated because of the nature of the issues and the tendency of B3’s purchasing department to change staff more frequently, rendering it more difficult to build a social relationship. However there are no clear-cut boundaries between the technical and commercial sides, though S3 tries to separate the different roles to avoid misunderstandings and ensure that different information is given to B3 depending on who it talks to. This is also part of the formal quality programmes. The production planning manager maintains that the cooperation is boosted substantially when both sides learn how to deal with each other and each other’s systems.

Price reductions are also based on certain levels of material costs, exchange rates and production costs. If the quantities vary considerably, the agreement will be renegotiated and other prices charged. A renegotiation requires a considerable variance, so the normal procedure is to stick to the initial agreement.
4.3.6.2 Interorganizational presentation of cost data

The customer often asks S3 to present cost data based on a certain type of product costing. As shown above, S3’s product costing only deals with the variable costs. Therefore, according to the controller, a significant problem occurs for S3 and for the people using the product costing. The issue has been discussed at meetings in order to decide what to do. So far no changes are implemented, but it is regarded as an important issue at S3. As a first step, the management group of S3 has decided to start with guidelines for the market department. Currently, the market department has to use the present costing system and then adjust it according to the wishes of B3 and other buyers. The problem with this way of working is that the solutions do not present a long-term policy and instead are more ad-hoc oriented, the controller says. The connection between the costing system and the cost data that is presented to the customer is that the market department often comes to the controller with what the controller calls “home-made” solutions (which is not meant in a negative way). The controller is a speaking partner and can suggest changes and can increase the consistency of calculating and presenting costs at S3. The solution is often to fill in the forms based on a combination of what is considered as reasonable and an estimated cost per operation. This way of working solves the short-term problem, but the basic problem is still there, the controller says. The main reason that S3 wants to avoid “ad hoc costing” is the risk of errors and inconsistency. If the product costing is built from scratch every time, the risk of errors increase but also the information shared with the customer becomes inconsistent. A typical comment from a customer can be like, “The last time you said this, but now you say something else”. Such a lack of a solid and consistent product costing could create distrust regarding both S3’s competence and intentions. The way the management group and the controllers decide to continue is to have one basic framework and then give the marketing department a certain degree of freedom to make changes and adjustments. The two areas that will differ are therefore the type of product (BA) and the customer. What the controller has in mind is mainly to provide instructions to make the daily work with product costing more consistent in order to avoid differences between different occasions, and to guide the marketing department how to calculate the cost in order to avoid mistakes. According to the controller, this type of guide can be even more important for homogeneous products sold to different customers via a first tier supplier. If company X pays a certain amount for, e.g. seat heating, company Y should pay something similar. If the price differs, there is a risk that S3 will not be regarded as trustworthy.

When the product is more heterogeneous, e.g. gear shift systems, comparisons are less important. The reason is that it is more difficult to
The companies compare heterogeneous products, and hence the need for motivating different prices is smaller. The controller confirms that it is going to be a difficult task to simultaneously have a homogeneous costing to show customers for comparisons and also adapt the costing to their different requirements. According to the controller the problem is made worse by the fact that both the buyer and the seller partly lack a common solid knowledge regarding product costing principles. They therefore meet with partly different frames of reference regarding classifications, what is included, how outcome changes depending on the assumptions, etc. The marketing department sometimes asks the controller about the calculation to avoid mistakes and to get help regarding classifications, so that it can “speak the same language” as the customer.

The reason for this hybrid version which on one hand is formal and systematic, and adapted and adjusted to specific situation on the other, is that the customers have different needs and wishes. The controller says:

“We can develop the product costing according to the wishes of customer X, but that will not help because the model will still not be accepted by customer Y”.

The product costing problem in this situation is the allocation of the manufacturing overhead costs. The customers want to have all costs allocated to products or projects via different manufacturing processes. The direct costs, as described above, are already allocated to manufacturing processes, whereas the indirect ones can be calculated in different ways and then allocated in different ways. The requirements of detailed information vary from one customer to the other. One advantage with S3’s present costing system, in the eyes of the controller, is that the product costing is relatively flexible compared with a full costing system. Due to the way S3’s present product costing system is designed, the marketing department does not have to change the basis of the costs, but it rather adds those not included in the present system. However, the key account manager thinks it would be good if the allocation of indirect costs was more refined and systematic. As a rough estimation or guide for full cost calculation, the amount of unallocated costs is compared with allocated costs. The ratio can partly serve as a guide line for how much extra needs to be allocated in general. This procedure which the key account manager describes as “rough” can just serve as an advice or indicator for the market department when filling in the forms for the customer.

Another preliminary change can be that the product costing has to be adjusted to the conditions of the different BA’s, mainly due to different markets.
4.3.6.3 The attitude to presenting cost data

The attitude to sharing cost data is not just positive or negative. There are a number of both experienced and potential pros and cons, making it difficult to be only positive or negative.

The controller explains S3’s general attitude in providing customers with cost data. The obvious risk is that the customer will use, or rather abuse, the cost split-up and other cost data as a way of reducing the price rather than the cost, or use it as a tool to take a main part of the cost reduction achieved through mutual cooperation. The controller says S3 will resist opening the books further if there is a risk for abuse. But if the cost data is used for mutual benefits, S3 is positive since it will be financially beneficial and strengthen the mutual ties between the two companies. Therefore the attitude of sharing cost data largely depends on the type of relationship between S3 and the customer. According to the controller the relationships differ to a large extent depending on the behaviour of the customer. The controller and the key account manager stress that the relationship with B3 includes a number of the pros of opening up the product costing and therefore the attitude is generally positive.

One advantage of using cost data across the boundaries is the provision of information that can be compared with the general experience of the customer and indirectly other companies. The controller says the data can mainly be used to direct attention to areas that can be improved. The type of question that may arise is as follows: “That cost seems to be high, is it really correct or reasonable according to our previous knowledge? Let us have a closer look at that”. This type of discussion can cover administration, R&D and to a greater extent manufacturing functions and the purchased products. Another advantage for S3 is that the price is occasionally motivated by discussions based on cost split-ups. It is worth noting that B3 is not particularly interested in coming closer to S3’s costing system than the cost split-up, or that S3 calculates the cost for a certain situation. B3 has never required access to the data behind the numbers of the cost split-up. The reason, according to the key account manager, is that the numbers are found to be reasonable and B3 trusts the intentions of S3.

From the key account manager’s viewpoint, it is favourable and positive to specify the costs since prices and costs are based on reasonable grounds. In the selection process it is also an advantage to show the costs as they can tell where the differences are between the competitors. The key account manager cites the example of a solution by S3 with the price SEK 700 and another by a competitor costing SEK 550. Initially, B3, for natural reasons, got surprised, but when going through the costs behind the offered price, it became apparent that S3 used a different type of electronics with higher
performance for which it charged an additional 160 SEK. (The numbers given by the key account manager are only examples).

The key account manager says a proper use of showing and discussing the cost, both the cost split-up and other types of cost data also gives S3 a chance to appear competent and serious. It gives S3 a chance to show B3 that “we know what we are talking about”, he says.

The key account manager, who is concerned about maintaining the good relationship with B3, also mentions another advantage for showing the costs. Occasionally, when the costs are regarded as too high, the cost split-up is used as a tool to structure the discussion. The cost split-up shows “facts” that increase understanding and knowledge about each other’s situation. The presented costs can then be used to show the customer that the price is reasonable and the cost split-up supports a more open problem-solving atmosphere, instead of a harder confrontation regarding price reductions.

Since sharing cost data involves risks and opportunities, the type of relationship becomes important regarding the attitude to opening books. In order to get more fruitful answers, the attitude has to be related to the relationship with a certain customer or customer group. The attitude differs depending on the customers. The controller states that the relationship with B3 is more open compared with many other customers. This is not only the experience from this specific relationship between S3 and B3. According to the key account manager, B3 has a reputation among suppliers in the automotive industry for behaving in an ethical and trustworthy way. There is a large difference between the various relationships S3 has with buyers, even when the same type of product is exchanged.

The controller hesitates to show the cost data as the customer wants to see them, mainly because he thinks that they are not the best type of cost data. The cost data that is based on full costing provides average numbers that are spread over a longer period of time. He gives the following example. If the market department talks to the customer regarding, e.g. manufacturing overhead costs which includes the cost of the building, then the parties discuss a cost that, in short and medium term, cannot be reduced even if it looks like that in the presented costs. Further, the allocation gets arbitrary and accordingly, it will provide the decision-makers with misleading information. The cost split-up, in this case, becomes a meeting place were two different product costing philosophies converge and many arguments are the same as in the “intra-organizational costing” debate regarding allocation of indirect costs.
This chapter presents the analysis of the empirical data submitted in chapter four. It starts with a discussion of the contribution of the thesis and the characteristics of the three cases, before attempting to answer the three research questions.

5.1 The contribution of the thesis

The thesis attempts to make three types of contributions: descriptive, explanatory and exploratory. It is not possible to entirely separate them due to their interrelationship.

The descriptions have been guided by the literature presented in the frame of reference and the focuses provided by the three research questions. As mentioned in chapter three the collection of data has been conducted in a tentative and interactive way together with the literature review. The descriptive part of the contribution is mainly presented in chapter four, although certain aspects are highlighted in chapter five. Firstly, the descriptive part can be seen as a contribution per se, since it describes phenomena not dealt with to a large extent in existing literature. The descriptions also provide data that could be relevant for continued research in interorganizational theories, IOCM and product costing. Secondly, the descriptive part serves as a platform for further exploratory and partly explanatory discussions of this thesis. The exploratory part, i.e. presentation of phenomena not dealt with in existing theory, is firstly presented in the cases in chapter four and highlighted and discussed in the present chapter when related to theory. The explanatory part attempts to reduce the complexity of the description and explain why a certain phenomenon occurs, based on theory or reasons explored. The explanation of phenomena is conducted both by analysing a single case and by comparing the cases. All three contributions are to a large extent inductive.
5.2 Characteristics of the studied companies and the relationships

This section discusses the characteristics of the relationships in which the product costing and other types of cost data are studied. It is placed in the beginning of the chapter because it provides the basis of the discussions for all three research questions. It also forms the basis of the discussions regarding each case as such and the comparisons between them. The characteristics are summarised in a table at the end the section.

The relationships examined in this thesis show a considerable complexity in terms of the relationship aspects per se and the benefits and motives of the cooperation. Based on the frame of reference (chapter three), some of the findings could be expected whereas others are a bit surprising. This should be made clear when discussing each case. (For a discussion about the difficulties of handling the complexity of interorganizational relationships within an analytical framework, see Gadde and Snehota, 2000).

The presentation of the characteristics is based on discussions and reduction of the complexity found in the cases presented in chapter four. The discussion regarding each single case and the comparisons between them are divided into similarities and differences. Furthermore a model is built on how the buyer and the supplier cooperate in the project.

The similarities are relevant since they form a common basis of the analysis of all three relationships. The common basis means that if interorganizational costing had been studied, for example, in the construction industry, between a Swedish supplier and German buyer, or during an economic recession, the results could have been partly different. Therefore the similarities reflect what has been seen in the cases, which can be related to the discussion in chapter three regarding trans-temporal and trans-spatial generalisations. Further, the similarities are discussed because they are part of the characteristics of the single relationship. For example, when the single case is discussed, it is worth noting that it has lasted for a long period of time, or that the exchanged products are organised in projects although this is valid in all three cases.

The differences in the characteristics of each case are relevant because they form the point of departure for the comparisons between the three relationships, and are as such expected to partly explain the differences of the design and use of product costing and other types of cost data.

When comparing the three cases, certain differences become clear. The differences are used to further analyse the situation in which the phenomena (interorganizational costing) are seen. When the characteristics are discussed, they are usually related to the conditions in the other companies,
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e.g. if a product is called “simple” it means that it is less complex than the products of the other companies.

5.2.1 Similarities between the cases

Though different in several ways, a number of similarities exist between the relationships:

1. All the cases are from the automotive industry.
2. The buyers have a common background.
3. The suppliers are almost entirely specialised in the automotive industry.
4. No international relationships are studied.
5. The product is also a project that runs over a certain period of time.
6. The relationships are studied during a boom in the economy.
7. The relationships have all lasted over a long period of time.

All the relationships are from the same industry, the automotive industry. Most likely every industry has its own culture, technology, market conditions, traditions, etc. It is reasonable to believe that certain methods, technologies, etc. are shared between different individual companies within the same industry. The way the British automobile companies have adopted the supply chain management of the Japanese automobile companies (Munday, 1992 a) serves as an example. As mentioned above, the automotive industry is one of the industries in which the earliest and most developed use of IOCM could be seen. If another industry had been chosen, the results could possibly have been different. A number of factors are significant for the automotive industry to influence the way the companies deal with the interorganizational cost management issues. Some characteristics of the automotive industry are: high quality requirements, high degree of global competition, high volumes, a high degree of R&D and know-how, increased customer demands regarding frequency and type of changes and supplier base reduction (Florida and Kennedy, 1993, Helper, 1991, Dyer, 1996).

The presence of similarities among companies in the same industry, do not exclude the existence of differences between individual companies regarding, e.g. supplier relationships, requirements, degree of outsourcing and bought quantities. In this thesis, the buyers, though different daughter companies, have a common history and background as they have belonged to the same company group. An important factor that is closely related to the buyers is the positive atmosphere and attitude in the relationships. In the interviews, the suppliers are unanimous that the company group to
which the buyers belonged has a very good reputation in the supplier market. They make it clear that there is a general opinion among subcontractors that this group has a reputation for being one of the “better” and most ethical to work with in the automotive industry. If a more confrontation and transaction-oriented buyer had participated in the study, the results would most likely have been different. Since the buyer plays an important part in the work with the supply chain and with interorganizational cost management (Ellram, 1996), the individual differences between buyers are probably very important when the interorganizational costing is studied. It can be worth noting that according to the literature a buyer can approach its suppliers in different ways and accordingly have different relationships with different suppliers (e.g. Kraljic, 1983).

Two of the suppliers (S2 and S3) are specialised in the automotive industry and the third (S1) also sells a large part of its products to the automotive industry where it originates. The suppliers, to a large extent, have adapted knowledge, manufacturing technology, logistics, quality levels, etc. to the requirements of the automotive industry.

There is no international cooperation in the study. Different countries have different costing traditions at an institutional level and also different cultures regarding supplier-buyer relationships (Nooteboom, 1999). For example Zucker (1986) underlines the importance of the social and cultural similarity as a factor for building (character-based) trust which could influence the information exchange in a relationship. The interest during the 1990's for Japanese management accounting and cost management can serve as an example of assuming something like a country specific management accounting (e.g. Bromwich and Bhimani, 1994). Due to the strong Swedish costing tradition, costing is relatively homogeneous both among companies and from a historical perspective (see chapter two). This tempts one to believe that the buyer and the supplier have a basic common view of how costs should be calculated. If the points of departure for the buyer and the supplier are more different, this would probably influence not only the communication but perhaps also the need or wish to adapt the supplier’s costing. There are probably differences between different countries which influence both the cooperation and the use of cost data. For example, if an international cooperation, or two non-Swedish companies had been chosen, the results would probably have been different. The Swedish market, for buyers and suppliers, has a limited number of actors. A small market can be an incentive to behave in a certain way because the alternatives are limited, and both the supplier and buyer want to have a good reputation and reputation spreads quickly when the market is not that large.
A main part of the cooperation takes place within projects which deal with a specific product and which are usually related to a specific vehicle model. The project can be distinguished both from a cooperation in a more ongoing relationship as well as a short single exchange of a product or service. The project means that the start and the end of the exchange become more apparent and distinct. The end of a project certainly could be an exit from or end of the relationship and increases the risk of entry by competitors. During the project, and especially in the early R&D phase, a great deal of involvement is required. The projects all have a normal life related to the life-time of the vehicle, even if some products could also be modified to be used for a later similar vehicle. If a more constantly on-going cooperation had been studied the result could have been different since a main part of the cooperation in the studied cases is carried out in the single project. Further, the time pressure is hard and the deadlines must under no conditions be missed due to the enormous costs the buyer would face if certain parts are not finished when production is planned to begin. This could be one reason for the buyer to stick to the supplier it already knows rather than risking other alternatives. Since the project plays such an important role in the cooperation and different tasks are carried out at different stages, a stage model is developed further down in this chapter in order to achieve a larger degree of precision when the research questions are discussed.

The cases were studied during a period of a booming economy. What influence this may have is difficult to state. It is possible that the cooperation between buyer and supplier would be different during a recession. Profits and prices are probably lower and the volumes are going down which all can cause different kinds of cost reduction programmes or other dramatic attempts to quickly reduce costs. It is not unreasonable to believe that the supplier would become involved or is affected by such cost reduction, especially if a main part of the production is based on outsourcing.

All studied relationships have lasted over a long period of time which means that the companies have a common history. The buyer is one of the main buyers not only in terms of volumes of purchases but also in supporting significant improvements in a number of areas such as logistics, manufacturing technology, quality, information exchange etc. It also means that the buyer has considerable knowledge about the suppliers (and vice versa) and that the buyer and supplier have considerable experience from joint cooperation. This can be seen in the way the suppliers talk about their buyer. All three suppliers refer to this buyer and the relationship as good or as one of the better buyers. A “better buyer” does not only refer to
reasonable price negotiations but that the relationship with the buyer is beneficial in a wider meaning for reasons mentioned above.

The fact that the suppliers and the buyer(s) have a long common history raises questions regarding whether the relationships have some of the characteristics of a close relationship discussed in chapter two, since the characteristics develop over time. Adjustments and investments are in many ways not specific for the buyer in the cases examined in this thesis, although the buyer to a large extent has supported different types of improvements of all three suppliers. Since the buyer is one of the most important ones (in terms of turnover) for all three suppliers, their capacity is adjusted to meet and include the demand of the buyer. Besides the tangible investments, both parties find it important to have knowledge of each other's situation and to learn to know each other's staff. Because the relationship is not carried out in a “social vacuum”, all three suppliers claim that it is a significant advantage to already have a relationship when new projects are discussed. The resources spent building the relationship can be seen as a relationship specific and intangible investment, with no value outside the relationship. There is a mutual commitment between the companies to continue cooperating. This can be seen in the efforts exerted of the relationship by both parties in order to develop long-term efficiency and other benefits. However, it is emphasised that the commitment is strongly based on the suppliers ability to be the best possible choice for the buyer. The buyer supports them in different ways to achieve that goal and maintain their position, but the buyer also has high requirements and demands. Therefore, the commitment is strongly conditioned to the abilities and attempts of the supplier. The buyer puts a considerable pressure on all three suppliers, particularly in price-related issues. The buyer's considerable power makes it possible to apply the pressure. Although all suppliers find the price pressure very hard, the buyer is not seen as abusing its power or acting in an unethical way. It is viewed as something one has to accept when being in the automotive industry. The price pressure is in many cases combined with support on how to improve and reasonable discussions about and motives behind why and how the price is to be reduced. In the three cases, the discussions are based on a good knowledge of the suppliers’ situation.

5.2.2 Characteristics of companies, products and relationships

5.2.2.1 Characteristics of S1 and the relationship

S1 is a relatively small supplier with a semi-automated and flexible manufacturing technology. The know-how and general R&D is smaller compared with the other companies. The quantities are relatively small and the products usually consist of a raw material treated in a few steps.
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B1 is the most important buyer both because 45% of S1’s turnover goes to B1 and also because of other non-monetary aspects such as prestige, development resources, competence, support etc. B1 supports improvements in a number of ways that are beneficial for S1 particularly in its relationship with B1, and for S1 in general. S1 gets most of its revenues from B1 though the exchanges include additional more long-term intangible benefits. B1 also gets information on a number of areas (including costs) and is therefore able to reduce risks in two of the most critical fields: logistics and quality. Accordingly, there are long-term incentives for both parties to maintain and develop the relationship since it includes more than just an exchange of a product in return for money.

