



School of Business,  
Economics and Law  
GÖTEBORG UNIVERSITY

# Calculation of Industrial Services - A Case Study at SKF

Master Thesis in Business Administration  
Studies in Management Accounting  
Spring 2007

Tutor: Urban Ask

Authors: Fredrik Persson, 78  
Henrik Rutgersson, 83

## **Thanks!**

We would like to thank our tutor Urban Ask at the School of Business, Economics and Law at Göteborgs Universitet and our contact person Henrik Widén at SKF Service Division Nordic Region. Your constant availability and your support with valuable opinions has been a great resource for our study.

We would also like to thank all persons that participated during the interviews at SKF.

Gothenburg, March 2007

Fredrik Persson

Henrik Rutgersson

## Summary

**Graduate thesis in Business Administration, School of Business, Economics and Law  
Göteborgs Universitet, Studies in Management Accounting, Master thesis, Spring 07**

**Tutor: Urban Ask**

**Authors: Fredrik Persson and Henrik Rutgerström**

**Title: Calculation of Industrial Services – A Case Study at SKF**

**Background and problem discussion:** We believe it is of high interest studying potential problems with costing industrial services based on the fact that literature have stated that manufacturing are moving towards becoming more service oriented, but at the same time literature is rather limited in terms of discussing costing of services. Based on this discussion we have decided on conducting an explorative case study at SKF. The knowledge that SKF have stated that they are shifting towards becoming more service oriented in combination with fact that they for long have played an important role in Swedish accounting practise makes them an interesting example when searching for potential problems within calculation industrial services.

From our background and problem discussion, we have stated the following research question:

*What potential problems might exist in the process of calculating industrial services?*

**Purpose:** The primary purpose with this thesis is via an explorative case study at SKF identify and exemplify potential problem in the process of calculation industrial services in a manufacturing company moving towards becoming more service oriented. The secondary purpose is via a theoretical framework categorise the potential problems in a structured manner.

**Method:** As our study focuses on a relatively limited research area we have chosen an explorative approach. We have chosen a case study as research method based on the fact that our study considers a current phenomenon; manufacturing companies that moving towards being more service oriented, and the fact that we have the possibility to focus on a well defined system; the calculation process.

**Empirical findings and conclusions:** From literature studies and pilot interviews at SKF we have created a model for our empirical findings focusing on; direct cost, relations cost, overhead cost and profit margin. Beside these overall areas we have also focused on definition of services, practical guidelines and standard cost. Through our empirical findings and analysis we have identified and deduced problems in the calculation of industrial services to all of our seven specified areas. We believe that our findings could be interesting for both practitioners and for future research regarding calculation of industrial services.

# Table of Contents

Page

<b>1 INTRODUCTION</b>	<b>7</b>
1.1 Background .....	7
1.2 Discussion of the Problem .....	7
1.2 Problem Definition.....	9
1.3 Purpose.....	9
<b>2 METHODOLOGY</b>	<b>10</b>
2.1 Research Approach .....	10
2.2 Research Method.....	11
2.3 Data Collection.....	11
2.3.1 Secondary Data.....	11
2.3.2 Primary Data .....	12
2.4 Data Collection Techniques.....	13
2.4.1 Interviews and Documentation.....	13
2.4.2 Semi-Structured and Unstructured Interviews .....	14
2.5 Selection Methods .....	14
2.5.1 Selection of Case Company.....	14
2.5.2 Effects of having SKF as our Case Study Company .....	16
2.6 Realization of the Study .....	17
2.6.1 Developing the Questioner.....	17
2.6.2 Guidelines for Interviews.....	17
2.6.3 Realization and Selection of Interviews .....	18
2.6.4 Analysis of the Empirical Findings .....	20
2.7 Evaluation of Study .....	21
2.7.1 Validity .....	21
2.7.2 Reliability .....	21
2.7.3 Critique of Sources.....	22
2.7.4 Possibility to Generalise.....	23
2.8 Summary of our Method Selections.....	23
<b>3 THEORETICAL FRAMEWORK</b>	<b>24</b>
3.1 Defining a Service .....	24
3.1.1 A Classification of Services.....	25
3.1.2 The Service Infusion in Manufacturing Companies .....	27
3.2 Product Costing .....	27
3.2.1 Absorption Costing.....	28
3.2.2 Variable Costing .....	28
3.3 Standard Costing .....	29
3.4 Direct Costs.....	30
3.5 Relationship Costs .....	31
3.5.1 Relationship Cost as a Model .....	32
3.6 Overhead Costs .....	33
3.6.1 The Traditional-method .....	33
3.6.2 The ABC-method.....	35