In the short run there is substantial mutual dependence. S1 is, due to investments, dependent on B1. The investments are mainly in flexible manufacturing capacity, rather than relationship specific investments. Due to the flexibility of the manufacturing equipment and its location in an area with a large demand for this type of treatment, S1 can probably find alternative use for its capacity in the longer run. B1 is dependent on the quality of the products and that they are delivered on time by S1. Quality problems can cause serious damage even if the amounts of the purchased goods are small. In the longer run, B1 is not dependent on S1 due to the existence of a number of alternatives.

The relationship involves a relatively limited number of people and appears to be more sporadic and unregulated in terms of organization, supplier development and cost management. Although the number of persons meeting on a regular basis is limited, it is still regarded as important that they know and trust each other and that they have mutual knowledge about the other parties situation.

There are existing competitors, i.e. other companies that ship products to B1, which S1 can deliver. However, S1 is not compared to the competitors on a systematic and regular basis and the knowledge regarding the competitors is also limited. S1 is regarded as an on-going supplier being invited to supplier meetings, in which B1’s future changes and requirements are discussed.

### 5.2.2.2 Characteristics of S1's products

The products exchanged are relatively simple and can hardly be regarded as key components for B1. They are based on one or few different types of direct material which is close to raw material. The material is treated and sometimes assembled in a few steps, packed and sent in batches. The size of an order, both in terms of SEK/unit and produced units, differs but is usually significantly smaller than S2 and S3.
The degree of common design and development is relatively limited regarding both the specific order and on a more general level outside the project. The reason for a low degree of common R&D is probably due to limited possibilities to reduce costs. Normally the product is mainly designed by B1, and after that S1 takes a look at the blueprints to see if it can be redesigned in order to manufacture it in a cheaper way, use cheaper material, or occasionally fulfil the same function in a cheaper way. S1 is informed about the function of the product to be able to redesign it, but there is normally no lengthy and intensive cooperation regarding the design, especially not at the very early stages of the process of developing the vehicle. The two parties tend to cooperate to a larger extent when dealing with larger projects.

Since there are normally few and non-dramatic changes and the manufacturing processes are relatively simple, it is relatively easy to roughly estimate the cost of the product at an early stage of its life-cycle. The market manager underlines that in projects involving smaller amounts, conditions are not discussed as much as when they deal with relatively larger total sums. However, it should be noted, that even if the product does not require a large amount of cooperation with R&D, it is still not a homogeneous standard product available on the open market and with a market price. Therefore a number of issues are related to the product per se that still need to be discussed.

5.2.2.3 Characteristics of S2 and the relationship

It is striking to see how S2 and B2 underline the importance of their mutual cooperative attitude during the interviews. They see it as the basis of their mutual trust and problem-solving ability. There are a number of examples given on how well the relationship works. They refer to this specific relationship as “special”. Both parties think that the relationship is uncomplicated, open, performance-oriented, and with a considerable amount of informal and mutual “give and take”. The cooperation also involves a large part of cross-functional contacts which can solve problems in a faster and more efficient way. S2 stresses that B2’s competence and honesty are important for the relationship, rendering cooperation and more efficient meetings. According to the key account manager, honesty and competence are two of the aspects S2 tries to develop when it cooperates with B2. This also includes the cost data that is presented to B2.

S2 regards B2 as a competent buyer in the sense that it has a good general knowledge about its suppliers’ conditions and the specific situation of S2. B2’s knowledge facilitates the discussion of essential issues related to the product and how to manufacture it. This, according to the key account manager, means that when costs are reviewed, the two companies have a
meaningful discussion regarding improvements. Besides competent, S2 finds B2 honest and ethical. These factors create an open atmosphere that focuses on improvements and mutual benefits.

In order to make the cooperation run smoother, S2 has an engineer employed who is permanently stationed at B2’s plant. The engineer facilitates communication and is particularly valuable for S2 since through him it gets informed at early stages of the life-cycle of the product/project. The R&D and other pre-production processes involve a larger number of people from both sides. For every meeting the partners put together specially chosen teams with the required competence.

The manufacturing process is complex and more oriented to large-scale production and also less flexible than S1’s production. Since the requirements of the product are complicated, the competence required is more complex. The main areas of competence are knowledge about the requirements of the end customers, purchasing and supplier development, R&D and manufacturing technology. Purchased parts and services are a significant part of the total cost of the product. The main products and services which are purchased are relatively simple subcontracting such as surface treatment and pressed details. S2 has one main competitor in Sweden, but S2 is the only one that delivers to B2, apart from some minor details. Accordingly, the launch of a new product/project becomes less dramatic for S2 since the supplier selection process in the beginning of the project is easier. Though S2 is not compared with the competitor, it is aware of the potential risk of B2 switching to a rival if the relationship does not work. The open communication and good social atmosphere are therefore one way of staying competitive, since it supports the efforts to meet the demands of B2.

5.2.2.4 Characteristics of S2’s products

S2 only manufactures options for personal cars and the quantities needed are therefore normally large. One type is general (for surfboards, skies, mountain bikes etc) and one part is usually mounted on the car in the factory (rails and crossbars). S2 is involved from the very beginning of the development of a new car model and the development of the products is conducted together. Since the components are attached to the car, B2 partly adjusts the design of the car to the design of the components acquired from S2. The development and design of the components are to a large extent conducted together, along with intensive and informal communication. The product involves a number of important attributes that can vary and cause changes to the price and value for the end customer. The main attributes are:
5.2.2.5 Characteristics of S3 and the relationship

S3 has the most advanced R&D, manufacturing and purchasing functions among the companies in this thesis. In recent years it has developed considerably in several respects in order to stay competitive. (For example the number of white-collar employees has increased to 160 from 100). The manufacturing processes are highly automated, and include a larger number of closely integrated steps designed for larger-scale production. This makes it less flexible. Relatively complex parts are purchased from suppliers, mainly those for the interior of the car and electronics. The parts that are related to the interior are partly coordinated by B3 since it has to match the rest of the car. Therefore, S3 has to have a large variety of competence regarding mechanics, large-scale manufacturing technology, electronics, interior, design, car assembling and market knowledge. S3’s efforts in R&D are significant regarding both existing products and those that can be launched in 6-7 years. As a result, S3 has the chance to influence the design of its product and the functions of the car to a larger extent than the two other companies in the thesis. The ability to develop the products is also one of the reasons why B3 buys them from S3. At the early stages of the product’s life-cycle it is difficult for B3 (and S3) to specify the attributes and components on a more detailed level. The main reasons for this are the high degree of complexity, the larger part of R&D carried out by S3 and S3’s knowledge of the end customer. Brought to a head, the purchasing process should become more complicated if the buyer (nor the supplier) does not know how the future product will look. The fact that the supplier carries out the main part of the R&D presumably enhances this effect.

A large number of people are involved from both sides and therefore the roles of different persons and departments from both sides are formalised and systematic. For example there is a clear difference between the commercial part and the technical part of the project. Communication is substantial and cross-functional but normally goes the formal way to avoid misunderstandings. One important difference between S3 and S2 seems to be the role of competition. When a new project starts, competitors appear to have a larger chance to replace S3, although it has not happened yet. At the moment, B3 has one similar supplier and both of them could replace
each other. Although competition is more obvious for S3, it still has a large advantage due to the established close relationship. Further, price negotiations are regarded as very hard but still reasonable. This is in line with what could be expected, due to the larger amounts that the projects deal with.

5.2.2.6 Characteristics of S3’s products

The product of S3 is the most complicated in the thesis both in terms of the number of components and the different types of technologies that are required. The projects also involve the highest amounts of money. The possibilities to make changes, choose different solutions, etc. are substantial, which increases the incentives to cooperate in order to get most “value for money”. The degree of purchased material is relatively high since both the electronics and the interior of the car are expensive. The product is always organised as a project that involves larger amounts of money, larger number of employees, etc. In order to exploit the possible economies of scale, both sides try to use certain parts that have been used before or try to develop modules that can be used for different products. The key account manager maintains that this way of working reduces costs in a number of different ways, such as design, tools and learning effects.

5.2.3 The projects in the relationships

During the interviews and the analysis of them, it was seen that a main part of the cooperation takes place during the project, especially the cooperation dealing with the suppliers’ product costing. Therefore the role of the project is elaborated, based mainly on the literature on target costing and interorganizational cost management.

As mentioned briefly above, the particular project is an important part of the interorganizational exchange in all three cases. The projects last over a long period of time and each one of them are usually of paramount importance for the supplier (and the buyer). The single project is both a transaction that takes place within the previously established interorganizational relationship, but it is also a transaction that requires considerable cooperation. In all three relationships, it is mentioned that previous projects influence the way the present project is carried out. This is, for example, evident in mutual investments, communication and trust that have been developed due to previous cooperation in projects and during activities not related to a specific project (e.g. common JIT projects). During the cooperation in the project, different types of tasks are carried out with different purposes and different decision situations over an
extended period of time. Therefore a number of different stages or activities can be identified during the project.

The importance of the project results from the fact that the relationships are carried out in a type of batch mode somewhere between a single transaction relationship and a continuous relationship. It is not a single transactional relationship since it benefits from previous transactions nor is it a continuous on-going relationship, since each project is relatively separated and could be used as a natural exit or possibility to evaluate and/or select another partner for future cooperation. Similar issues are discussed, albeit briefly, by Cooper and Slagmulder (1999). The IOCM is then divided into four different aspects: the network dimension (relationship), the product design (target costing/value engineering), product manufacture (value analysis) and the interface (reduction of transaction costs). It is argued that IOCM can be divided into two different dimensions.

“The network level provides the environment in which the product dimension can operate.”

(Cooper and Slagmulder, 1999, p 151)

Due to the importance of the projects and the fact that cooperation is carried out in different ways at different stages of the project, a model is developed partly inductively for describing the life-cycle of the project based on the role of the supplier's product costing. The model serves two purposes. Firstly, it classifies the activities carried out in the relationships. Secondly, it provides a higher degree of precision for the first and second research questions. The model developed here takes its point of departure in the product costing of the suppliers and is accordingly not a general life-cycle model of a project. By dividing the project into a number of steps, the results can be discussed more precisely than if the project is dealt with as one whole unit or transaction without different steps. This part only presents the model as such, i.e. the division of the project into a number of main activities.

A number of researchers divide the exchange (project) in different steps when describing the TC process. The models can be one dimensional, usually only dividing the TC process into a number of steps depending on what is conducted. They can also be two dimensional, combining what is done with who is doing something. An example of a traditional and relatively detailed model of the TC process could be Monden and Hamada (1991, p 20). They describe the TC process on the basis of categorisation of six steps of the life-cycle and nine different organizational unit(s) carrying out the specific activity. The two categorisations make a two dimensional model in which 27 different activities can be placed. (The six steps of the 184
life-cycle are: corporate planning, development of the specific new product project, determining the basic plan for a specific new product, product design, production transfer plan, and production. The nine organizational units are: corporate planning department, cost management department, product planning department, domestic & overseas sales department, design department, cost planning department, purchasing department, and production engineering department).

However, the problem with the stage models developed in the TC literature, is that they usually have a strong focus on the internal aspects of the buying company, whereas this thesis focuses on the interorganizational aspects from the perspective of suppliers. Although Monden and Hamada’s model is one of the more detailed presented in the existing TC literature, the supplier is not included to any larger extent. A number of the activities presented in the model include some kind of cost estimation or calculation conducted by the buyer, but none of them include the supplier’s costs or its cost calculations. Another example of the common internal focus can be Ansari et al (1997) who present seven key questions when assessing if the company is ready for TC. None of the questions discuss the supplier. This means that there is a slight misfit between the traditional TC models and the focus of this thesis since they include certain activities that are not relevant, i.e. the internal activities of the buyer (e.g. profit planning), and exclude certain activities that ought to be included, i.e. cooperation with the supplier(s) (e.g. supplier selection). Another difference is that the TC literature tends to focus on pre-production activities, even if the entire life-cycle is occasionally included (e.g. Ansari et al., 1997). The projects include not only the pre-production stages but also the production and finishing. It should be noted though that there are exceptions in TC literature dealing with the supplier. Two of the most well-known are Ansari et al (1997) and Cooper and Slagmulder (1999). Ansari et al briefly relate the supply chain to a TC project and Cooper and Slagmulder bring the discussion one step further by reviewing the role of the supplier of a TC project and the relationship with the suppliers.

Based on the three cases, the interaction within a project involving product costing can be divided into four main groups. The four steps are partly similar to a traditional TC model presented by Ansari et al (1997) in order to describe “The context of target costing” (p 22 and p 82), but Ansari et al’s model is not developed to fit the focus of this thesis. A similar division is also presented by Cooper and Slagmulder (1999).

Although the four steps are normally carried out in the order presented below, they do not have to be carried out sequentially. Instead they can be carried out partly simultaneously, e.g. the supplier can be selected during the concept stage, and certain preparation of the on-going production is carried
out during the R&D stage. It can be worth noting that the two phases of target costing, establishing the target cost and attaining the target cost, (e.g. Ansari et al., 1997) are usually not possible to relate to one single stage. When the cooperation is more intensive during the pre-production stages, the establishment phase is related to the first three steps with a focus on the first two. The achievement phase, though mainly related to the R&D stage also partly includes the on-going production due to the required annual price/cost reduction during that stage.

The cooperation is more intensive during the pre-production stages, the establishment phase is related to the first three steps with a focus on the first two. The achievement phase, though mainly related to the R&D stage also partly includes the on-going production due to the required annual price/cost reduction during that stage.

The table below presents the four stages of the project. The two first stages are in many cases carried simultaneously.

Table 5.1 The project divided into four stages

<table>
<thead>
<tr>
<th>Stage</th>
<th>Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection of supplier</td>
<td>Examination of supplier qualification</td>
</tr>
<tr>
<td></td>
<td>Examination of supplier’s offer</td>
</tr>
<tr>
<td></td>
<td>Negotiation regarding terms</td>
</tr>
<tr>
<td>Concept and feasibility</td>
<td>Development of the main features and functions of the component and related areas</td>
</tr>
<tr>
<td>Research and development (R&amp;D)</td>
<td>Designing the component and related manufacturing processes, tools, prototypes etc</td>
</tr>
<tr>
<td>On-going production</td>
<td>Start-up of full speed production</td>
</tr>
<tr>
<td></td>
<td>Full speed production</td>
</tr>
<tr>
<td></td>
<td>Continuous improvements</td>
</tr>
<tr>
<td>(The relationship outside one specific project)</td>
<td>Cooperative activities carried out related to more than one project</td>
</tr>
</tbody>
</table>

The selection of supplier deals with the discussions and negotiations related to whether the buyer and supplier decide to carry out the project together. From the supplier’s perspective, the goal of this activity is to get the contract of the project. The supplier selection includes a number of activities such as supplier identification, evaluation of supplier qualification, supplier negotiations, examination of the supplier’s solution, offer and other terms, presented costs etc. As discussed above, the selection of supplier as well as the relationship per se, can show a large degree of complexity with a number of interrelated factors. The supplier is often and to a various degree involved in the conceptual work, and therefore the selection process is partly based on previous work during the current (and previous) projects. The process of selecting supplier varies between the three relationships and also within each of them. In its relationship with B1, S1 says that when
there is a small amount and a simple product, the selection process is relatively uncomplicated, while larger orders usually are discussed to a larger extent. One of the key issues in the discussions is the price and related terms such as yearly expected cost reductions and price changes due to quantity variances. S2, which usually does not participate in any selection process, still claims that it is aware that this position will only be preserved as long as B2 is convinced that it is the very best alternative. In its relationship with B3, S3 says that the selection process is less complicated if similar products or modules have been exchanged earlier. Then the project would deal with changes to a different extent, rather than an entirely new product.

Concept and feasibility activities can partly be carried out simultaneously or before the supplier selection activities. Concept activities are derived mainly from the buyer’s product strategy and planning, based on a number of factors such as the technology needed, internal development, competitive intelligence, customer/market information, life-cycle calculations and investments needed. Therefore the supplier either faces the result of the buyer’s early internal TC activities, or is approached for earlier involvement because competence regarding specific component is important for the overall characteristics of the vehicle. Apart from design issues, the supplier can participate in feasibility discussions.

The role of S1 at this stage is relatively small. In the other two cases, S2 and S3 tend to get and provide information at an early stage for a number of reasons:

- the component requires a high degree of R&D within a limited period of time. It is therefore important to start early during the project in order to be able to finish it on time.
- the supplier has knowledge about the preferences of the end customer related to the component.
- the design of the component may influence other parts of the vehicle (e.g. design and strength of fastening of the component).
- S3 has special knowledge of the latest technology in its field (gear shift), which is relevant since it affects the function and performance of the vehicle.

The R&D activities are based on the results of the previous concept activities and apparently a key stage in the interorganizational cooperation. At the beginning of this stage, the component is more specified and the basic functions are decided. At the end of this stage, the design of the component is finished and the related manufacturing equipment is ready for the start-up of the production. The way the R&D activities are carried out
differs between the three cases and the suppliers have different roles. In some cases (usually S1) the product is relatively specified and the supplier receives the blueprints of what is going to be delivered and then has the possibility to investigate if it is possible to make minor changes (tolerances, different material etc) in order to reduce the manufacturing costs. In other cases when the supplier is more involved in the concept activities and the function of the component, it gets more room for suggestions regarding design of the product and accordingly the possibility to present design and manufacturing process improvements. During the R&D stage the buyer and the supplier work together in cross-functional teams with different types of cost data and discuss different types of alternative features and identify areas where the supplier can improve (supplier development). The cooperation regarding the product and related issues is combined with interorganizational negotiations and discussions regarding the agreement used for supplier selection. This was particularly apparent at S3 but could also be seen at S2. Some of the differences between the three cases are the intensity and number of employees that are involved:

S1 – Relatively low intensity and a limited number of people involved.
S2 – Frequent meetings with specialised teams based on the particular issue.
S3 – Frequent meetings with a large number of different people involved (including the suppliers of S3). Different roles, functions and information flows are also formalised, due to the larger number of people involved.

In the three cases, the supplier is usually responsible for buying the special tools although they belong to (and are paid by) the buyer. That is conducted as a part of the R&D stage since the tools are specially designed for the component.

On-going production activities include both the start-up activities, (tests and rollout of full speed production, run-in and adjustments of tools etc), and the following full speed on-going production. The on-going production also includes issues related to logistics, service and eventually changes of the manufacturing processes or product design. In all cases the supplier is expected to reduce prices during the on-going production. The reduced prices are based on expectations of cost reductions. Since this stage lasts over a long period of time, it is not unusual to make certain changes to the design, material or manufacturing technology mainly in order to reduce costs.

Apart from the cooperation within a specific project, there are activities which are carried out jointly and influence more than one project. The activities could be related to general issues between supplier and buyer and purchasing policies, such as implementing new technology, new materials, environmental issues, logistics etc.
Analysis

5.2.4 Summary and overview of characteristics

The cases show complex and multidimensional interorganizational cooperation, both in terms of motives and characteristics. When studying individual companies and relationships, the position is not just a result of only distinct strategic decisions taken by the top management. A similar view is presented by Gadde and Snehota (2000). Accordingly it is not possible to see how the interrelated characteristics of a close relationship are developing linearly based on an underlying economic logic (discussed in chapter two) when single cases are studied. As discussed in chapter two, the IOCM literature reduces the complexity of the buyer-supplier relationship. It is usually achieved by different types of categories, supposed to represent underlying logic and complexity. (One such example, discussed in chapter two, is Cooper and Slagmulder’s (1999) categorisation of suppliers into common suppliers, subcontractors, major suppliers and family members). Instead of reducing the complexity by “putting a label” on each of the three relationships, a larger number of underlying characteristics are identified in order to present a wider view of the cases.

To present an overview of the above discussions, the table below summarises some of the aspects of the three cases. Some of the aspects are discussed in the frame of reference and some are recognised during the study. The way the cooperation is carried out and how the two parties organise their interorganizational cooperation is one of the found aspects. The relationship between S1 and B1 appears to be relatively sporadic in the sense that it is less regulated and different projects can be carried out in slightly different ways. There is a relatively limited number of people involved from both sides. The relationship between S2 and B2 is more structured and systematic and there seems to be a cooperative attitude due to the parties’ high degree of confidence in each other’s intentions and abilities to behave in a certain way. The relationship between S3 and B3 appears to be the most formalised, regulated and structured. It also involves a larger number of people and a significant coordination of both the manufacturing and R&D processes. All three relationships have lasted over a long period of time. During the long cooperation the involved companies have developed trust, commitment and knowledge about the other party’s needs, requirements, capabilities etc. To know each other and each other’s organization is regarded as very important. All the suppliers claim that B1, B2 and B3 have supported important improvements.

Some aspects are slightly surprising, mainly regarding the relationship between S1 and B1. One could expect a more distant relationship with competitive bidding etc, since the product is relatively cheap and only requires limited R&D mainly carried out by B1. Despite the limited possibilities to reduce costs, there is mutual commitments and ambitions to
maintain a close cooperation. There appears to be mutual trust regarding intentions and qualification. Both parties have invested both money and time in the relationship which they expect to pay off following a period of long cooperation. One possible reason could be that the focus of the exchanged product per se is too narrow. The exchange of the product and the relationship also include issues such as assurance about quality, deliveries on time and that S1 is open and provides B1 with information, is cooperative and flexible etc. In the relationship between S1 and B1, the product is relatively cheap, but quality problems or delayed deliveries could significantly harm B1 with the economic impact being larger than just the cost of the product. This means that from a cost benefit point of view, it is reasonable to develop a closer relationship in order to reduce risks and problems. Even if the product is relatively simple, the relationship within which the exchange takes place appears to be more complex and more complicated to replace.

Table 5.2 Summary of characteristics of the suppliers and the products

<table>
<thead>
<tr>
<th>Relationship, product and supplier characteristics</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S1 &amp; B1</td>
</tr>
<tr>
<td>Industry of the relationship</td>
<td>Automotive</td>
</tr>
<tr>
<td>Nationality</td>
<td>Swedish</td>
</tr>
<tr>
<td>Type of exchange</td>
<td>Project</td>
</tr>
<tr>
<td>Suppliers industry</td>
<td>Mainly automotive</td>
</tr>
<tr>
<td>Previous cooperation</td>
<td>Many years</td>
</tr>
<tr>
<td>Competitors delivering to the buyer</td>
<td>A number</td>
</tr>
<tr>
<td>Cost/price of a project/product</td>
<td>Low</td>
</tr>
<tr>
<td>Degree of R&amp;D</td>
<td>Low</td>
</tr>
<tr>
<td>The buyers interaction with suppliers of the supplier</td>
<td>Low</td>
</tr>
<tr>
<td>Development of the product</td>
<td>Mainly B1</td>
</tr>
<tr>
<td>Complexity of product</td>
<td>Low</td>
</tr>
<tr>
<td>Quantities</td>
<td>Low</td>
</tr>
<tr>
<td>Possibility to predict the cost at early stages</td>
<td>High</td>
</tr>
<tr>
<td></td>
<td>S2 &amp; B2</td>
</tr>
<tr>
<td>Industry of the relationship</td>
<td>Automotive</td>
</tr>
<tr>
<td>Nationality</td>
<td>Swedish</td>
</tr>
<tr>
<td>Type of exchange</td>
<td>Project</td>
</tr>
<tr>
<td>Suppliers industry</td>
<td>Only automotive</td>
</tr>
<tr>
<td>Previous cooperation</td>
<td>Many years</td>
</tr>
<tr>
<td>Competitors delivering to the buyer</td>
<td>None (apart from minor details)</td>
</tr>
<tr>
<td>Cost/price of a project/product</td>
<td>Medium</td>
</tr>
<tr>
<td>Degree of R&amp;D</td>
<td>Medium</td>
</tr>
<tr>
<td>The buyers interaction with suppliers of the supplier</td>
<td>Medium</td>
</tr>
<tr>
<td>Development of the product</td>
<td>Together/Mainly S2</td>
</tr>
<tr>
<td>Complexity of product</td>
<td>Medium</td>
</tr>
<tr>
<td>Quantities</td>
<td>Medium</td>
</tr>
<tr>
<td>Possibility to predict the cost at early stages</td>
<td>Medium</td>
</tr>
<tr>
<td></td>
<td>S3 &amp; B3</td>
</tr>
<tr>
<td>Industry of the relationship</td>
<td>Automotive</td>
</tr>
<tr>
<td>Nationality</td>
<td>Swedish</td>
</tr>
<tr>
<td>Type of exchange</td>
<td>Project</td>
</tr>
<tr>
<td>Suppliers industry</td>
<td>Only automotive</td>
</tr>
<tr>
<td>Previous cooperation</td>
<td>Many years</td>
</tr>
<tr>
<td>Competitors delivering to the buyer</td>
<td>One</td>
</tr>
<tr>
<td>Cost/price of a project/product</td>
<td>High</td>
</tr>
<tr>
<td>Degree of R&amp;D</td>
<td>High</td>
</tr>
<tr>
<td>The buyers interaction with suppliers of the supplier</td>
<td>High</td>
</tr>
<tr>
<td>Development of the product</td>
<td>Mainly S3/Together</td>
</tr>
<tr>
<td>Complexity of product</td>
<td>High</td>
</tr>
<tr>
<td>Quantities</td>
<td>High</td>
</tr>
<tr>
<td>Possibility to predict the cost at early stages</td>
<td>Low</td>
</tr>
</tbody>
</table>
### Analysis

<table>
<thead>
<tr>
<th>Relationship, product and supplier characteristics</th>
<th>Relationship</th>
</tr>
</thead>
<tbody>
<tr>
<td>S1 &amp; B1</td>
<td>S2 &amp; B2</td>
</tr>
<tr>
<td><strong>Number of persons involved in relationship</strong></td>
<td>Low</td>
</tr>
<tr>
<td><strong>Way of cooperating</strong></td>
<td>Sporadic</td>
</tr>
<tr>
<td><strong>Most important factors for being selected as supplier</strong></td>
<td>Deliveries on time, quality &amp; price</td>
</tr>
<tr>
<td><strong>Project stage – characteristics</strong></td>
<td>S1 &amp; B1</td>
</tr>
<tr>
<td><strong>Supplier selection</strong></td>
<td>Price is a main issue</td>
</tr>
<tr>
<td><strong>Concept and feasibility</strong></td>
<td>Very limited cooperation</td>
</tr>
<tr>
<td><strong>R&amp;D</strong></td>
<td>The buyer usually presents the first blue print</td>
</tr>
<tr>
<td><strong>On-going production</strong></td>
<td>Annual cost reduction</td>
</tr>
</tbody>
</table>

### 5.3 The use of product costing and other kinds of cost data in the relationships

This section is divided into three parts. The first identifies the costing situations and how the cost data is designed during the interorganizational cooperation. (The traditional *intra*organizational costing situations are not dealt with). The second discusses the situations in the different relationships. The third discusses suppliers' attitude towards the use of product costing for interorganizational cooperation.
5.3.1 Identified interorganizational costing situations

The identified costing situations are based on what the respondents have explained to be the official and intended purpose of calculating the cost. It is worth noting that since only official and intended costing situations are identified, it limits the description and analysis in this thesis of how product costing is used. During the discussions, different interviewees used different names when describing the same type of costing situation. Therefore the name (e.g. pricing) of the costing situation is determined by the author based on the discussions with the respondents.

Each situation presented below is observed to some extent in at least one of the three relationships. Some of the situations are mentioned in the literature regarding supply chain management and IOCM. The difference between previous literature and this study is that this one focuses on how the supplier’s costing is used. In literature the design and use of the supplier’s costing is briefly touched upon as one part of a number of other issues of the interorganizational cooperation.

1. Choice of supplier. The purpose is to present the cost data so that the buyer can make the decision regarding who is going to deliver the product. The costs are based on the product’s required specifications.
2. Evaluating the supplier. In certain situations different suppliers provide solutions that are not equivalent. Cost data is provided along with the description of the offer. The cost data is used to recognise and discuss the differences in the offers and thereby make them comparable.
3. Initial cost and function discussions. During the early stages, and while the product is not yet designed, the costs are presented and discussed in a less precise way than at later stages. This could be seen as the start of the value engineering phase and functional analysis.
4. Determining a platform for costs. In certain situations a platform of costs is established. The platform is based on costs previously presented to the buyer. This means that the platform is used as a reference and then additions and reductions of attributes and costs are related to the platform when the entire cost of the product is discussed. The platform discussion is elaborated in section 5.4.
5. Motivating/discussing changes of costs based on previous similar products. If a product, in a new project, is similar to one made before, it can be used in the same way as the platform presented above (4). There is a difference between 4 and 5. In 5 there is a previous product that is used as a platform, whereas in 4 the platform is established based on previous discussion during the project.
6. Picking attributes. The costing situation “picking attributes” is most probably the core of the value engineering process. This means that the different attributes such as material, design, precision, etc. are discussed and related to the cost the buyer has to pay.

7. Picking treatment of supplier. Picking treatment is partly related to 6. The difference is that in this situation the attributes are similar and instead different ways of producing them are discussed. It appears that 6 and 7 are often combined and discussed together. For example the use of another kind of material can reduce by X SEK since different treatment can be used.

8. Purchasing costs. Purchasing costs mean that when the buyer gets access to the costs of direct material and tools, the supplier’s main purchasing costs, it can also support the supplier to find a cheaper source of the purchased goods.

9. Motivating price. Occasionally, when the supplier’s costs are higher than what the buyer is willing to pay for a product, the supplier calculates the costs in order to legitimise the price level. This is a way of reducing tension in the relationship that could occur if the buyer gets the impression that the price is too high. It is worth noting that in the relationships between S2 and B2 and between S3 and B3 it is underlined that this cost/price motivating procedure is a short-term and rare occurrence and it does not mean that the buyers accept inefficiency.

10. Deciding price. The purpose is to calculate and present the costs in order to decide the price for the project, number of units of the product, etc. The costs that are calculated are normally regarded as a fair way of fixing the price that both parties accept.

11. Price reductions. As part of the initial agreement, the price is supposed to be reduced with a certain rate on an annual basis. The price reduction is therefore calculated and discussed normally once a year. It is officially claimed to be based on cost reductions, but, according to the three suppliers, it is normally not possible to reduce the costs as much as the price during the last years of the project.

12. Price motivation/change. As part of the initial agreements, the supplier can be compensated for changes in certain conditions such as lower production quantity and price of raw material. The cost effects of the changed conditions are calculated by the supplier and presented to the buyer in order to motivate a price change.

13. Efficiency improvements. This means that the costs for particular manufacturing or administrative processes are examined and calculated with the aim of reducing them. The second part of this
costing situation, and in many cases the main purpose, is to share the cost reduction.

14. Changes/investing in manufacturing technology. During the production stage, both parties try to find more efficient ways of working for the supplier by utilising new technologies. The new technologies often require certain investments. The costs and the benefits are calculated in order to find out whether the investment is feasible and later how to share the cost reduction. The issues can be related to manufacturing as well as administrative processes.

15. Re-designing the product. To re-design a product is not planned or scheduled as a part of the project, though it has occasionally occurred in the cases. Changing the product can be rather costly for both parties but new technology, material, etc. can still make it favourable. Since the costs change both for the re-design and later during the production, they are calculated and discussed.

The list of identified costing above can be seen as the first step of how to analyse the use of product costing. However, based on the empirical findings it is possible to increase the precision of the analysis by looking at:

1. The way the costs are calculated and how frequently it is done.
2. At what stage of the product life-cycle the costing situation is observed.
3. In which relationship(s) the costing situation is identified.

Firstly the three distinctions made above will be elaborated. Secondly a table providing an overview of the three distinctions and the empirical finding. Thirdly the empirical evidence will be presented based on the categories discussed here.

Costing situations as dealt with in this thesis have two different parts, the type of decision made and the costs calculated for that decision. It is reasonable to include both parts when discussing the use of costing. The decisions are presented above. The way costs are calculated is presented with the cost object and whether routine costing or non-routine costing and adjusted calculations are used. The frequency of the decisions is included in order to present the extent the costs are used for interorganizational purposes. The use of costing is described in terms of:

A. The official intended purpose/outcome of the costing situation.
B. Cost object, i.e. for what the costs are calculated.
C. Routine or non-routine adjusted calculations.
D. How common the use of the particular calculation is (always, often, occasionally, seldom), or when the costs are calculated.
As presented above, the project is divided into four groups, the supplier selection stage, the concept stage, the R&D stage and the on-going production. Besides the project, aspects outside a specific project are dealt with.

The supplier selection stage includes two main types of decisions, choosing supplier (1) and evaluating supplier’s offer (2). (The number in brackets represent the number of the decision situation in the list above). These two decisions are only related to the selection stage. The costing situation determining a platform (4) plays an important role in the selection of supplier but is also part of the concept stage and will therefore be presented there.

The concept stage, dealing with initial functions and features of the product, include initial cost discussion (3), determining a platform for costs (4) and motivating/discussing changes of costs based on previous similar products (5).

It is not possible to entirely separate the concept and the R&D stage in terms of costing situations since some of them can be used during both stages. This is the case for the situations motivating/discussing changes based on previous products (5), picking attributes (6) and picking treatment (7). Each costing situation is presented where it appears to be used most frequently. The R&D stage, when detailed design solutions are discussed, deals with the costing situations, picking attributes (6), picking treatment of supplier (7), purchasing (8), motivating price (9) and deciding price (10).

On-going production, dealing mainly with cost reduction of existing products, includes price reduction (11), price motivation/change (12), efficiency improvements (13), changing/investing in manufacturing technology (14) and redesigning the product (15).

The costing situations seen in each of the three relationships are presented directly in the table below. The number (e.g. 1.1, choosing supplier in the relationship between S1 and B1) shows that this type of costing has been seen and will be described further down. The costing situation is described based on the factors mentioned above, A, B, C and D.
## Table 5.3 An overview of costing situations in different relationships

<table>
<thead>
<tr>
<th>Stage of the life-cycle</th>
<th>Costing situation</th>
<th>S1&amp;B1</th>
<th>S2&amp;B2</th>
<th>S3&amp;B3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection of supplier</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 Choosing supplier</td>
<td></td>
<td>1.1</td>
<td>2.1</td>
<td>3.2</td>
</tr>
<tr>
<td>2 Evaluating suppliers offer</td>
<td></td>
<td>1.2</td>
<td>2.2</td>
<td>3.1</td>
</tr>
<tr>
<td>Concept stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3 Initial cost discussions</td>
<td></td>
<td></td>
<td>2.3</td>
<td>3.3</td>
</tr>
<tr>
<td>4 Determining a platform for costs</td>
<td></td>
<td></td>
<td>2.4</td>
<td>3.4</td>
</tr>
<tr>
<td>5 Motivating/discussing changes of costs based on previous similar products</td>
<td></td>
<td></td>
<td></td>
<td>3.5</td>
</tr>
<tr>
<td>R&amp;D – the design stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6 Picking attributes</td>
<td></td>
<td>1.3</td>
<td>2.5</td>
<td>3.6</td>
</tr>
<tr>
<td>7 Picking treatment of supplier</td>
<td></td>
<td>1.3</td>
<td>2.6</td>
<td>3.7</td>
</tr>
<tr>
<td>8 Purchasing</td>
<td></td>
<td>1.4</td>
<td>2.7</td>
<td>3.8</td>
</tr>
<tr>
<td>9 Motivating price</td>
<td></td>
<td>1.5</td>
<td>2.8</td>
<td>3.9</td>
</tr>
<tr>
<td>10 Deciding price</td>
<td></td>
<td>2.9</td>
<td></td>
<td>3.10</td>
</tr>
<tr>
<td>On-going production stage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 Price reductions</td>
<td></td>
<td>1.6</td>
<td>2.10</td>
<td>3.11</td>
</tr>
<tr>
<td>12 Price motivation/change</td>
<td></td>
<td>1.7</td>
<td>2.11</td>
<td>3.12</td>
</tr>
<tr>
<td>13 Efficiency improvements</td>
<td></td>
<td>1.8</td>
<td>2.12</td>
<td>3.13</td>
</tr>
<tr>
<td>14 Changes / investing in manufacturing technology</td>
<td></td>
<td></td>
<td>2.13</td>
<td>3.14</td>
</tr>
<tr>
<td>15 Re-designing the product</td>
<td></td>
<td>1.9</td>
<td>2.14</td>
<td>3.15</td>
</tr>
<tr>
<td>The relationship outside the project</td>
<td></td>
<td>1.10</td>
<td>2.15</td>
<td>3.16</td>
</tr>
</tbody>
</table>

### 5.3.2 Costing situations between S1 and B1

1.1 A) The purpose is to decide if S1 is going to deliver the particular product. B) The cost object is the complete order/project. C) The costs are calculated based on the routine costing system of S1. D) If the project involves larger sums the costs can be specified according to the specific form designed by B1. The agreement upon price and other conditions is part of the decision which supplier to select.

1.2 A) The purpose is to evaluate the offer of S1, if an unexpected price is presented. It can be higher or lower than B1’s expectations. B) The cost object can be the project in total and the details in which S1 and B1 suspect
misunderstanding or differences. C) The costs from the routine costing system are used, but are occasionally adjusted regarding allocation and overhead rates. D) The calculation is only conducted when B1 thinks that there is a misunderstanding, or occasionally when B1 wants to give S1 a second chance. Such a discussion could be like “OK, we want to give you the project but you have to adjust the price since it is higher than the competitors, so calculate it again and see what you can do”.

1.3 A) The purpose is to try to manufacture the same or similar functions in a cheaper way. B) The cost objects are different ways of manufacturing similar attributes. C) The cost is calculated based on the routine costing system. D) Since S1 knows how to produce and B1 knows what function is required, this discussion takes place when the former thinks that there are cheaper alternatives to fulfil the same or similar functions.

1.4 A) The purpose is to find cheaper ways for S1 to purchase raw material and subcontract chiefly surface treatment. B1 can recommend alternative sources or ways of purchasing. B) The cost object is based on the estimated material costs presented to B1. C) The material cost is not based on the routine costing system, but rather estimated on experience owing to the fluctuations. D) This type of discussion is only conducted when larger amounts of material are purchased and B1 thinks that the cost is too high. It can take place during the R&D stage and the on-going production.