3.7 Profit Margin.....	37
3.7.1 Cost-based .....	37
3.7.2 Value-based .....	38
3.7.3 Competition-based .....	38
<b>4 EMPIRICAL RESULTS</b>	<b>39</b>
<hr/>	
4.1 Defining Service at SKF .....	39
4.1.1 Current Definitions and Classifications .....	39
4.1.2 Problems Related to Insufficient Service Classification .....	40
4.1.3 Practical Categorisation .....	41
4.2 Practical Guidelines for Calculating Services .....	42
4.2.1 Standardised Template/Checklist .....	42
4.2.2 Full Cost Distribution versus Variable Costing.....	43
4.3 Standard Costs .....	43
4.3.1 Standard Costs in Relation to Development Costs.....	45
4.4 Direct Costs.....	46
4.4.1 Identifying and Quantifying Direct Costs.....	46
4.4.2 Purchasing .....	47
4.4.3 Other Viewpoints Concerning Calculation of Direct Costs .....	48
4.5 Relationship Costs .....	48
4.6 Overhead Cost.....	50
4.6.1 Overhead Cost Object.....	50
4.6.2 Keys for Distributing Overhead Costs .....	50
4.6.3 Other Viewpoints Concerning Calculation of Overhead Costs .....	52
4.7 Profit Margin.....	52
4.7.1 Practical Guidelines for Setting the Profit Margin .....	52
4.7.2 Pricing Strategies .....	53
4.7.3 Risk Analysis .....	54
<b>5 ANALYSIS</b>	<b>55</b>
<hr/>	
5.1 Defining and Classifying Services .....	55
5.2 Practical Guidelines for Calculation .....	56
5.3 Standard Costs .....	57
5.4 Direct Cost .....	59
5.5 Relationship Costs .....	60
5.6 Overhead Cost.....	61
5.7 Profit Margin.....	62
<b>6 CONCLUSION</b>	<b>64</b>
<hr/>	
6.1 Conclusions.....	64
6.2 Suggestions for Future Research .....	66
<b>7 REFERENCES</b>	<b>67</b>
<hr/>	
7.1 Books and Articles .....	67
7.2 Other .....	69

## **Table of Figures**

- Figure 1: A structural frame for our study
- Figure 2: Summary of interviews
- Figure 3: Service matrix
- Figure 4: Summary of methods selections
- Figure 5: The service process matrix
- Figure 6: Tracing cost
- Figure 7: Schematic model how the sellers relationship costs impact on the sellers result
- Figure 8: Distribution of overhead cost with the traditional method
- Figure 9: Distribution of overhead cost with the ABC-method
- Figure 10: Primary considerations in price settings
- Figure 11: The respondent's categorisation of services
- Figure 12: Summary of our findings

## **APPENDIX**

- Appendix 1: Calculation of Industrial Services – Semi-structured questioner (second version)
- Appendix 2: Calculation of Industrial Services – Time and Activity Plan
- Appendix 3: Time plan - Interviews
- Appendix 4: A Structural Frame for this Study

# 1 INTRODUCTION

---

*In this chapter we will describe the background to our problem and through a discussion define our problem question. We will also describe the purpose with this thesis.*

## 1.1 Background

The authors came across the subject for this thesis during one insightful and interesting discussion with our tutor Urban Ask. Without having decided upon a specific subject we had been in contact with several companies in the quest of locating an organisation where we could conduct a case study. One company that we had a first initial contact with was SKF mostly based on the fact that both authors have a genuine interest for SKF.

The SKF Group is the leading global supplier of products, solutions and services in the area comprising rolling bearings, seals, mechatronics, services and lubrication systems. The Group's service offer also includes technical support, maintenance services, condition monitoring and training.

We received information from our tutor that SKF is involved in a general transition where they are moving from being focused on products, to including more services operations. At the same time SKF had explicitly stated that they have some difficulties calculating some of their industrial services. We both felt that this was an interesting problem area. After a few phone calls with different personnel at SKF we ended up in contact with Henric Widén, Business controller at SKF Service Division Nordic Region. He could immediately relate to the difficulties with calculating industrial services, but at the same time he could not clearly state what the problem was.