1.5 A) S1 motivates the price to make B1 understand that the price/costs are reasonable. Both parties regard the cost of the product as the factor that should decide the price. Accordingly, the costing replaces the hard negotiation and both sides find the price reasonable. B) The cost object is normally the whole project, but can also be broken down to show B1 the structure of the costs and how they are caused. C) The costs are based on the routine costing system. D) The costs are presented by S1 when B1 finds the price too high and S1 wants B1 to understand the situation of S1.

1.6 A) The purpose is to calculate the price reductions due to expected cost reductions at S1. B) The cost object is the cost of the yearly production, split-up into certain categories. C) The costs are calculated based on the specific conditions, with the routine costing system playing a minor role. D) The cost reduction is normally calculated once per year regarding projects dealing with relatively large sums. Smaller projects are not calculated in this way.

1.7 A) The purpose is to calculate the cost/price if certain conditions have changed. B) The cost object is the project based on the related changed condition such as how a lower quantity changes the costs and revenues of S1. C) The costs can be based on the routine costing system as well as considering the specific conditions of the situation. D) The costs are
calculated when the conditions have changed remarkably. The changes are normally dealing with changed quality levels, new technology, batch sizes, other delivery conditions and changes of material prices. The changes of quantity and material price are normally regulated in agreements that are signed before the manufacturing stage.

1.8 A) The purpose is to find areas for cost reduction and then decide how the reduced costs should be shared between the two sides. B) The cost object is normally a certain operation or way of dealing with a product. C) In the first step, attention direction, the routine costing system is used to provide an overview. In the second step, when the profit is shared, the costs are calculated based on the new conditions. D) The two steps of cost reduction are not always related to costing. Firstly, the efficiency improvements are dealt with without using the costing system. This is often the case when certain cost reduction teams from B1 go directly to the specific issue, such as improvements of logistics. Secondly, there are situations in which S1 keeps a main portion of the cost reduction and therefore it does not have to be calculated.

1.9 A) The aim is to calculate the cost effects of changing a product. The calculation has two purposes: to decide whether it is profitable to change the product and to determine the amount of saving in order to share the profit. B) The cost object is the cost of the changed attribute of a product based on saving per unit or the remaining life time of the product. C) The routine costing system is used for calculating hourly rates for different alternative treatments. D) Both sides agree that this type of situation is, and should be, relatively rare since it is not necessary to redesign the comparatively simple product after a certain period of time. If necessary, it is normally S1 that finds a cheaper way of manufacturing the product, using different equipment.

1.10 A) The purpose is to increase the efficiency of general aspects of S1 that are not related to a certain product or project. The main areas are quality improvements, information sharing, logistics or manufacturing technology. B) The cost object is the changed condition or aspect. C) The calculation is usually separated from the routine costing system. D) The costing consequences of supplier development are rarely calculated. Instead they are one part of the relationship with B1.

The following table provides a summary and overview of the situations presented above.
Table 5.4 An overview of interorganizational costing situations between S1 and B1

<table>
<thead>
<tr>
<th></th>
<th>How common/ When</th>
<th>Cost object</th>
<th>Routine vs. non-routine costing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier selection</td>
<td>Only larger amounts</td>
<td>The entire project</td>
<td>Routine costing with occasional adjustments</td>
</tr>
<tr>
<td></td>
<td>Suspected misunderstandings</td>
<td></td>
<td></td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Costs appear too high</td>
<td>Single manufacturing process and attribute of the component</td>
<td>Routine costing (for standards and allocation)</td>
</tr>
<tr>
<td>On-going production</td>
<td>Mixed</td>
<td>Both of the above</td>
<td>Both routine costing and non-routine costing</td>
</tr>
</tbody>
</table>

In this case it is worth noting that costs are mainly calculated for interorganizational purposes when the project deals with larger amounts, when there could be a misunderstanding or B1 finds the costs of the product or order are too high. This means that during many projects the costs are not used interorganizationally to any large extent. The exception is the annual required price reduction that is more or less always calculated.

During the supplier selection the main cost object is the entire project, calculated with the routine costing with certain adjustments. Since the supplier selection appears to be relatively similar to a traditional “intraorganizational” situation when an offer is given, the use of a routine full cost calculation with some adjustments is not particularly surprising.

During the R&D, the particular feature combined with the treatment is the main cost object. The costs that are used are mainly full costs based on routine costing (standards and allocation of indirect manufacturing costs).

During the on-going production the picture is less clear, due to the variety of decisions. The annual price reduction is calculated separately from the routine costing whereas the calculations of changed conditions can involve both routine costing and separate calculations. It is a bit surprising that the costing is not used to any larger extent for cost reductions during the on-going production (efficiency improvements). The reason could be that a more significant cost reduction program is not initiated because of one single costing situation, but can rather be based on long-term discussions. The other reason is that B1 has supplier development teams approaching the special issue directly.
5.3.3 Costing situations between S2 and B2

Since S2 normally is the only supplier of this type of product in an on-going relationship, there is no formal supplier selection stage when S2 is compared with other similar suppliers. At an early stage, S2 is involved and prepares suggestions based on:

- the knowledge it has regarding the car model
- knowledge of the end customer’s demands
- a cost target per unit provided by B2

Occasionally, however, competitors are invited to hand in an offer. The offer is then used for the selection of the supplier for a particular project/product. Accordingly, situation 2.1 and 2.2 (table 5.3) are only calculated when other suppliers are invited.

2.1 A) The main purpose is to choose the supplier for the project. B) Though a single product, the cost object is built on certain conditions regarding quantities. Divided into a number of groups, the costs cover the whole product rather than each single detail. C) At this early stage the cost is estimated in view of knowledge and experience and non-routine costing. (The key account manager has previously worked with cost calculation at S2) D). When other suppliers (competitors) are invited, the costs are always calculated and presented in a certain form. This situation rarely occurs since S2 is almost the only supplier of this type of products.

2.2 A) The purpose is to evaluate S2’s offer and compare it with the competitors. Due to its increased complexity, the product different competitors offer is not identical. Different competitors choose to fulfil the demand in different ways with different materials, design, surface treatments, etc. B) The cost object is normally a single product, but the costs can also be calculated for a special detail, design, type of material, etc. if S2 and B2 together want to take a closer look at something. C) At this early stage the costs are discussed based on non-routine costing and estimations. D) This type of costs are calculated and discussed when B2 thinks that the offers are different or there could be some misunderstandings. The costs are calculated as a part of an on-going discussion in which other issues are also discussed.

2.3 A) The purpose is to decide about early trade-offs between different attributes as a basis for further developments of the concept(s). B) The cost objects are either the product or the cost of certain attributes. C) The calculation is based on non-routine costing and experience from previously similar situations. D) This type of on-going discussions always takes place during the early steps of the development of the product.
2.4 A) The purpose is to build a platform for further changes of the product and also to make sure that there are no misunderstandings or miscalculation. B2 has no interest in taking an offer based on miscalculation or misunderstanding since it will complicate the cooperation and in worst case delay the project. This costing situation is important since it is used as a basis for further changes of the product. B) The cost objects are mainly the single product but the costs can also be calculated for the entire project or a certain detail. C) The costing is based both on the routine costing system but due to the importance of the situation the costs are adjusted in order to fit the specific conditions. D) These discussions and calculations are important for the coming work with design of the product and pricing discussions.

2.5 A) The purpose is to decide more precisely how the product should be designed. This takes place constantly during the R&D stage. Normally, S2 presents two or more concepts or suggestions with different price tags based on the costing system. The different suggestions are developed by S2 and the decisions and discussions take place together with B2. B) The cost objects are both the attributes that are discussed and the total cost per unit. The basis of the total cost is the cost that was calculated in 2.4. C) The costing is mainly based on the costing system. D) These discussions and calculations are one of the cornerstones of the work involved in designing the optimal product within a certain time.

2.6 A) The purpose is to decide how the product should be treated. The discussions are closely related to point 2.5 since the attribute and the method of manufacturing are closely related to each other. B) The cost objects are the different operations required for the manufacturing of a certain detail of the product. C) The routine costing system is the main basis for calculating the costs of different manufacturing alternatives. D) The discussions are regarded as less important than 2.5. From a costing perspective S2 deals more with its internal processes on its own. But it is worth noting that B2’s involvement as far as manufacturing is concerned is mainly restricted to quality, logistics and cost reduction. The costing plays a minor role but not on the detailed level of the treatment of a single machine on the preliminary R&D stage. It is mainly left to S2 to decide how to manufacture the design they have agreed to.

2.7 A) The purpose is to decide how to purchase raw material, components and surface treatment. B) The cost object is the specific product or service that is going to be purchased. C) The calculation is based on estimations and discussions with the suppliers. The costing system plays a minor role. D) The discussions are important from many perspectives such as quality and environmental standards, logistics, costs, etc., but costing does not play an important role.
2.8 A) The purpose is to motivate the price based on S2’s costs. S2’s objective is to calculate and show the costs in response to B2’s questions which may include queries like: “How can the product be so much more expensive if we choose X instead of Y?”. B) The cost object is either the total product per unit or a specific detail that B2 finds too expensive. The costs of the cost object are also combined with descriptions of how the product should be manufactured, purchased, etc. C) The costs can be calculated on the basis of routine costing system or non-routine costing, bearing in mind the supplier’s estimations and offers. D) The occasions when S2 calculates the costs only in order to motivate the price are relatively rare.

2.9 A) The purpose is to decide and agree upon the price, based on how the design has changed. The initial base (2.4) is used as a platform from which changes are calculated. B) The cost object is the structure of the cost of the different details. C) The routine costing system is used for calculating the conversion costs, discussions and offers from the suppliers for the purchased products and services. D) The price is always decided early during the R&D stage and changes if the design or other aspect changes. The price changes during the development of the product but the way the price should be settled is decided in the beginning of the project.

2.10 A) The purpose is to calculate the price reduction. B) The cost objects are not only the total order during the coming year but also the single product. C) The costs are calculated mainly based on non-routine costing, even if the routine costing system provides some input. D) As part of the initial agreement, the price is reduced with a certain rate every year. The underlying assumption is that S2 should be able to reduce the manufacturing costs during the life-cycle of the project.

2.11 A) The purpose is to decide and motivate a certain change of the price due to changing conditions. B) The cost object is usually the total order of what has been produced during the past year, but can also be based on unit level. C) The calculation is based on non-routine costing and on assumptions from the routine costing system. D) The calculation normally takes place when the conditions of the agreements have changed, which is normally revised once per year. The most common change of conditions is the price of raw material and quantities, but there can also be other changes.

2.12 A) The purpose is firstly to increase the efficiency of manufacturing or administrative processes and secondly to share the cost reduction. B) The cost object is normally a certain manufacturing process but can also be the project itself in order to direct attention to areas of potential efficiency improvements. C) The costs can be based on both routine costing system and be calculated or adjusted with non-routine costing. D) The costs for manufacturing processes are calculated when S2 or B2 suspect that there is
a potential for reducing costs and when other changes are discussed regarding, e.g. quality or logistics.

2.13 A) The purpose is to calculate the potential of cost reduction by investing in new equipment and then sharing the reduced costs. B) The cost object is the equipment that eventually is going to be purchased. C) The cost consequences are calculated with both routine costing system and non-routine costing. D) The costing situation occurs when there is a potential to reduce the costs by investing in certain equipment. The costs and the benefits of the investment are normally shared but there are different ways of profit sharing.

2.14 A) The purpose is to decide if it is profitable to change the design of a product and eventually share the cost saving. B) The cost object is the product or a particular detail that is changed. C) The costs are calculated with the routine costing system and with non-routine costing. D) The calculation is conducted if there is reason to believe that it is possible to fulfil the same demand in a cheaper way. The basic approach is that the product should not be changed during the manufacturing stage, since it is normally expensive to buy new tools, etc.

2.15 A) The purpose is to rationalise a certain aspect that is not related to a particular project. The improvement is run like a project and with a specific purpose. B) The cost object is the changed aspect. C) The calculation is separated from the routine costing. D) The costing situation rarely occurs.

Table 5.5 An overview of interorganizational costing situations between S2 and B2

<table>
<thead>
<tr>
<th></th>
<th>How common/when</th>
<th>Cost object</th>
<th>Routine vs. non-routine costing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier selection</td>
<td>Very rare</td>
<td>Product/project later more detailed</td>
<td>Non-routine</td>
</tr>
<tr>
<td>Concept</td>
<td>Always and frequently</td>
<td>Mainly the product, project and certain attributes</td>
<td>Both routine costing and significant adjustments</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Always and frequently (not price motivation 2.8)</td>
<td>Broken down details of attributes, manufacturing steps and purchased material</td>
<td>Mainly routine costing (not purchasing 2.7)</td>
</tr>
<tr>
<td>On-going production</td>
<td>Mixed</td>
<td>Mainly production processes and yearly deliveries</td>
<td>Mainly routine but also non-routine costing</td>
</tr>
</tbody>
</table>
The concept and the R&D stages are the two intensive stages for the product costing. Since S2 is involved from the very beginning of the project and usually does not participate in any supplier selection, costs are rarely calculated for that purpose. It is more difficult to comment on the decision situations at the on-going production stage since they are rather heterogeneous and in general less frequent. It is worth noting that B2 is not at all involved in the traditional variance analysis or other ways of reducing costs of on-going production.

As mentioned above it is not possible to draw a clear line between the decisions at the concept stage and the R&D stage. However, it is worth noting that the cost objects during the concept stage cover larger parts than in the R&D stage, which appears to be more detailed by focusing on a specific detail, attribute, manufacturing process etc. It makes sense that the cost objects become more focused on details the more finished the product is in terms of design. It is also worth noting that the routine costing appears to be more frequently used when the details are discussed during the R&D stage, rather than when dealing with “the big picture” during the early concept stage.

The interorganizational use of product costs appears to play a minor direct role for efficiency improvements. One reason can be that the presented costs, in terms of efficiency, provide information on a more general level, signalling for example that the costs are too high, or are too high for a certain treatment, process, etc. In this case cost reductions are not triggered by one specific costing situation but are rather has developed during a longer period of time based on a number of presented costs and other factors.

5.3.4 Costing situations between S3 and B3

As described in chapter two, the development of a component is carried out in two different ways, developing a new platform or make minor changes on an existing platform. It means that the early stages of the life-cycle can differ compared with the previous cases. When existing components can be used for different car models (existing platforms) the components are not as closely related to a project as in the previous cases. Below costing situations for both existing platforms and new platforms are dealt with.

S3 has an extensive know-how regarding gear shift systems and approach to R&D. One example can be the “shift by wire system” developed for general future use rather than a special project. S3 probably has more knowledge about the product than B3, a matter that can influence the purchasing process. S3 faces an explicit competition, making the early stages and early costing situations more critical.
3.1 A) The main purpose is to present costs as a basis for selecting the supplier for a new project. This means that it is a project dealing with a product that to a large extent has to be developed, as opposed to a project dealing with the same or similar product that has been exchanged before. B) The cost object is the product that is split up into a number of categories. C) The costs are calculated with non-routine costing and investigations. D) This situation is based on a number of previous meetings discussing and presenting requirements and preliminary suggestions.

3.2 A) The purpose is to evaluate S3’s offer (3.1) B) The cost object is the product, divided into a number of categories, but can also include special calculations regarding a certain aspect for which a higher degree of details is required. C) The costs are calculated with non-routine costing. D) This costing situation occurs every time a new product is purchased.

3.3 A) Firstly, costs are calculated as part of discussions regarding the main function of the product. Secondly, the costs are calculated for different versions of the earliest prototypes. The costs also include the necessary tools and other types of manufacturing equipment. B) The cost object is initially the product divided into a number of cost categories. Later on, the product is divided into a number of details. C) The calculation is based on non-routine costing including overhead costs. D) These situations are the first ones when costs and functions are more directly related to each other. This type of discussions always take place at the early stage of developing a new product.

3.4 A) The purpose is to establish a cost platform, from which changes of the product is calculated. As part of this situation, the costs are carefully discussed since this is the basis for the future price. The product that is exchanged between S3 and B3 can be changed significantly during the R&D stage, which also means that the price will change. This situation is closely related to and based on 3.1 and 3.2 above. B) The cost object is usually the single product or project, but can also be a more significant component. C) The presented costs are based on non-routine costing involving a number of persons with different competence. D) This type of situation occurs in almost every new project and is regarded as very important.

3.5 A) The costing situation deals only with changes of an existing product. An already existing product is the point of departure and the changes of attributes are added or excluded to get the new cost and price. B) The cost objects are the changes of the new version, the costs of both new and excluded details. The costs are normally presented in a cost split-up or more detailed special calculations. C) The costs are mainly calculated with non-routine costing with allocated overhead costs. D) This type of calculation is relatively common when a new version of an existing product is discussed. These calculations are important for S3 since it is used as the
basis for a large number of different versions and influences the price of the component over a long period of time.

3.6 A) The main purpose is to meet a component target cost by deciding on different attributes. Therefore the cost consequences of different suggestions provided by S3 are calculated. B) The cost object is normally the attribute and the costs are broken down into a number of categories. C) The costs are calculated with non-routine costing and investigations. D) The discussions are intensive and common when the target cost has to be met.

3.7 A) The purpose is to find cheaper alternatives to manufacture a product or detail that fulfils the requirements of B3 and the end customer. B) The cost object is normally an attribute and the manufacturing costs that are allocated to it. C) The costs are based on non-routine costing with allocated manufacturing overhead costs. D) This situation is usually less frequent compared to 3.6. However, B3 has an extensive knowledge regarding manufacturing technology and can therefore support S3 to manufacture the product in a more efficient way, using different types of equipment, etc. The cost reports are used together with detailed descriptions of how the product is dealt with in different types of machines, etc.

3.8 A) The purpose is to find the right way of purchasing regarding price and quality. B) The cost object is the purchased detail, such as an interior component. C) The costs are based on offers and other contacts with suppliers, as well as the experience of both S3 and B3. D) This situation is frequent and also differs from the other two cases. Since a large part of the manufacturing costs are purchased details regulated by B3, S3 and B3 cooperate to find appropriate solutions.

3.9 A) The purpose is to motivate, in financial terms, a certain change of cost and price. B) The cost object is normally a certain detail. C) The calculation is based on non-routine costing. D) The calculations conducted with the only purpose of motivating certain costs for B3 are relatively rare. During the previous cooperation, S3 and B3 have developed a way of working together which means that S3 presents “honest” costs rather than the first step or point of departure of an on-going negotiation. Therefore B3 rarely questions the figures that S3 presents although the discussions related to the price are always seen as important and intensive.

3.10 A) The purpose is to formally decide the price that is going to be the base for the rest of the life-cycle of the present product and future potential products. This situation is closely related to the situations above, 3.1, 3.2 and 3.4. B) The cost objects cover the single product and the project that is going to last for a number of years. C) The costs are mainly calculated with adjusted calculations. D) This is an important situation since
it determines the price over a long period of time. It is also the basis of cost reductions or changes if the conditions are no longer the same.

3.11 A) The purpose is to calculate the price reduction that is a part of the initial agreement. B) The cost object is the estimated price of a particular project of one year. C) The calculation is mainly based on non-routine costing. D) The calculation is normally conducted once per year to decide the price of the products. The reason is that S3 is expected to rationalise the production and purchasing with the same rate as the price reduction. According to S3, this is possible to achieve during the earlier years but considerably more difficult during the later stages of the life-cycle of the products.

3.12 A) The purpose is to decide and motivate price in the light of changing conditions. The two conditions considered are significant quantity variances and changing price of raw material. B) The cost object is the order that was produced during the last year. C) The costs are based on non-routine costing. D) The costs are calculated once per year if conditions change. Conditions have to change considerably in order to calculate the cost. Based on terms and clauses from the initial agreement, the calculations are not conducted regularly.

3.13 A) The first purpose is to increase the efficiency especially of the manufacturing processes, but also to improve and adjust administrative functions. The second purpose is to share the achieved cost reduction. B) The cost object is normally a single operation but can also cover a larger process of manufacturing, which S3 and B3 assume is possible to rationalise. C) The costs are based on non-routine costing. D) The calculations, though not often conducted, are not rare.

3.14 A) The purpose is firstly to calculate the costs and savings/revenues of investments in certain equipment, and secondly to share the cost reduction. B) The cost object is the new equipment that is eventually to be acquired. C) The costing is only based on non-routine costing. D) The costs are calculated when both parties find it reasonable to share the required investment in order to reduce costs.

3.15 A) The purpose of the cost calculation is to decide whether it is favourable to redesign a product. B) The cost object is the product or a certain component that is changed in relation to the changes of the manufacturing processes. C) The costs are calculated based on non-routine costing. D) The costing situation occurs occasionally during the life-cycle of the project.

3.16 A) The purpose is to calculate the cost consequences of certain supplier development projects. B) The cost object is the cost consequence of the changes. C) The costs are calculated solely with non-routine costing. D) The cost consequences are rarely calculated.
Table 5.6 An overview of interorganizational costing situations between S3 and B3

<table>
<thead>
<tr>
<th></th>
<th>How common/When</th>
<th>Cost object</th>
<th>Routine vs. non-routine costing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supplier selection</td>
<td>Always</td>
<td>Project</td>
<td>Non-routine costing</td>
</tr>
<tr>
<td>Concept</td>
<td>Relatively frequently</td>
<td>Initially the product. Later certain details and prototypes alternatively changes of an existing product</td>
<td>Non-routine costing</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>3.6-3.8 Frequently 3.9 Rarely 3.10 Once</td>
<td>A certain detail, attribute or manufacturing process or suggested prototype 3.10 (deciding price) a finished prototype</td>
<td>Non-routine costing</td>
</tr>
<tr>
<td>On-going production</td>
<td>Mixed</td>
<td>Mainly certain manufacturing processes or the deliveries in one year</td>
<td>Non-routine costing</td>
</tr>
</tbody>
</table>

The costing appears to be used most frequently while developing the product during the concept and R&D stages. Further, S3 presents many of the design decisions as ready suggestions occasionally together with a prototype, rather than joint on-going discussions on a detailed level. This is in line with what could be expected since S3 is given a relatively large degree of freedom to develop the component. It is not possible to see any clear-cut difference within those two stages, apart from the fact that the cost object appears to be more precise and detailed the closer to production start the project comes.

The supplier selection of a new product is based on previous work during the concept stage. This appears to require considerable calculations and estimations because of its importance both for future profits and for getting the contract. It also covers the entire project. When the project deals with an existing product the supplier selection process requires less work and takes its point of departure in the costs of the existing product.
All through the project, the costs are based on mainly non-routine costing. The reason is that S3 does not allocate certain indirect costs to its routine costing. Accordingly, it has to be done separately.

### 5.3.5 Discussion about the use of costing and cost data in the three cases

Before the costing situations are discussed, it is worth noting that the presented situations are in contrast to the common view of the use of product costing and management accounting. This can be exemplified by the definition of management accounting in one of the best selling textbooks in the field by Professor Colin Drury:

> “Management accounting is concerned with the provision of information to people within the organization to help them make better decisions.”

(Grury, 1996, p 4)

In the three cases, there are a number of situations in which the costs are calculated for decision-makers outside the company.

In the relationship between S1 and B1, the costs are presented and used occasionally. The marketing manager says that one can see three different types or levels of ways of working, depending on the size (in financial terms) of the order. Regarding small orders, the price is hardly discussed as long as it is at a reasonable level, and B1 accepts the offer without questioning. With medium orders, the price and the costs are discussed and B1 can require a reduction of cost and price. Concerning large orders, costs are sometimes presented and discussed. Then the situations 1.3-1.5 in table 5.3 above occur. The situation “Deciding price” (situation number 10 in table 5.3) is not marked in the relationship between S1 and B1. The reason is that the price is more or less decided when S1 is chosen after the acceptance of B1. The changes of the product, in which the costing is involved, are regarded as limited. As regards larger orders, S1 is also informed of an expected price, which is based on B1’s target costing philosophy. (What is referred to as “large orders” is merely a comparison with other orders from S1 and not with the other relationships).

In the relationship between S2 and B2, all situations more or less always occur. Since S2 is the only supplier of the product, the initial step is less “dramatic”. S2 has an employee permanently stationed at B2. Also staff from S2 often visit B2 to learn what is going on or to get more general information. The choice of the supplier for a project is normally more a formality than a struggle with competitors. As underlined in several interviews, S2 is fully aware that this way of working is based on the fact that B2 regards S2 as being its superior supplier. Therefore, S2 is highly
motivated to keep the good relationship and preserve its position as the most competitive supplier. Compared with the S1 & B1 relationship there is intensive work during the concept stage and the design stage. In this relationship there are two key players, the key account manager of S2 and the purchaser of B2. These two persons coordinate the on-going meetings regarding tasks, competencies, deadlines, cost discussions, etc. The contacts are mostly of an on-going nature and have been going on before the start of the project and the supplier selection process. Therefore, there is a constant pooling of interests. However, two points are worth noting. First, B2 still has an initial requirement of the price (the target cost) and second, both parties characterise cooperation during stage 2.3-2.9 as “intensive” as they frequently meet to improve the product and reduce the costs.

In the relationship between S3 and B3, the presented cost data plays an important role in the beginning of a new project. The start of the project is relatively formal despite the on-going contacts between S3 and B3. S3 is informed about the expected price and other features of the product and presents a first solution based on the information. The product is relatively expensive and the product is complex and requires a considerable R&D. Thus, the situations 3.3-3.10 (table 5.3) are intensive and involve considerable efforts from both parties. One problem is that the initial suggestions on the basis of which S3 is chosen will differ considerably from the final product. One problem is of course to set a target cost in case there are substantial modifications of the design. Further, the S3 is the one with the largest degree of competence about the product type. This competence is the main reason why B3 wants an established relationship with S3. It is also worth noting that when the project deals with modifications of an existing product, the beginning is normally less formal.

There are both differences and similarities in the three studied cases. Several costing situations can be seen in all three relationships, mainly related to the development of the product. The situations seen in each case are closely related to the way the relationship is carried out, which is discussed here within the framework of the four stage model. The relationship between S1 and B1 includes only a limited degree of common development, probably because the financial benefits are relatively limited. Accordingly there are no common decisions (involving costing) during the concept stage and a limited number of them during the R&D stage. In the relationship between S3 and B3 some projects deal with modifications of existing products or modules and as a result there are costing situations related to those decisions. However, even if a situation with the same name can be seen, there are differences regarding the way costs are calculated and their frequency or intensity.
The main difference is the intensity or frequency of the situations. In the relationship between S1 and B1, the costs are dealt with occasionally and by relatively small groups of people. In the other two relationships, they are frequently tackled and in relatively large groups with cross-functional teams. It is mainly during the earlier stages, the selection of supplier, concept stage and the R&D stage, that the costs are used more frequently and intensively, especially in the relationships between S2 and B2 (not supplier selection) and between S3 and B3. The way S1 and S3 prepare and present offers differs significantly. S1 gets the specification on the basis of which an offer is calculated and the costs are occasionally added. In the case of S3, the offer is based on previous cooperation during the concept stage and consists of a presentation of detailed costs as well a suggestion/prototype. The offer in this cooperation is an early activity of a process that will continue with a significant joint R&D. Similar differences in frequency can be seen during the concept and R&D stages. S1 presents the costs when they are too high, whereas S2 and S3 do it on a regular basis. It appears as if S2 presents its costs more frequently than S3 during the concept stage. The reason could be that in the relationship between S2 and B2 the product is developed jointly (parallel concurrent cost management), whereas in the relationship between S3 and B3, B3 has larger freedom and responsibility (simultaneous concurrent cost management) and therefore presents suggested solutions.

In all cases the costs presented are based on full costs, but way they are calculated differs. S1 uses mainly its routine costing system with occasional modifications when preparing and presenting an offer. Later during the project mainly routine costing is used. One reason for the frequent use of routine costing for price-related decisions could be the limited degree of common R&D. Since the common R&D is limited in the relationship between S1 and B1, a project is carried out in a way similar to a traditional arms-length relationship compared with the other two cases. The price and related issues are calculated in a more traditional way, which in this case would probably include the full cost of the job order. The cost object is the entire project at the beginning, and if changes are discussed, the cost object is the specific change.

S2’s calculates its more frequently and in a number of different ways. During the concept and R&D stage, a number of different cost objects are used from the entire project to a single operation. The routine costing is applied in a number of situations and is adjusted according to the specific conditions. The reason for increased frequency and diversity in the way of calculating is most likely the more developed cooperation regarding the development of the product and the product’s larger complexity.
The relationship between S3 and B3 presents a significant difference regarding the way the costs are calculated, since S3 does not allocate indirect costs in its routine costing. As the costs discussed with B3 are full costs, the indirect costs are allocated outside the routine costing. Another difference is that previous products or modules are used as a basis from which changes are calculated. This means that only the changes of the module are calculated instead of calculating the costs from the beginning. As mentioned above, the products of S2 and S3 are developed in slightly different ways. This influences the frequency of the costing, but the same cost objects are seen in both cases.

The results presented are partly in line with what could be expected from the way the IOCM literature describes interorganizational cooperation. From the way the costing situations are structured in this thesis, it is clear that the main part of the interorganizational use of the supplier’s product costing can be seen during the pre-production stages. The observations also indicate that the way the project is carried out can at least, to some extent, explain the differences in the way the suppliers’ product costing is used in different interorganizational relationships.

The discussion above in this section follows the project, which is similar to the way the IOCM literature looks at the relationship, i.e. with a strong focus on projects. The relationship-oriented literature (e.g. the interaction approach), on the other hand, studies the relationship rather than the single project and it views the relationship as the basis on which the project is built. In other words, according to this view, the way the single project begins and is carried out depends on previous cooperation.

The issues related to characteristics of a close relationship are discussed in chapter two. In this thesis the characteristics of a close relationship cannot directly explain the observed way of using the cost data or the differences between the cases. One reason is that the three relationships show clear similarities in terms of what is regarded as a close relationship. However, just like the relationship affects the way projects are carried out, it might also influence the way product costing is used, albeit in a less direct way. Below some issues will be presented which are related to the characteristics of the relationships and the interorganizational use of product costing.

The three relationships have been going on for a long time. For the three suppliers, the buyer has been a key buyer both in terms of turnover and because of supporting development and adjustments. This means that the buyer has a good insight into the conditions and capabilities of the suppliers. The buyer’s knowledge of its suppliers include cost issues, based on previous discussions regarding costs. The suppliers, on the other hand, know the requirements and methods etc. of the buyer, which makes it easier
for them to meet the buyer’s demands. The buyer and the suppliers come from the same country which most likely makes the relationship run smoothly due to common language and culture and facility, if they meet in person. To some extent the common language may also include the way costs are calculated and discussed.

Along with knowledge about requirements, the previous cooperation enables the development of mutual trust regarding competence and intentions. In total, all three relationships appear to run in a smooth and open atmosphere, although all three suppliers also claim that there are occasionally hard negotiations mainly regarding price-related issues. It is worth noting that there are very few situations based on control or indicating lack of trust. For example, costs presented as such are rarely questioned by the buyer and the buyer does not conduct auditing on the costs or underlying aspects. Instead, the suppliers are entrusted with presenting the costs for making decisions for improvements. On the other hand, all three suppliers claim that it is important to present trustworthy and reliable costs. It is therefore reasonable to believe that the constructive and problem solving way of working together with the supplier’s product costing is based on a common history and a significant exchange of information which have enabled trust and adaptations. It is also striking that the buyers do not need to use their power to force the suppliers to present their cost data. Instead the suppliers appear to have a surprisingly relaxed attitude to the present way of sharing the cost data with their buyers. (The attitude to sharing cost data will be further elaborated in the next section). If the involved companies were to lack experience in working together, knowledge in the other party and the other party’s way of calculating costs, the observations could be different.

5.3.6 Discussion about the attitude to the interorganizational use of costing and cost data

This thesis shows that product costing also serves external purposes. In the IOCM literature a cooperative attitude, including information sharing, among the suppliers is regarded as a key issue for successful relationships and supply management. However, along with the possibilities, there are potential risks or problems in sharing cost data with a customer.

“It is probable that one of the more thorny issues threatening the success of such partnerships is the provision of financial information to the buying firm.”

(Munday, 1992 b, p 35)
The literature on interorganizational relationships addresses problematic areas with sharing information, but it does not at length deal with the attitude of the suppliers sharing cost data with their buyers. One probable reason for the supplier not to open up the costing for the buyer is the fear of a reduced profit margin (Munday, 1990, 1992a and 1992b). This has happened when the relationships were more of an arm’s-length type. For example General Motors has used so-called “forced open books” in order to squeeze the suppliers (Pfeffer and Salancik, 1978). Similar procedures can be seen in the relationships between suppliers and the Swedish national defence (Frenckner and Samuelson, 1984) and between suppliers and the US and the UK governments (Baily, 1987). The difference between those two examples and the information exchange in a close relationship is that in the former, the purpose is to regulate the profit margin while in the latter it is to create a “win-win situation” with mutual gains. Accordingly, the information sharing can be a possibility, but is also a problematic issue to deal with for the cooperating companies.

The common view in the literature appears to be that the buying company strives for more information about the supplier and the supplier hesitates or to some extent tries to hold back. Accordingly, there can be a gap regarding information between what the buyer wants and what the supplier is willing to share. In a small survey conducted in U.K., Munday (1992a) found that a vast majority of the suppliers:

“…were content to provide such cost information ‘sometimes’.”

(Munday, 1992a, p 249)

This implies that some suppliers are willing to share some cost data, which is also partly in line with the findings of this thesis.

In the cases examined in this thesis the buyer has reviewed the routine costing of the supplier as one of a number of factors. Apart from the formal and systematic supplier evaluation, the underlying assumptions of costing are hardly dealt with and the buyer is not interested in getting more information. This is particularly obvious in the relationship between S2 and B2, in which there seems to be no gap between what is provided and what is required.

The pros and the cons of sharing information are dealt with in the empirical chapter. They are summarised below since they could influence the attitude. Both experienced and expected factors are included.
Analysis

The pros:
- Improving the supplier’s processes, R&D, manufacturing and administration
- Reducing purchasing costs
- Reducing tension in the relationship
- Showing commitment to the buyer

The cons:
- Could reduce the profit margin
- Could create misunderstanding that harms the relationship and delays the project

That the issue of sharing cost data with the market in general has been widely discussed under formal conditions in the three cases is an indication of its importance. For S1 it only deals with the relationship with B1, since it is the only large customer. For the other two companies, the attitude depends on the relationship with the buyer. The motives presented below are rather similar but different relationships with different buyers influence the attitude. As mentioned above, the three suppliers claim that the buyers included in the study have a general reputation for being among the more ethical and well-informed, trying to build long-term relationships. S2 and S3, with several similar buyers (car assemblers), also claim that B2 and B3 are regarded as one of the better and most cooperative buyers in their portfolio. Thus there is a more positive attitude to share information since the benefits tend to be higher while the problems and threats tend to decrease.

It seems that the attitude to share cost data appears to be at least partly based on the relationship with the buyer, and not only on whether the general attitude is positive or negative. In the relationship between S2 and B2 one can see that both parties want the cost data presented in a certain way or a certain form. The reason is mainly to avoid misunderstandings that can hurt the relationship and delay the timetable of the project. Accordingly, the type of cost data being shared or requested appears to influence the attitude to share it.

S1 presents a similar reason regarding the type of data and includes the possibility to obtain and calculate it. The vice-managing director thinks that certain data, based on the routine costing, would not be good enough. Therefore it would not be taken seriously and could be even harmful. In his opinion, the costing sometimes replaces the basic knowledge of S1’s manufacturing processes. As a result, the routine costing may present something while experience and knowledge about the underlying processes show something else. Therefore, it is not always regarded appropriate to provide the buyer with cost data based solely on the costing system.
Accordingly it is reasonable to assume that the capability of routine costing to provide “accurate” information also influences the attitude to share the information.

5.4 The design of the supplier’s product costing and other types of cost data for IOCM

This section is divided into three parts. The first discusses the product costing and the IOCM techniques. The second deals with the individual cases and the third compares the three cases.

5.4.1 Product costing for IOCM

Before discussing the cases, the IOCM techniques presented in chapter two should be modified. Apart from the traditional intraorganizational use, product costing provides information for different types of reports for decisions in which the buyer is involved. This is seen in all three cases. The cost consequences can be calculated for a number of different decisions such as compensations for quantity variances, changes in the manufacturing processes related to the design of the component, etc. This type of calculation of costs of the supplier (and accordingly the use of costing) is normally not mentioned among other interorganizational cost management techniques. Occasionally, the literature refers to the notions such as “the cost structure of the supplier” (Ellram and Feitzinger, 1997), “open book policies” (Cooper and Slagmulder, 1999) or “cost analysis” (Ellram, 1996) which most likely include different kinds of situations when the supplier uses routine costing. However, neither the decision situations nor the way the cost data are calculated are particularly specific. They are rather described in a general way. Therefore, another type of cost report ought to be added to the list above, “the special interorganizational cost calculation”, which means that the cost report is presented by the supplier based on the conditions and needs in the specific situation. The reason that special interorganizational cost calculation is explored in this thesis is that the point of departure is the supplier and its product costing. The difference between the cost split-up and the special interorganizational cost calculation is that in the latter the costs are not calculated in a general form designed and provided by the buyer. Instead, the supplier calculates and shows the cost consequences of the specific situation. The difference between “open books” (or “open book accounting”) and special interorganizational cost calculation is that in the latter the supplier calculates the costs and presents
the result for the buyer. Open books is more of a general approach that deals with the level of access related to the buyer's ability to use and get access to the data, assumptions, etc. from the supplier's routine costing. The special interorganizational cost calculation is a specific part of the wider notion open books accounting. Based on the findings in the three cases, figure 2.2 in chapter two by Frenckner and Samuelson (1984) can be modified in order to show the two ways the supplier calculates and presents the cost in the interorganizational cooperation with the buyer. The modified figure shows how the supplier's traditional product costing (routine costing and non-routine costing and investigations) are used to provide data for both the cost split-up and the special interorganizational cost calculation.

**Figure 5.1** The supplier's calculation and presentation of costs in the interorganizational relationship. Inspired by Frenckner and Samuelson, 1984, p 14

The special interorganizational cost calculation can also be divided into different types. Based on the findings, the distinctions are: (1) a detail vs. the entire project, (2) adding vs. withdrawing a detail (3) and presenting the sum vs. specifying it in certain components (such as machinery, labour, etc) and (4) operations/treatments are specified vs. costs aggregated in larger groups.

(1) The first distinction that can be made is between a certain detail or the entire product that is exchanged. At certain stages the whole cost structure is presented while during the on-going cooperation, the costs are often calculated for just the detail that is dealt with at that moment.
(2) The second distinction, especially underlined by S3, is whether a detail is added or withdrawn. This makes cost calculation more important and demands a high degree of systematic and consistent way of calculating the costs of the added or withdrawn detail. The situation that arises is that through cooperation the buyer expects the cost of a detail to be reduced with the cost that is presented. If it happens that the supplier has presented a cost that might be too high, the cost and the price reduction will be too high. It is also important to calculate the costs in a consistent way and to use the same type of costing method. The problem is mentioned by S3 which only uses variable costing, and accordingly faces difficulties with the presented allocated overhead costs. The problem is that if an extra detail is calculated with contribution costing, and then the detail is changed or withdrawn, the same way of calculating the costs has to be used. If not, the cost and price reduction will be too high. This issue occurs because S3 is strictly tied to the presented costs.