Together with Henric we discussed different problem areas and possible approaches for a case study at SKF Service Division Nordic Region. Finally we came to the conclusion that we should have a broad focus on the calculation process of their industrial services in order to identify as many relevant problems as possible.

SKF has since it began manufacturing rolling bearings in 1907 been an important part of the Swedish industry. SKF has also played a key role in the Swedish cost accounting debate (Ask, Ax, Bergevärn & Jönsson, 1992).

## 1.2 Discussion of the Problem

Services today are without comparison the largest and most important part of modern business environment. This is true even in the manufacturing industry (Hörberg, 1994). Traditional production oriented companies such as; ABB, SKF and Volvo, are all moving towards delivering comprehensive solutions, where services are becoming increasingly important (Nordin, 2005).

Grönroos (1996) and Edvardsson, Gustafsson, Johnson & Sanden (2000) argues that it is becoming more difficult for manufacturing companies to differentiate themselves only

through offering superior products. Instead they have to differentiate themselves by incorporating innovating services, in their total offerings. According to Oliva & Kallenberg (2003) management literature is almost unanimous in suggesting to product manufacturer to integrate services into their core product offerings. They further argue that the literature is surprisingly sparse in describing to what extent service should be integrated, how it should be integrated or in describing the challenges inherent in the process.

The transformation towards including a higher degree of services in the “product solution” has in some cases produced some managerial difficulties for the industrial companies (Nordin, 2005; Oliva & Kallenberg, 2003). According to Burns & Scapens (2000) the recognition that existing ways of thinking within an organisation can have an important influence on processes of management accounting change. They further argue that attempts to introduce new management accounting systems and techniques, without careful consideration of the prevailing institutions within the organisation, is likely to encounter resistance.

Hansen & Mowen (2006) argues that traditional cost accounting has emphasized on companies manufacturing physical products and virtually ignored costing of services. The authors of this thesis are ready to agree up this statement, based on the fact that we spent a considerable amount of time in the initial stage of this study trying to gather prior research which focuses on the costing of services. The result was very limited indeed.

Instead we started to look at other research areas such as “Service management” literature and came across research conducted by the “Nordic School”, spearheaded by; Christan Grönroos, Richard Norman and Bo Edvardsson. They all argue that services are inherently different from products, which in some occasion can have an impact on the cost accounting (Edvardsson et al., 1999; Grönroos, 1996; Normann, 2000). Edvardsson et al. (2000) further state that the service content in various products in the manufacturing industry has had a rapid increase, in recent years. In fact, it is common today that the majority of a workforce in what is generally seen as a manufacturing firm is devoted to various internal and external service activities.

Morris & Fuller (1989) argues that industrial services differ from products in a number of fundamental ways. Industrial services both include a high level of tangible and intangible elements (Edvardsson et al., 2000). Fransson (2004) view industrial services as “Functional products” and define them as: “*A specific hardware which usefulness is maintained through necessary by-services*“.

We believe it is of high interest studying potential problems with costing industrial services based on the fact that literature have stated that manufacturing are moving towards becoming more service oriented, but at the same time literature is rather limited in terms of discussing costing of services.

Based on the discussion above we have decided upon conducting an explorative case study at SKF. The knowledge that SKF have stated that they are shifting towards becoming more service oriented in combination with the fact that they for long have played an important role in Swedish accounting practise makes them an interesting example when searching for potential problems within costing industrial services.



## **1.2 Problem Definition**

With consideration to our previous background and problem discussion, we have stated the following research question:

- **What potential problems might exist in the process of calculating industrial services?**

## **1.3 Purpose**

The primary purpose with this thesis is via an explorative case study at SKF identify and exemplify potential problems in the process of calculating industrial services in a manufacturing company moving towards becoming more service oriented.

The secondary purpose is via a theoretical framework categorise the potential problems in a structured manner.

## 2 METHODOLOGY

---

*In this chapter we will describe how this study has been conducted, discuss the choices we have made and critically evaluate them.*

### 2.1 Research Approach

According to Patel & Davidson (1994) there is a general classification of the different research approaches between; *explorative*, *descriptive* and *testing of hypothesis*. The principally distinction is based on the amount of information that is available for the specific problem area before the research starts (Ibid).

In consideration to our background and problem discussion we have chosen to conduct an explorative study. The primary reason why we have preferred an explorative approach is based on our perception that the prior research focusing specifically on costing of industrial services is rather limited. This view is shared by Hansen & Mowen (2006) and Oliva & Kallenberg (2003). But at the same time we can not for certain exclude the possibility that our inability in searching for research material is the reason behind this perception. We however consider that this is not the case.

According to Patel & Davidsson (1994) the amount of prior research is an important factor when choosing research approach. When there are limitations in the knowledge, one would have to explore the subject in order to understand the underlying nature of the problem (Ibid). These types of studies are called explorative studies. The main objective with explorative studies is to examine phenomena that are more or less unknown (Andersen, 1998). Practitioners have acknowledged that there are difficulties calculating industrial services, but there is limited knowledge of what the problems consists of<sup>1</sup>. In this explorative study the problem area will be highlighted with a broad approach, with the objective to gather as much relevant knowledge as possible with regards to our specific problem area (Patel & Davidsson, 1994). To be able to approach our problem area in a comprehensive and structured way we have created a wide theoretical framework. From the framework and through our own competence together with knowledgeable personnel at SKF we have tried to identify as many relevant research approaches as possible. This wide approach is a means of verifying that our study will include as many underlying factors to the specific problem as possible.

An explorative study can be used as a pre-study in a descriptive study, or more explicitly; be used to identify problems in an organisation (Andersen, 1998). As been stated earlier our purpose with this thesis is primarily to identify potential problems with calculation industrial services.

---

<sup>1</sup> This is to certain extent based on our contact person at SKF perceptions. His perception is regarded as being relevant, based on the fact that he has practical knowledge regarding the subject.

## **2.2 Research Method**

According to Andersen (1998) there are two main methods upon which research can be based: *quantitative methods* and *qualitative methods*. The quantitative method is characterized by statistical and mathematical analysis, where the guidelines through out the study are clear cut and formalised. The qualitative method is characterized by verbal analysis and focuses on obtaining deeper understanding (Patel & Davidsson, 1994). In a qualitative study the researcher is trying to get as close as possible to the research objective, in order to receive a deeper understanding (Holme & Solvang, 1997).

In our study we have chosen a qualitative research method. The way we have chosen to conduct our study is based on the purpose we have formulated. We considered it being necessary to work closely with our case company and get a deeper understanding in order to fully be able to identify and exemplify problems in the calculation process. Our purpose is not to be able to draw general conclusion, it is rather to exemplify. For that reason we believe that a qualitative method is most suited for the purpose of this study.

Our qualitative research is based on semi-structured interviews with relevant personnel whom have practical knowledge in calculating industrial services. By carrying out this type of interviews we are able to follow different directions that where not intended from the beginning. This is an important condition in regards to our stated research question, due to fact that the problem area is relatively unexplored. According to Holme & Solvang (1997) an advantage with the qualitative method is the flexibility. The direction can be altered during the study, when new knowledge is discovered. We believe it is of great importance that we are able to alter the focus as our knowledge increases during the data collection period and adapt our empirical study towards those issues with holds most relevance.

## **2.3 Data Collection**

The two main types of data that can be collected are primary and secondary data. Primary data is new data that the researcher gathers for a defined purpose, and secondary data is already existing data (Halvorsen, 1992).

### **2.3.1 Secondary Data**

In this study secondary data is being used to create a background discussion to our problem area and also to generate a theoretical framework to the specific problem.

The purpose for using secondary data in the background discussion is to emphasize the phenomenon of traditional manufacturing companies moving towards becoming more service oriented and how this transaction have produced problems in costing process of industrial services. The main purposes of gathering secondary data in our theoretical framework are partly to generate a structure for our empirical study, partly to make it possible to categorise and deduce any identified problems. A secondary purpose has also been to provide SKF with knowledge regarding calculation.