(3) The third distinction deals with how the costs are presented. At certain meetings the costs are only presented as a sum. For example the supplier presents two or more alternatives, the plastic version costs XXXX SEK and in metal it costs YYYY SEK. In other situations the costs are specified based on treatment and material.

(4) The fourth distinction deals with situations when the different operations or treatments of a certain component are discussed. In some situations the cost of each single operation is specified while in others the costs are aggregated and presented in different categories.

Apart from the distinctions above, there are also investigations regarding cost reductions, improvements etc. by using new equipment. Yoshikawa et al (1990) describe how the buyer’s cost tables are used as a benchmark for how state-of-the art equipment can reduce costs. In the three cases the calculations are conducted based on the specific situation of the supplier which is similar to traditional capital investment estimation. This type of calculations deal with the different types of investments in equipment and normally not the product.

5.4.2 Design of costing and IOCM in the three cases

The IOCM techniques seen in the cases are presented in the table below in order to provide an overview. Each single case is discussed in more detail further down in this section. The techniques are related to the specific stage of the project discussed above.

If an IOCM technique is seen, it is marked with an X. If a technique is used rarely or only infrequently used, it is marked with an (X). Target
costing, divided into three categories of value engineering, value analysis and functional analysis, is left unmarked.

**Table 5.7** An overview of the IOCM techniques used in the three cases

<table>
<thead>
<tr>
<th>IOCM - technique</th>
<th>The relationships</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>S1 and B1</td>
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<tr>
<td>Target costing</td>
<td></td>
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<tr>
<td>-Value engineering</td>
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<tr>
<td>-Value analysis (Kaizen)</td>
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<td>-Functional analysis</td>
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<td>Cost tables</td>
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<td>Cost split-ups, etc</td>
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<td>Open books</td>
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<td>QFP trade-off</td>
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<td>Minimum cost investigation</td>
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<td>Special interorganizational cost calculations</td>
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</table>

S1’s products are relatively simple. B1 normally specifies them when asking for an offer from S1. Besides the specifications and other conditions, B1 often adds the price it wants S1 to meet. This procedure can be seen as a simple form of *chained target costing*. Occasionally, S1 is also required to specify the costs in a form. S1 takes a look at its possibility to provide a reasonable offer and then discusses it with B1. The main issues discussed are how the product can be manufactured in a cheaper way if certain requirements are adjusted and the function still is fulfilled. Reducing of quality is almost never discussed. This process involves simple applications of the IOCM techniques *cost split-up, QFP trade-off, and special interorganizational cost calculations*. Since S1 is involved in and informed about the function of the component, a simple form of functional analysis can be seen. Later,
during the production stage, normally joint efforts are exerted to reduce the manufacturing costs, which can also be seen in the expected annual price reductions. This is a simple form of value analysis (Kaizen). Since there is a significant degree of openness in the relationship, both regarding costs and related issues, open books are applied.

The design of the presented costs is partly different depending on the situation in which it is presented. S1 only presents the costs in one type of cost split-up. The costs are then presented in a form similar to a traditional product costing sheet:

- Machine costs
- Material
- Salaries
- Social costs
- Indirect administration and profit
- Total cost/price

The cost split-up is designed by B1 and filled in by S1. There are no instructions on how the costs are expected to be calculated regarding underlying assumptions such as volumes, interest rate or the structure of cost pools.

Apart from the cost split-up, costs and calculations of costs are discussed during the project on the basis of special interorganizational cost calculations. The cost object can be certain operations, features of the product, variance regarding mainly volumes and price of the raw material. When these types of special interorganizational cost calculations are discussed, S1 normally chooses how to calculate and present the information based on the conditions of the specific situation. The special interorganizational cost calculations can also be used outside a specific project. The purpose usually is to calculate benefits from changes of manufacturing technology and related areas such as logistics.
### Table 5.8 IOCM techniques at different stages of the cooperation between S1 and B1

<table>
<thead>
<tr>
<th>Stage</th>
<th>IOCM technique</th>
</tr>
</thead>
</table>
| Selection of supplier | Cost split-ups  
| | Open books  
| | Chained TC  
| | Special interorganizational cost calculations |
| Concept | Functional analysis (to a very limited extent) |
| Research and development (R&D) | Chained TC  
| | QFP trade-off  
| | Open books  
| | Minimum Cost Investigations (limited)  
| | Special interorganizational cost calculations  
| | Cost split-ups |
| On-going production | Value analysis  
| | Special interorganizational cost calculation |
| (The relationship out-side one specific project) | Value analysis  
| | Special interorganizational cost calculation |

The relationships between the buyers and S2 and S3 show considerable similarities. They are therefore presented together before highlighting the differences. In the relationships that involve the buyers and S2 or S3, more refined IOCM techniques can be seen. Prior to product development and at its early stages, a clear component target cost is set by B2 and B3. B2 and B3 do not use detailed and computerised cost tables as described in the literature in the relationship with S2 and S3. It should also be noted that the target price in these two relationships is slightly more complicated than what appears in the literature (e.g. Ansari, et al 1997 and Cooper and Slagmulder, 1997). In the literature, the broken down target cost of the component is the price that the supplier has to meet. In the two relationships, there are a number of factors that make the interorganizational part of the target costing process little more complex than that. Deciding the target cost of a product that is not yet designed appears to be a problematic area. Other areas are the tools and the annual cost and price reduction. The component target cost (i.e. the price) is only one of a number of factors that have to be agreed upon. The studied relationships have lasted over a long period of time during which a considerable mutual involvement has taken place. The effects of the mutual involvement are discussed in the previous part and show that the
relationship is not an exchange in a social vacuum only kept up by the possibility to offer the lowest price. It is considerably more complex than that, rendering the target costing process more complicated. However, it should still be noted that the price the suppliers are able to offer is a highly important aspect, which both S2 and S3 stress several times.

The beginning of the project can be more critical for S3 as it takes part in a supplier selection process. This is normally the case when developing a new platform. The presented material, including the calculated costs, is therefore compared to the offers from the competitors. Two aspects are important to note here: firstly, S3 has a huge advantage compared to other potential competitors and secondly, there is an on-going discussion at the start of the project, before and after the presentation. In case there are large differences between different offers, B3 tries to find out the reason. The cost split-up can serve as a tool to match different offers. It can also provide a more detailed picture of the offer to reduce the risks of misunderstanding. B3 is not interested in snatching an offer in which the supplier has made a calculation mistake, since such an error would make cooperation during the project more troublesome and complicated. It is of a very high priority for the project to run as smoothly as possible since the time for launching the product is very limited.

Since S2 and S3 cooperate with the buyers from the very beginning of the project to develop the component, the cost split-up and special interorganizational cost calculations are used to a large extent during the concept stage and the R&D stage. What both suppliers have in common is that their component has to be considered when the rest of the vehicle is designed. They also participate in the earlier discussions regarding basic functions of the component and how it is related to the rest of the vehicle. This is further underlined by the fact that they both have a significant knowledge about the end customer's preferences. During the pre-production stages, S3 is to a larger extent given certain instructions regarding how to fit the component to the vehicle and within those specifications it gets a relatively high degree of freedom. This way of working is presented in chapter two as parallel concurrent cost management. S2 appears to have a more on-going cooperation during the early stages since the component is developed jointly, which is referred to as simultaneous concurrent cost management.

The buyer occasionally supports improvements of S2’s and S3’s manufacturing. The improvements are usually carried out as projects. The suppliers’ product costing plays a minor role in this type of cooperation since the cost reduction team from the buyer usually focuses on a particular issue.
S2 and S3 are presenting their cost data in similar ways, in cost split-ups and in special interorganizational cost calculations. At the beginning, the costs are presented in a cost split-up covering the entire product. This is similar to the way S1 presents its costs. Occasionally, the product is divided into different components making the cost split-up more transparent. Later on, the costs are more specified in a more detailed cost split-up provided by the buyer. The cost of each component is then divided into different costs: material, material overhead costs, labour, process cost, overhead costs and profit. (“process costs” are the indirect manufacturing costs and “overhead costs” are those for non-manufacturing overhead costs). As with S1, the costs can be further broken down into single operations when a certain issue is discussed. Accordingly, three main cost objects used are:

- The project
- The product (per unit)
- Each single component

The special interorganizational cost calculations are presented and discussed during the entire project. During formal meetings, larger presentations, milestone meetings etc, the cost split-up is used.

As for S1 there are no regulations from the buyer regarding the underlying assumptions of the calculations for neither the cost split-up nor the special interorganizational cost calculations.
Table 5.9 IOCM techniques at different stages of the cooperation between S2 and B2 and between S3 and B3

<table>
<thead>
<tr>
<th>Stage</th>
<th>IOCM technique</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection of supplier</td>
<td>Cost split-up (very rare)</td>
</tr>
<tr>
<td></td>
<td>Cost split-ups</td>
</tr>
<tr>
<td></td>
<td>Open books</td>
</tr>
<tr>
<td></td>
<td>Special interorganizational cost calculations</td>
</tr>
<tr>
<td></td>
<td>Functional analysis</td>
</tr>
<tr>
<td>Concept</td>
<td>Functional analysis</td>
</tr>
<tr>
<td></td>
<td>Value engineering</td>
</tr>
<tr>
<td></td>
<td>Concurrent cost management-simultaneous</td>
</tr>
<tr>
<td></td>
<td>Cost split-ups</td>
</tr>
<tr>
<td></td>
<td>Special interorganizational cost calculation</td>
</tr>
<tr>
<td>Research and development (R&amp;D)</td>
<td>Value engineering</td>
</tr>
<tr>
<td></td>
<td>Concurrent cost management-simultaneous</td>
</tr>
<tr>
<td></td>
<td>Open books</td>
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<tr>
<td></td>
<td>Minimum cost investigations (limited)</td>
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<tr>
<td></td>
<td>Special interorganizational cost calculations</td>
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<tr>
<td></td>
<td>Cost split-ups</td>
</tr>
<tr>
<td>On-going production</td>
<td>Value analysis</td>
</tr>
<tr>
<td></td>
<td>Special interorganizational cost calculation</td>
</tr>
<tr>
<td>(The relationship outside one specific project)</td>
<td>Value analysis</td>
</tr>
<tr>
<td></td>
<td>Special interorganizational cost calculation</td>
</tr>
</tbody>
</table>

5.4.3 Discussion about design of product costing and IOCM in the cases

This section discusses and elaborates how the cost data of the supplier are presented in the relationship. It then moves on to relate the supplier's product costs to each relationship and each stage of the project.

This thesis underlines two aspects of IOCM that are related to and supported by the supplier's product costing, the hierarchy and the cost platform. The two aspects are not mentioned in the existing literature on IOCM, probably because of its focus on the buying company.

The first aspect can be called the hierarchy. During the cost break-down, the total target costs of the buyer are initially broken down into main functions of the product such as the body, interior, engine, etc. The cost
break-down then continues until it reaches the level that faces a specific supplier. However, the cost breakdown does not finish at this stage. Instead the supplier's product costing appears to support an increased level of details. When the costs are discussed between the buyer and supplier, they are presented either in formal cost split-ups or in special interorganizational cost calculations. For every main function of the product, the costs are specified based on certain categories and treatment. The main functions of the component are broken down and the costs are specified. A type of hierarchy map is created on which each single function, detail, etc. can be traced due to the presentation of how the detail is treated in certain activities. Every activity is assigned a cost, based on the product costing of the supplier or other suppliers further up in the supply chain. On this “hierarchy map” every activity or detail can be discussed and evaluated. In some cases there are no “black boxes” since treatments, material, etc. are open for the buyer. What can be seen is that the target cost of the final product (the vehicle) is broken down into hierarchies over the company boundaries so that every single operation, detail, etc. become visible for the buyer. Breaking down the product in smaller units in the product costing is probably not unique. What is interesting is that the buyer is involved in this process and that it surpasses company boundaries through the supply chain.

What is described here is certainly a type of open books since it provides the buyer with detailed cost data regarding the components and conditions of the supplier. The main technique for this type of presentation is the cost split-up. The cost split-ups provided by S2 and S3 can be detailed whereas S1 usually only present the different costs (material, labour etc). The cost split-ups are normally related to certain formal meetings such as presentation of the supplier’s offer, milestones etc. For on-going meetings during the project, special interorganizational cost calculations are presented, normally in order to highlight a certain operation, cost etc. S1 provides these types of reports for supplier selection and during the R&D stage, supporting mainly price discussions in the chained TC and QFP trade-off. Occasionally, S1’s product costs support minimum cost investigations since they can highlight too costly direct material. S2 provides the reports during the pre-production stages. The presented costs of S2 are used mainly to support functional analysis, value engineering, and the simultaneous concurrent engineering. Occasionally they support minimum cost investigations. S3 provides the reports during the pre-production stages and as part of the supplier selection. The provided costs support functional analysis, value engineering, parallel concurrent engineering and occasionally minimum cost investigations. As mentioned above, B3 plays a key role in dealing with certain S3 suppliers, since the components have to be
coordinated and matched with the rest of the vehicle. This is however not regarded as a minimum cost investigation.

The second aspect can be called cost platform. It is briefly presented as a costing situation (no 4) in the previous section (5.3) It means that previously calculated costs are used as a base, from which changes are eventually added or withdrawn. The phenomenon arises due to the striving for the use of the same component (module) for more than one project or as a basis for supplier selection. The module is not strictly related to only one project, since some modules are used for more than one project. The cost platform is related to product costing since it is based on previous calculations from previous projects. This means that the presented costs are partly based on previous products (projects), rather than being calculated from scratch. When the cost platforms are used in this way, it means that the component, or a similar one, has already been used before. The component (and cost platform) goes through a previous kaizen stage with the annual demands for cost reduction. Accordingly, the cost platforms connect and partly blur the boundaries between different projects regarding the calculation of costs. This partly opposes the strong focus of the project in the IOCM literature.

The fact that cost platforms and modules can blur the project boundaries can mainly be seen in the relationship between S3 and B3 and to some extent between S2 and B2. When S3 and B3 deal with a new project focusing on adjustments of a previous component, rather than developing something entirely new, the supplier selection process is significantly easier and less critical for S3. A consequence of cost platforms is that they bring and require consistency between different products regarding the calculation of the costs. This is mainly seen in the relationships between S3 and B3 and between S2 and B2.

In the relationship between S3 and B3, the cost platform is also used as a basis for selecting supplier when developing a new product. The early discussions during the concept stage form the basis of the platform as well as other parts of the offer on which S3 is selected. Since this takes place early during the project, the cost platform serves as a point of departure for further modifications of the product during the development process. Costs are added to or subtracted from the cost platform depending on changes of the component. In the relationship between S1 and B1, a cost platform is not used for supplier selection and later changes during the R&D stage. Because the component does not require such an extensive cooperation regarding concept and R&D, S1 can be selected based on early discussions regarding a component on which only a few changes might be done. Since the component is relatively simple, it is not developed on the basis of modules.
Interorganizational use of detailed cost tables as mentioned in the IOCM-literature are not detected in any of the of the studied cases. However, when the allocations rates, treatments, etc. are discussed, the market manager and/or the controller stress several times that the buyers know their suppliers’ costs. This knowledge is obtained mainly from long-term cooperation, which gives the buyer good insight into the manufacturing and other key processes as well as the costs of the suppliers. The cost tables, as described in the literature, are used by the buyer and are usually based on state-of-the-art conditions of a supplier (e.g. Cooper and Yoshikawa, 1994a). One difference in the cases is the buyer’s awareness of the supplier’s way of calculating its costs. Another difference in principle appears to be who calculates the costs of the supplier. In the literature cost tables are used by the buyer, whereas in the cases the supplier calculates the costs in a way the buyer finds acceptable.

The findings show two main ways in which the costs are calculated and presented, the formal cost split-up and the adjusted special interorganizational cost calculation. The product costing is used for both of them. The buyer's role is mainly to keep the calculation at an acceptable level, since it is aware of the costs. If the buyer would have used detailed cost tables in the interorganizational cooperation, the situation would most likely have been different. The figure below is a modification of that by Frenckner and Samuelson (1984) discussed earlier in this chapter and in chapter two.

**Figure 5.2** The relationship between the supplier’s product costing and the buyer’s cost tables (Inspired by Frenckner and Samuelson, 1984)
If both the supplier and the buyer calculate the costs, the two ways of calculation will converge in the interorganizational reports. The consequences of this convergence are not discussed in this thesis because it has not occurred to any larger extent in the studied cases. If the convergence occurs, the situation could be problematic, leading to conflicts, but also to fruitful discussions regarding the development of the product costing. The changes of the product costing are discussed in more detail below.

It can be interesting to compare the target costing and cost tables presented in the IOCM literature with the findings of this thesis. In both cases the pricing and related areas appear to be a key issue. By studying the relationship from the supplier's point of view, new phenomena can be discerned. A difference in principle between the component target costs and costs provided by the supplier is that the former shows what the buyer is willing (able) to pay for the product, whereas the latter shows the costs producing it. In the literature the buyer uses the decomposed component target cost as a tool for setting its price of the component, which can be compared to the way prices are set in the three cases of this thesis. In the relationships between S3 and B3 and between S2 and B2, cost platforms are used for setting and adjusting the price during the pre-production stages of the product. The cost platform also serves the purpose of deciding about the price of a product not yet designed, a process mainly seen in the relationship between S3 and B3 and to a lesser extent between S2 and B2.

Due to the close relationship, costs calculated by the supplier play a main role in agreeing to the price and further development of the component. (It should be noted, that during the early stages a component target cost is clearly communicated and used as a guide on how to develop the offers).

To summarise, the three cases show that the product costing of the supplier is used as a tool to support, or as a part of, the interorganizational cost management. The supplier's product costs also fill similar functions as cost tables. This has not been dealt with in depth in the mainstream literature of product costing or the IOCM literature. It is also reasonable to believe that the way the product costing is related to the IOCM is due to the long history and that several characteristics of a close relationship can be observed.

Occasionally, the term open book accounting stands for interorganizational cooperation with the supplier’s accounting system, but the notion is rather vague and lacks commonly accepted definitions. The discussion above shows how the product costing is related to IOCM. In order to provide a higher degree of precision in the further discussion, the supplier's product costing is related to the IOCM techniques at different stages of the life-cycle of the product. Below, the relationships between the
suppliers cost accounting and the IOCM techniques is presented based on the four steps of the project (supplier selection, concept, R&D and on-going production).

5.4.3.1 Supplier selection
Two different ways of selecting the supplier are observed. One is relatively simple whereas the other is based on significant previous cooperation regarding functions, prices etc. In the simple selection process the presented costs provide support by supplying information regarding the offer and being the main tool for supporting and elaborating the discussions related to chained target costing and relatively simple QFP trade-off. In the more complex supplier selection process, the supplier’s product costs are a part of the offer and support the development of the product. Since the product normally requires a significant degree of development, the offer for supplier selection necessitates considerable efforts related to the function analysis and the techniques used during the concept stage. This work is carried out partly interorganizationally and the suppliers’ presented costs are one part of this cooperation. In both ways of selecting the supplier, a target cost is usually the point of departure for the presented offer.

5.4.3.2 Concept
During the early stage of the project, the cooperation between S1 and B1 is limited and hardly any IOCM techniques are noticeable. In the discussions between S2 and B2 product costs support certain mile-stone meetings which are part of the functional analysis, value engineering and the concurrent cost management. The same can be seen between S3 and B3. The difference appears to be a more frequent use of platforms as a basis for changes. This can probably be explained by the fact that modules are used to a large extent.

5.4.3.3 Research and development
The R&D stage appears to be the most intensive of the project in terms of use of the supplier’s product costing for IOCM. The reason is probably because cost and manufacturing effects are calculated for different alternatives or solutions. During the R&D stage, the presented product costs of S1 support the discussions related to QFP trade-off. The presented costs can also highlight prices paid for subcontracting and material and occasionally S1 receives support in finding cheaper alternatives. This could probably be seen as a simple form of minimum cost investigation. In the other two relationships, product costs support different types of design solutions related to how they can be manufactured. Since the concurrent cost management is carried out differently by S2 and S3 (in a simultaneously
and parallel way respectively), it is reasonable to assume that some of the calculations carried out jointly by S2 and B2, are executed internally and evaluated by S3 and then presented along with the solution for B3. The way costs are calculated based on platforms from which costs are reduced or added are discussed in larger detail above in this section.

5.4.3.4 On-going production

In none of the three cases, the suppliers’ product costing support value analysis to any larger extent. The cost reduction of the on-going production is usually handled as separate projects, focusing on a particular issue. In all three relationships it is possible to change the design the component after the start of the full speed production. This is however relatively rare and when occurring, it can be seen as a late part of the R&D stage. It is usually costly to change design after the full speed production has started.

Apart from the cooperation in the project, the presented costs support the IOCM in two different ways. Firstly, they inform the buyer in general about the situation at the supplier. This could be observed in all three relationships. Secondly, certain modules are used for later projects. This could mainly be seen in the relationship between S3 and B3. The reason is that S3 to a large extent develops its products based on modules.

In literature IOCM normally takes its point of departure from the perspective of the buyer, and then pushes the demands of the market further up in the supply chain. Accordingly the supplier faces a component target cost derived from the market of the buyer, rather than the from its own costs.

“In theory, under target costing customers are unaware of the profits that their suppliers earn on the products they sell.”

(Cooper and Slagmulder, 1999, p 224)

In the three cases, the supplier cooperates with the buyer by providing cost data in order to reduce costs and/or get a better product. A number (but not all) of the IOCM techniques can be seen in at least one of the cases. The use of IOCM techniques differs in different relationships. Also the way they are employed varies within the relationship depending on the characteristics of the exchanged product. The most developed techniques can be seen in the relationships between S3 and B3 and between S2 and B2, whereas fewer of them are employed in the relationship between S1 and B1. This is in line with the IOCM literature. When costly products with a high degree of R&D are exchanged, more refined IOCM techniques are expected to be applied. It is therefore not surprising to observe that S2 and S3 are involved in more intensive IOCM. This is apparent especially during the
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pre-production stages of the project. The cooperation also includes a larger number of IOCM techniques if the product has to be developed from the start compared to one that only has to be modified. The importance of R&D capacity is also underlined by the two companies since it is one of the key factors for staying competitive. In the IOCM literature, the pre-production processes are the most important cornerstones in attaining the target cost. The empirical findings of this thesis are in line with the present body of knowledge.

However, the findings also indicate that the way IOCM is carried out cannot solely be explained by the characteristics of the product. The reason is that the cooperation carried out before the specific project, appears to influence the way the project is carried out. All three suppliers say that it is a significant advantage to have an established relationship with the buyer. The most obvious example is S2, which is almost always the only supplier to B2. This advantageous position is achieved through previous cooperation. The three relationships have a long common history of working together. All three suppliers claim that the buyer has been an important party by supporting changes and improvements in a number of areas. The improvements have been beneficial both in the suppliers’ cooperation with the buyers in this thesis and in general. During the cooperation the relationships are developed and the parties learn to know each other. It means that the two parties have experience from working together and they know who to contact, how to put teams together, whether the other party is reliable etc. One of the key characteristics appears to be trust and next to it exchange of information. The suppliers trust the buyers in the sense that they will not abuse the information they obtain (including cost data) and that they will not spread technical or commercial information to competitors. This means that the suppliers are more willing to share information (including cost data) that is useful for increasing benefits of cooperation. The information exchange has increased the mutual knowledge about each other and one’s capabilities, organizations etc. Therefore the IOCM techniques discussed here are carried out in an on-going relationship, in which the parties have a significant experience from previous cooperation.

The previous cooperation can also explain the relationship between S1 and B1. S1 produces a cheap product with a low degree of R&D. Based on IOCM literature, it is reasonable to expect a more distant relationship based on techniques such as competitive bidding. However, it turns out that even if the product per se offers relatively limited possibilities for cost reduction, it is important that the buyer can trust the supplier mainly in terms of deliveries on time and quality. The trust has been created through previous cooperation (and information exchange) and joint development. This type
of relationship characteristics have only rarely been discussed in the IOCM literature.

5.4.4 General discussion of the interorganizational costing

Compared with a traditional arm’s length relationship on the market, the interorganizational use of cost data supports the supplier to become what is sometimes referred to as an “extended enterprise”. The buyer partly shares problems related to factors that are beyond the supplier’s control. The supplier focuses more attention on the conversion activities. The cost data support the compensation for variances in quantities, the price of the raw material and also regulate certain aspects of purchased products. Apart from these factors, the buyer often pays for the product specific tools for manufacturing used at the supplier’s plant. This also reduces the risks associated with quantity variances. Even if the buyer pays for the tools, the supplier is usually responsible for buying them. The reason is that the buyer wants the supplier to take full responsibility for the quality of the products. The issues presented here are clear examples of how blurred boundaries between the companies can be related to the supplier’s product costing.

In all three relationships one can see how the cost data are used to highlight the supplier’s activities and processes. The presentation of the activities has at least two effects. Firstly, the buyer can “pick” the treatment that is found to be appropriate when the product is designed and secondly, the cost of the activities is highlighted. In an arm’s-length relationship the buyer comes to the boundary of the supplier to order and to pick up the product. The full cost of the product, as it is often presented in the literature, is calculated by the supplier, eventually based on the buyer’s requests. The buyer pays a price based on a full cost. In the case of developed relationships, as seen in this thesis, the situation is different. The buyer, in a close relationship, has good insight into the resources and activities that can be chosen and can also influence adjustments and investments. On every activity the costing is used for presenting “price tags” so that the buyer can see the price of the attributes it is picking for the product. The second aspect is the price tag of the activities and the coordination of the activities of the supplier. This issue is partly related to the cost tables that have been dealt with above. Even if the buyer(s) does not use the detailed type of cost tables seen in certain Japanese companies, it has a substantial experience from cost reduction and different types of manufacturing methods. Due to the close relationship, the buyer gets the opportunity to suggest improvements and investments not only regarding the activities and resources but also how to coordinate the activities. The risk that the supplier has inefficient activities “hidden” inside the company
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decreases, as the buyer gets the chance to find and improve them. The role of the buyer's use of the supplier's costing for improving activities should however not be exaggerated. In the three cases the costing is used to direct attention to a more general level, and not as a benchmark or to support investing in other types of equipment as Cooper and Yoshikawa (1994 a) describe it. For the latter types of situations other sorts of investigations are used.

According to all three suppliers, the price is one of the most important features of the product. It is therefore worth to comment on the use of costing and pricing. The on-going price discussions in all the three cases are at least partly based on the supplier's costs. (This does not mean that inefficiency is accepted by the buyer). However, there are some significant differences between the pricing methods discussed based on the cases and cost-based pricing as it is dealt with in the traditional cost accounting literature. Firstly, the price is partly based on the cost of each single process, type of material etc. described above as a hierarchy. Secondly, in the relationships between S2 and B2 and between S3 and B3, cost platforms from previous projects are often used. This means that the costs have already been reduced with kaizen costing when the project starts. Thirdly, the costs are combined with a good insight into the supplier's capabilities and product costing due to previous cooperation. As mentioned above, all three suppliers state that even if the relationships have been going on for a long period of time, they will just last as long as the buyers consider the suppliers to be the most efficient alternative. Fourthly, the presented costs can reduce the tension that the pricing issue can cause. All three suppliers underline that they are in an industry with hard competition and small profit margins. In their view this is common understanding in the automotive industry. The discussions in the relationships can be intensive regarding the price and related areas. Since the costing is a relatively accepted way of setting the price, it can reduce the potential tension and instead support attempts to reduce the costs. S2's key account manager explains the open attitude as when “the costing shows that the product is too expensive and that the real problem that has to be solved is to reduce the costs and not cheat the other side”. Accordingly, the presented costs can reduce tension and support mutually beneficial cooperation. The use of interorganizational cost data can support changing the cooperation from conflict and negotiation tricks to goal congruence with both parties feeling responsible for reducing costs.
5.5 Changes of the supplier’s costing system due to the relationship with the buyer

This part deals with changes of the routine costing due to the interorganizational use of the supplier’s costs. The traditional mainstream literature on management accounting recognises that different costs are used for different purposes. This means that the information should be determined by the different needs of the users whereas the routine costing tends to be a compromise between a number of different needs. In the three cases, an influential buyer is involved in certain decisions. This could be one reason for changing the routine costing of the company in order to adjust to the needs and demands of the buyer.

When answering the two previous research questions (1 and 2) the discussion are based mainly on the four stages of the project. This research question (3) does not follow the four stages of the project since it not likely that a single stage of the cooperation causes changes of the routine costing.

5.5.1 An overview

The traditional product costing literature deals with a number of factors expected to influence the design of the costing system (for an overview, see e.g. Ask and Ax, 1997). The assumption, often implicit, is that the company is a closed unit that is not influenced by a buyer.

The changes of the routine costing in the three cases are presented in the table below. The table shows how the companies deal with the situation that can occur if the current routine costing system does not match the requirements from the buyer. It should be noted that no supplier has changed its routine costing due to the interorganizational cooperation. The “mismatch” between the buyer’s requirements and the routine costing systems is solved by non-routine costing or adjustments of the calculations from the routine costing. One can also notice that the routine costing issues are seriously discussed due to the external requirements.

The five horizontal areas in the table below deal with how the companies react to the external requirements to present costs.

1. The existing routine costing is used – means that the routine costing is able to support the requirements from the buyer
2. Actual changes of the costing system – means that the company has changed its routine costing system in order to better fit to the demand of the buyer
3. Non-routine costing – means that the company calculates costs for the specific situation. This means that the routine costing system is at least partly replaced by other calculations, investigations, etc.

4. Discussed under serious conditions – means that changes of the routine costing are discussed in formal meetings with the management group or that changes are planned but not implemented. It does not include only a wish by the controller, market manager, etc. If there are serious discussions, there can be three potential results, changing the routine costing (point 2), not changing the routine system (point 5) and not yet decided and the discussion continues.

5. No changes - means that either the company formally decides not to change the costing system or the buyer has not influenced the costing system.

The numbers in the table below refer to the number of the company.

Table 5.10 An overview of what the three suppliers do to provide the buyer with cost data

<table>
<thead>
<tr>
<th></th>
<th>1 Existing routine costing is used</th>
<th>2 Actual changes of the routine costing</th>
<th>3 Non-routine costing</th>
<th>4 Discussed under serious conditions</th>
<th>5 No change of the routine costing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allocation of OH costs</td>
<td>S1 &amp; S2</td>
<td></td>
<td>S1, S2 &amp; S3</td>
<td>S1 &amp; S3</td>
<td>(S1)</td>
</tr>
<tr>
<td>Costing method</td>
<td>S1 &amp; S2</td>
<td></td>
<td>S3</td>
<td>S3</td>
<td>S3</td>
</tr>
<tr>
<td>Standards and variance analysis</td>
<td>S1, S2 &amp; S3</td>
<td></td>
<td>S1, S2 &amp; S3</td>
<td>S1, S2 &amp; S3</td>
<td></td>
</tr>
<tr>
<td>Cost capital and depreciation</td>
<td>S1, S2 &amp; S3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

In some cases S1 does not find its allocation of indirect costs detailed enough in the routine costing system and therefore some changes are made in order to show a more suitable cause and effect relationship. The interorganizational use of the product costing has so far directed attention to the cost allocation since a number of people at S1 are involved in the presentation and calculation of more detailed costs. Changes have been seriously discussed at formal management meetings in which also representatives from the mother company have participated. Up to now S1 has not changed the costing system, but it is not yet finally decided.
standards and other types of inputs are almost always based on non-routine costing. The reason is that in the beginning, when the product is not finally designed, one has to roughly estimate the operation times, etc. Later on and during the life-cycle of the product the variance analysis is calculated in the light of the specific situation, including elements such as quantity or material price variances. Certain inputs and assumptions used for the formal costing system can also be used for the special interorganizational cost calculations.

**S2** normally uses the costing system to provide information for the cost split-up and for special interorganizational cost calculations. B2 has looked at the structure, routines and principles of S2’s costing system, but never uses the product costing directly. The main reason is that B2 prefers to have the costs specified in the “usual way” in the cost split-ups. The calculations of standards and variances are conducted manually based on special investigations. These decisions are non-routine and require more attention to be precise enough.

**S3** has the most complicated situation when it comes to changes of the product costing, due to the costing method and the allocation of overhead costs of the routine costing. The problem is obvious. B3 requires allocated overhead costs and S3 does not allocate them. The issue has been intensively discussed and most people involved show a large interest in product costing techniques. The marketing manager and the key account manager would like to allocate the costs whereas the controller prefers the existing costing system. Providing the market side with a more solid base for pricing discussions and backing a more systematic operative way of working are the main motives for allocating overhead costs. There are two motives for not changing the present costing system. One is that the whole company group has a common system based on common principles. That makes the coordination easier and the management avoids “home made” solutions in the daughter companies. The second motive for not allocating the overhead costs is that it will not solve the problem with the obvious mismatch between the costing system and the cost split-up. The reason is that S3 can develop and adjust the allocation of overhead costs to the requirements of B3. But S3 also has other buyers with other requirements. In order to please the customers, S3 would need to develop “different costs for different customers” which is not practically possible, according to the controller.

### 5.5.2 Discussion about changes of the costing

Regarding the design and changes of the routine costing in the interorganizational cooperation, there are three highly relevant techniques,
the open books, the cost split-ups and the special interorganizational cost calculations.

In all three cases the buyer has investigated the supplier’s routine costing system as a part of the supplier evaluation. In none of them the buyer regards the supplier’s routine costing as very important, but examines it in order to get a basic idea on how the supplier calculates its costs. Since the suppliers and the buyers have been working together for a long time they are well aware of each other’s situations including costs. The buyer has an overview of the structure of the supplier’s routine costing, but is never directly involved in the calculation per se, and does not personally deal with the costing system, such as underlying Excel sheets, MRP system, etc. The buyer has never required totally open books and the supplier has never felt the need to present them. S1 uses the routine costing for presenting two types of reports, the cost split-up and the special interorganizational cost calculation. Occasionally, the routine costing is adjusted for both the cost split-up and the special interorganizational cost calculation.

For S1 the cost split-up is used only occasionally whereas in the other two relationships it is frequently employed. For S1 the cost split-up is only used when the projects involve larger amounts. The costs are then split up in one dimension, which means that only the types of costs (material, labour, etc.) for the entire project are presented. For S2 and S3 the cost split-ups can be divided into two groups, the one-dimensional and the two-dimensional. The one-dimensional merely specifies the costs of a certain project. It is only used at the start of the project when the costs are more roughly estimated. The two-dimensional cost split-up presents the costs on the basis of the type (e.g. material or machinery) and on component level. This means that when the two-dimensional cost split-up is used, a large number of costs (number of components x number of costs) are presented to the buyer. Both the one- and two-dimensional cost split-ups are used frequently.

The special interorganizational cost calculation is used in all three relationships and for a number of purposes. The costs presented to the buyer are based on routine as well as non-routine costing. The supplier almost always calculates the costs in the reports and then presents them in a way appropriate to the situation.

One important aspect related to the three techniques presented above and the design of the routine costing is the access the buyer has to the routine costing. In all the presented cases, the supplier has the possibility to calculate the costs and fill in the reports based on routine costing and non-routine costing. Accordingly there is not a direct connection between the reports that are presented to the buyer and the routine costing. This does not exclude the fact that the buyer can question how the presented costs are calculated if they appear
to be unreasonable. If the buyer had total access to the costing system, the problem related to the routine costing would be more complicated since the supplier would probably be more bound to its routine costing system. In the studied cases, the supplier can act as a filter between the interorganizational reports (i.e. cost split-up and special interorganizational cost calculation) and the routine costing, and that renders changes to the routine costing less important or urgent.

Even if the costs in the reports can be adjusted or calculated in different ways, the routine costing is influenced by the interorganizational cooperation. The most problematic and most discussed areas are related to the allocation of overhead costs and the costing method.

The allocation of overhead costs is the most discussed issue in two cases, S1 and S3. Even if none of the companies have changed the routine costing, both S1 and S3 have discussed it under serious conditions. The allocation issue has also been discussed at S2. The main motive is the desire to avoid exceptions and adjustments with the non-routine costing and instead have routine costing albeit partly cover some of the interorganizational costing situations. All changes conducted with the non-routine costing strive for what is experienced as an improvement regarding cause and effect. This means that the whole project is examined and the calculations are adjusted to get the costs that are caused. The attempt to link causes with effects is in line with the main development of cost accounting throughout the century (e.g. Horngren, 1995).

The costing method is only discussed at S3, since it is the only supplier not allocating all overhead costs. This is the product costing issue mostly discussed at S3. The costing method is discussed at company group level under formal conditions. It also appears that it is an issue that is regarded as important. The two persons appearing most interested in the costing method issue, are the market manager and the key account manager, the two officials who mostly deal with the commercial part of the buyer relationship.

Regarding the standards, there are normally two different approaches to set their level, the realistic and the motivational (e.g. Frenckner and Samuelson, 1984). The realistic approach is mainly used for planning while the motivational is used to motivate the employee or organizational unit with the ability to influence the achieved level of the standard. In the studied cases a third approach can be seen, namely the presentable. The presentable level provides the buyer with information for a number of different purposes. This does not mean that the presentable level of a standard of, for example, a machine operation is necessarily different from the realistic, despite the differences in the underlying purpose. It is almost impossible to find out whether the level of the standards is different for the
internal and external product costing in a case study in which both sides take part. Naturally, a supplier would not tell a visiting researcher that the presented standards are adjusted in order to earn money if the buyer was going to read the report. The second aspect deals with variance analysis which, for interorganizational purposes, only deals with external factors such as quantities and the price of raw material beyond the supplier's control. The variances are only calculated on a basis of non-routine numbers from the standards presented. The issue regarding external and internal variance analysis has not been discussed to any large extent and does not appear to be particularly problematic.

The fourth category of costing deals with the cost of capital and depreciation. This issue is not discussed or dealt with in any of the three studied cases. Nor has it internally been regarded as a problem that needs change. This might be a bit surprising since costs of capital and depreciation for machines and factories are a significant part of the conversion costs. As mentioned above, the buyer has examined the supplier's costing systems. Accordingly the buyer accepts the supplier's way of calculating its costs. After that, none of the underlying factors have been discussed to any larger extent in the interorganizational cooperation. Another reason for not discussing the costs of capital and depreciation is perhaps that the buyer, according to the suppliers, has a good knowledge of approximately how much certain machines normally cost based on experience from other suppliers.

A number of changes of the product costing due to interorganizational cooperation are discussed above. Apart from the changes, the frequency of product costing apparently increases. Because of the interorganizational cooperation a number of additional situations in which costs are calculated occur. The interorganizational costing situations, based on intraorganizational costing, appear to support the work carried out jointly with the interorganizational cost management issues.
6 Conclusions and further research

This chapter is divided into two main sections, the conclusions and the suggestions for further research. The conclusions answer the research questions presented in chapter two (section 2.4). The section on further research presents three potential areas for further research based on the findings of this thesis.

6.1 Conclusions

The conclusions summarise the analytical part of the previous chapter in order to, as Keating (1995) states it, answer the basic question:

“…what have we learned about management accounting from this case study?”

(Keating, 1995, p 67)

In chapters four and five, a number of phenomena are described and discussed. To a large extent they are presented in the way they are carried out in the “reality”. In this section the complexity of the cases is reduced and the findings are discussed in order to emphasise what has been learned from these case studies. The conclusions are accordingly based on the theoretical points of departure in chapter two, the descriptions in chapter four and the analysis of the findings in chapter five. Since the theoretical points of departure are based on three parts (product costing, interorganizational relationships and IOCM), the contributions to theory will be directed to the same three theoretical fields.

The presentation of the conclusions is structured to answer the three research questions which are:

1. What kinds of decisions are made when the supplier’s product costing and other types of cost data are used in the relationship between the supplier and the buyer?
2. How are the supplier’s product costing and other types of cost data designed for interorganizational cost management?
3. Has the supplier changed or seriously discussed changing its costing system because of the relationship with the buyer?
The first and the third research questions are related to the mainstream body of knowledge in product costing and management accounting. The second research question is mainly related to the existing knowledge of IOCM. The discussions regarding interorganizational theories (section 2.2) are related to all three research questions in a more indirect way. They provide a wider picture of the environment in which the discussed phenomena are seen.

From the theoretical point of departure of this thesis, a main part of the cooperation in all three relationships is carried out in projects. Since the stage models normally presented in the IOCM literature are based on the buyer’s perspective (i.e. the buyer’s stages), they include aspects that are not relevant for the supplier and exclude others which ought to be included. Therefore the project from the supplier’s perspective is described based on four main categories: supplier selection, concept, research and development and on-going production. This framework is derived from the findings of the three cases, although inspired by Cooper and Slagmulder (1999) and Ansari et al (1997). It serves two purposes, firstly to categorise the interorganizational cooperation from the buyers perspective, and secondly to serve as a framework when certain activities are discussed. This type of categorisation has not been presented before in the IOCM literature, although the literature mentioned above in this section alludes to it.

6.1.1 The use of product costing and other kinds of cost data in the relationship

Product costing and management accounting are normally seen as tools used internally in the company and accordingly interorganizational costing situations are not considered. The way accounting is used is dealt with in several different ways in the literature depending on the perspective (e.g. Mellemvik, et al 1988). In this thesis the official and intended purposes of decision making are chosen. The reason is that this thesis takes its point of departure in the traditional product costing, occasionally referred to as the conventional wisdom. Since this is a new type of situations the main contribution is a description based on a relatively traditional framework, enabling comparisons and additions to the existing conventional wisdom of management accounting. The use is divided into a number of steps:

- Firstly 15 different situations are identified in which the product costing is used in at least one of the relationships.
- Secondly the way the costs are calculated in each situation in terms of cost object and the routine and or non-routine costing is presented.
Conclusions and further research

• Thirdly the frequency of the costing situation is presented.
• Fourthly the 15 different costing situations are related to the stage model developed in chapter five.

By combining the 15 situations with the three dimensions, a richer description is achieved, making both discussions on single cases as well as comparisons more fruitful.

One main conclusion is that the concept and R&D stages are key stages in which the product costing and other cost data are used. This can be seen both in the number of situations and how common the situations are. It is also possible to see that in a simple relationship in terms of common R&D, a smaller number of situations occur and they are also less frequent. In the two relationships involving a larger degree of common R&D (S2 and S3), the simpler product involves more frequent interorganizational calculations. This slightly surprising finding can be explained by the way the products are developed i.e. parallel vs. simultaneous.

Another important and critical stage is the supplier selection. The ways the costs are calculated and offers are prepared differ significantly, mainly due to the degree of common development of the product. With a simple product the offer is prepared in a way appearing rather traditional. When the product is developed together, the offer is based on previous discussions and the supplier has already started the development process in order to be able to provide an offer together with an early prototype.

It is somehow surprising, that the presented cost data plays a relatively minor direct role in cost reductions during the on-going production. One reason could be that the cost reduction is not achieved with one single calculation, but the presented costs can still provide a general view that certain processes, treatments etc. are more costly than they ought to be. Another reason could be that certain types of cost reduction programmes are initiated by the buyer and are carried out as projects going directly to the issue they deal with. Another reason could be that the on-going cost control with standards and variance analysis are only calculated and used for internal purposes.

It is not surprising that the pricing decisions are thorny and important issues in the studied relationships. However, the pricing processes show some differences compared to how they are dealt with in the literature. Based on full cost they are similar to existing literature (e.g. Ask and Ax, 1997). This is also in line with the Swedish costing tradition that appears to be widely spread in practise. However there are some differences between what is explored in the cases and traditional cost based pricing.
1. The price is usually based on each single process, detail etc. due to the transparency provided by the exchanged cost data.

2. In the two research intensive relationships it is also possible to find that the platform (elaborated below) serves as a point of departure for further changes of the product during its life-cycle and occasionally also for later projects.

3. The pricing based on costs is combined with good knowledge about the supplier, ensuring that the calculated costs are based on efficient manufacturing and administrative processes.

4. The use of product costing can in some cases reduce tension in the critical pricing discussions. This is achieved by presenting possible reasons for a price perceived as high.

It should be noted that the ways of using product costing and other types of cost data in the studied cases take place within relationships which have lasted for a long period of time, in which mutual trust and commitment are developed along with significant exchange of information. All three relationships appear to be run in an open and problem-solving atmosphere.

6.1.2 The design of the supplier’s product costing and other types of cost data for interorganizational cost management

In the IOCM literature a number of methods, techniques are discussed. (For presentation purposes in this thesis they are all referred to as IOCM “techniques”). Based on a literature review, they are discussed and compared in the frame of reference. As the name IOCM implies, they are all related to cost management in interorganizational situations. The focus on management of costs means that IOCM includes a large number of issues such as purchasing, supply chain management and R&D, to mention a few. In many cases there is no distinction between the cost data and the decisions made, which is common in the main-stream literature on product costing and also applied in this thesis (research question one). The relatively wide focus on IOCM contrasts with this thesis which solely concentrates on how the suppliers’ cost data is presented and used in relationships in which different types of IOCM techniques are employed.

With one main exception, the IOCM techniques take their point of departure in the buying company. In the studied cases a new type of technique called the special interorganizational cost calculation is identified. It is worth noting that this technique is observed in all three relationships, which in many ways appear similar to the ones dealt with in IOCM literature. Depending on the situation, this type of technique is presented in different forms. The contribution of this identified technique is that it
Conclusions and further research

underlines that the supplier’s cost data supports IOCM in a way that has not been described before. Accordingly the results of this thesis implies that IOCM is carried out jointly between the buyer and the supplier, rather than a buyer pushing the pressure of the market upstream in the supply chain by using TC. The way the suppliers’ product costing supports IOCM is discussed with a larger degree of precision by looking at each single step of the project.

After exploring special interorganizational cost calculation, the observed IOCM techniques are described, discussed and related to each other. In the two relationships involving more R&D and complex costly products, more advanced IOCM techniques are observed. The findings are in line with what could be expected and therefore to a large extent confirm findings in previous literature (e.g. Cooper and Slagmulder, 1999). However, a main part of the literature on IOCM appears to be based on relatively general standard practise and anecdotal evidence (Koga, 1999). Therefore such a description and categorisation can be seen as a contribution, presenting how IOCM is applied in “reality”. Further, a main part of IOCM literature deals with Japanese companies, whereas this thesis deals with companies located in Sweden.

By studying the supplier’s side of the IOCM, two phenomena are seen. The first is called a hierarchy and shows how the decomposition of the component target cost, facing the supplier, is further broken up by using the supplier’s product costing. This means that each single treatment, component, process etc can be discussed. The second is a type of platform which can be observed when there is a larger extent of development of a new product, or different types of modules are used. A result of the platform is that the boundaries of a project, which is the main unit of analysis in IOCM, are blurred since the platforms are used in more than one project. This also means that a project can directly benefit from previous project’s cost reductions. Further, the platform is combined with R&D and supplier selection for pricing purposes, which appears to be one of the key issues in TC. This way of setting prices and selecting suppliers has not previously been dealt with in the IOCM literature and accordingly a new phenomenon has been explored.

As also mentioned in the previous section, it should be noted that the presented cases have a long common history in which mutual trust, significant information exchange and knowledge about each other’s situation are developed.
6.1.3 Changes of the supplier’s costing system due to the relationship with the buyer

It is possible that a buyer could influence the design of the routine costing in the same way as there can be mutual adaptations in other areas.

In order to present a wider picture, the changes are discussed in terms of whether the existing routine costing is used, changed, partly replaced by non-routine costing and/or discussed under serious conditions and finally whether it is decided not to change it.

No company in the thesis has changed its routine costing due to its buyer. In some areas the costs are calculated using non-routine costing instead of routine costing, mainly regarding level of standards and the allocation of indirect costs. However, two of the companies have seriously discussed changes regarding allocation of indirect costs. Since the routine costing is a compromise between a number of different needs, the buyer is just one of many other factors that could influence the design. Therefore it is difficult to draw more general conclusions, although it is still worth noting that changes of the costing system have been seriously discussed. Two motives are presented that make it less urgent to adapt the routine costing to the way the buyer wants the costs to be presented. Firstly, the product costing is not directly related to the demands of the customer. The supplier is able to make adjustments. The second aspect is mentioned by S3, which has a number of large buyers, i.e. different buyers have different requests. This means that it would be rather difficult to fully adjust the routine costing to the demands of the buyers since it would require a number of routine costing systems, or as the controller of S3 says: “different costs for different buyers”.

6.2 Further research

The results of this thesis can be used in different ways for further research. This section suggests a few of them.

The studied cases indicate that, even if a main part of the description focuses on the single project, the relationship outside the project is important. This has mainly been presented as characteristics of a close relationship. The IOCM literature usually focuses on the project/product. When studying buyer-supplier relationships, it can be worth considering widening the focus by including the relationship rather than the single transaction (project). To develop this type of relationship takes time and resources, and is therefore a long-term investment. If the relationship is the focus, the product that is purchased (project) is too narrow for describing
the exchange process. The product (the exchanged item) that is usually regarded as relatively homogeneous (or a set of attributes) would instead be seen as a heterogeneous part of an on-going exchange process if one considers that the exchange takes place within a relationship. From this wider perspective, the presented costs can be seen as a part of the whole exchange process within the relationship. The costs which are added to the other features of the cooperation can have a number of potential positive effects for the buyer such as an assurance that the price is reasonable, a way of getting knowledge about the supplier market, learning about the cost structure, learning about the cost drivers and a manifest of commitment. It means that the role of cost data will get a wider focus than in this thesis and the presented and discussed costs are part of the exchange process that add value not only to the product but also to the relationship. This type of research could benefit from a theoretical field with a wider focus on the relationship, such as the interaction approach.

There are also other ways to continue developing further knowledge on interorganizational use of costing and IOCM. This thesis has looked at IOCM mainly from the perspective of the supplier. The IOCM literature usually underlines the importance of supplier relationships. However, the techniques and focus that are dealt with in the literature almost solely relate to the buyer. This appears surprising due to the importance of the suppliers both in terms of their short-term impact on the buyer’s direct material and as providers of competence, technology, market knowledge etc. This thesis indicates that the supplier is playing an important and active role regarding the IOCM and that setting the target cost in this type of relationships is far more complicated than usually presented in the IOCM literature. Therefore further research regarding IOCM from the supplier’s perspective would probably increase the understanding of IOCM.

Based on this thesis, there are other ways to continue developing knowledge. One way could be using a different method(s). A traditional view of case studies is that they can be used as a basis for survey studies and statistical generalisation. As presented in the beginning of the analysis of the data (chapter five) this thesis deals with a narrow type of cases. Survey studies could benefit from the results and continue developing knowledge in at least three ways. Firstly a descriptive survey could use a wider sample from different industries, different buyers etc. That would create knowledge regarding how common the phenomena are in other situations. Another way would be to use the results for generating hypotheses in order to test correlation. That could show if there are significant differences depending on factors discussed in this thesis. By using a survey, it would also be possible to find out results from interorganizational relationships that are not working in a way that is beneficial for both parties. A case study
involving both parties will probably not be able to find out problems or opportunistic behaviour since the report will inform the other party about secrets that exist in that type of relationships.
References

The references are listed in the Swedish alphabetical order.


Ansari, S., Bell, J. E., and The CAM-I Target Costing Core Group (1997), Target Costing – The Next Frontier in Strategic Cost Management, Irwin, Chicago


249


Clark, J.M., (1923), *Studies in the economics of overhead costs*, Chicago


Clifford, P. G., (2000), Performance in Interorganizational Relationships (IORS): The Relative Impact of IOR Structure and Process on Relationship-related Efficiency and Effectiveness, PhD-Thesis, Weatherhead School of Management, Case Western Reserve University, Cleveland


Frenckner, P., (1986), *Från kostnadsberäkning till ekonomisk styrning – fyrtio års kostnadsintäkts analys med Paulson Frenckner* (From Cost Accounting to Management Control – Forty Years with Paulson Frenckner), Mekan IFL, Stockholm


Harland, C. M., (1996), Supply Chain Management: Relationships, Chains and Networks, *British Journal of Management,* 7 (Special Issue/March): 63-80


References

Hill, C. A., (1998), An Empirical Study of The Impact of Supply Chain Integration and the Information Technology Within the Food Industry, PhD-Thesis, Graduate School of Vanderbilt University, Nashville


Hopwood, A. G., (1983), On Trying to Study Accounting in the Contexts in which it Operates, Accounting, Organizations and Society, 8(2/3): 287-305

Horngren, C. T., (1995), Management Accounting: This Century and Beyond, Management Accounting Research, 6(3): 281-286


Häckner, E., (1985), Strategiutveckling i Medelstora Företag, PhD-Thesis, University of Gothenburg, Gothenburg

255
Hägg, I., and Hedlund, G., (1979), "Case Studies" in Accounting Research, Accounting, Organizations and Society, 4(1/2): 135-143

Hägg, I., and Johansson, J., (1982), Företag i Nätverk – Ny Syn på Konkurrenskraft, SNS, Stockholm


Johansson, S.-E., Östman, L., (1992), Lönsambetskraw-redovisningsmätt-styrning, (Rate of return - Financial Measurements - Control), Studentlitteratur, Lund


References

Kaplan, R. S., (1977), Application of Quantitative Models in Managerial Accounting: A State of the Art Survey, University of Wisconsin Press, 23(Jan): 30-71

Kaplan, R. S., (1982), Advanced Management Accounting, Prentice-Hall, New Jersey

Kaplan, R. S., (1986), The Role of Empirical Research in Management Accounting, Accounting, Organizations and Society, 11(4/5): 429-452


Koga, K., (1999), Determinants of Effective Product Cost Management During Product Development: Opening the Black Box of Target Costing, PhD-Thesis, Graduate School of Business, Harvard University


Miles, M., and Huberman, A., (1984), *Qualitative Data Analysis*, Sage, Beverly Hills, CA


References


Normann, R., (1992), Service Management: Ledning, Strategi i Tjänsteproductionen, (Service Management: Management and Strategy for producing Services), Liber Ekonomi, Malmö

Olson, J. R., (1999), Information Exchange in a Supply Chain: An Empirical Investigation, PhD-Thesis, The Graduate College at the University of Nebraska, Lincoln Nebraska


Otley, D. T., and Berry, A. J., (1994), Case Study Research in Management Accounting and Control, Management Accounting Research, 5: 45-65


Poole, R. R., (1997), The Impact on the Buyer-Seller Relationship of Firms Using Electronic Data Interchange, PhD-Thesis, University of North Texas


260
References


Scapens, R. W., (1990), Researching Management Accounting Practice: The Role of Case Study Methods, British Accounting Review, 22: 259-281


Schermerhorn Jr, J., (1975), Determinants of Interorganizational Cooperation, Academy of Management Journal, 18: 846-856


261


Sillen, O. (1912), *Grunddragen i industriell självkostnadsberäkning*, (The basics of industrial absorption costing) Stockholm


References


Tomkins, C., (2001), Interdependencies, Trust and Information in Relationships, Alliances and Networks, Accounting Organizations and Society, 26: 161-191


Webster, F. E., (1992), The Changing Role of Marketing the Corporation, Journal of Marketing, 56: 1-17


Wilson, D. T., Dant, S. P., and Han, S.-L., (1990), State of Practice in Industrial Buyer-Supplier Relationships, Report 6:1990 of Institute for the Study of Business Markets, University Park PA


Young, C. E., (1996), The Role of Transaction Cost Theory and Social Exchange Theory in Strategic Alliance Commitment, PhD-Thesis University of California, Irvine


Appendix

Guide for the semistructured interviews with S2 and S3
This guide was used a checklist for the relatively open initial discussions.

Data about the interviewee
- position and main tasks.
- background (previous positions, experience and education).

General company data
- general data such as organisation, employees, products.
- description of what S2 /S3 is doing.
- history – main events and the development during the last five years.

Relationship with the buyer – general
- historical development – experience and other.
- main benefits from working with the buyer.
- problematic issues related to the buyer.
- differences between different buyers.
- the relationship from “the characteristics of a close relationship”.
- what is S2/S3 doing to support the buyer (e.g. competence, improvements).
- how will the future relationship with the buyer be? (wider discussions)
- How is the interview working together with the buyer and how has the buyer influenced the tasks the interviewee is performing?
- Who is involved in the cooperation?
- Describe the relationship in general?

Product costing
- How is the interviewee’s general experience regarding S2/S3’s product costing?
- How is the interviewee using the product costing and related areas?
- For the CFO/controller – describe in detail the costing system and other parts of the enterprise system?

The use of product costing the in the relationship with the buyer
- How is the interviewee using the product costing in his relationship with the buyer? Describe in detail every situation when costs are presented to the buyer.
- Who is calculating the costs and how and when?
- How are other people using the product costing with the buyer?
• For the decisions that are made, what role does the cost data have and what other types of information is used?
• What is the interviewee’s opinion about the way cost data is shared and what would he like to change?
• Experienced or expected problems with the way cost data is used now?
• Discussion regarding certain potential areas (e.g. pricing and cost reduction)
• What kinds of cost data is the buyer providing?

Product costing for interorganisational cost management
• Describe in detail how costs are reduced, prices are set, improvements of products, processes tries to reduce costs, improve the product etc. Who is doing it? What types of cost data are used?
• Problematic areas?
• Achievements?
• Critical and important areas for this way of working
• Discuss the way of working along with the techniques identified in literature

Changes of the product costing system
• What is the interviewees opinion about the way costs are calculated?
• How would the interviewee like it to be?
• Why is it not the way it “should be” i.e. reasons not for changing the costing system?
• Have changes been discussed and in that case, what arguments where presented and by who?
• Problematic issues with changing the costing system.

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