A problem when collecting the secondary data, relating to our specific problem area, has been the limited access of relevant and academic literature. This is based on the fact that we did not receive one single match, which was relevant for our study, when searching for calculation or pricing of services, in both Swedish and English. In order to get around this problematic we instead searched for areas related to service costing. For example we located researchers within “the Nordic school”, spearheaded by: Christian Grönroos, Bo Edvardsson and Richard Normann. Via their literature, which for example were titled “Service Marketing, “Service Management” we found sections related to our specific problem area. Also using references to these text has been a good method for collecting relevant information for our theoretical framework.

### Searching for Secondary Data

Secondary data has primarily been collected through database search in: *Gunda, Business source premier, Google, the website of Karlstads University (Centrum för tjänsteforskning) and by viewing different lists of references.*

### Word Used when Searching the Web

Following keywords have been used: “*Kalkylering av tjänster*”, *tjänstekalkylering, kalkylering +tjänster, ”prissättning av tjänster”, ”service costing”, ”service calculation”, service +costing, service +definition, service +problem, industrial services, industrial +services, “costing problem”, servification, “service infusion”, manufacturing +transformation +service, ”service management”, “service marketing” etcetera.*

## 2.3.2 Primary Data

The primary data in this study has been collected via a qualitative case study at SKF Service Division Nordic Region. SKF is a traditional manufacturing company, moving towards becoming more service oriented, and our aim has been to use SKF as an illustrative example regarding the problems with costing industrial services.

### Case Study

We have selected to conduct a case study as means of gathering primary data.

If a case study is suitable or not depends on four major factors: 1.The type of research question. 2. Degree of control. 3. How you envision the end result. 4. Are you during the study able to focus on a well defined system? (Merriam, 1998).

If the purpose of the study is to answer a question such as: “How many”? Then a survey study is to be preferred. But if the purpose is to answer questions such as: “In what way”? or “Why”? Then case studies, historical method and experimental methods are better options (Yin, 1984 cited from Merriam, 1998). In this study we will focus on the calculation process in a given situation, with the purpose of exploring and identifying the problem. Therefore the study will be focusing on questions such as: How is it being done? Why is it being done in a particular way?

Degree of control focuses on the possibility of manipulating important variables in the study. If the study focuses on a current event and at the same time important variables are difficult to

manipulate, then case studies are ideal (Merriam, 1998). The movement within manufacturing companies towards being more service oriented and costing industrial services are indeed current events, but as been stated earlier the limited prior research makes it difficult for us to identify important variables in this specific study. Thus we have a lesser degree of control over the forthcoming development of the study.

Depending on the research question, the envisioned result or product, of a particular study can be of different character. If the end product is a study of cause and effect, then an experimental study is to be preferred. On the other hand if the end product is a holistic description and interpretation of a current phenomenon, then a case study is to be preferred (Merriam, 1998). As been stated earlier, our study focuses on a current phenomenon which is relatively unexplored. For that reason we have chosen to incorporate a broad research approach in order to reduce the risk of exclude important facts.

The fourth factor according to Merriam (1998) is the possibility to identify a well defined system in the study. It's both a possibility and our intention to focus on a well defined system. We will be focusing on calculation of industrial services.

We have in accordance with the discussion above decided to conduct a case study as a means of gathering primary data. The calculation situations which we will be studying are of a complex nature, with a wide set of interconnecting variables. According to Backman (1998) case studies are suitable when the research objects are complex. Another advantage with case studies is the fact that they allow a wide research approach, in contrast to experimental and survey studies which tend to have a more narrow approach (Merriam, 1998). The broad approach is a crucial aspect in our study, due to fact that we only have access to a limited amount of prior research and information regarding our specific problematic. Thus our study becomes an explorative case study.

## **2.4 Data Collection Techniques**

There are several different techniques that can be used for collecting data. The suitability of a specific technique depends on; how it can answer the stated research question in regards to the time available and resources available. Techniques that can be used are: *Existing documents, different forms of self reporting systems, attitude index, observations, interviews* and *surveys* (Patel & Davidsson, 1994). Qualitative case studies primarily uses; interviews, observations and/or documentation as means of gathering data (Merriam, 1998).

### **2.4.1 Interviews and Documentation**

We have primarily used interviews and partly used documentation, as our methods for gathering data. The reason of using documentation in our study was to get an initial overview of our case company and the specific problem area and thus be able to conduct enhanced interviews in the latter stage. The major reason for choosing interviews as our main technique is the flexibility aspect. This is an important condition in regards to our stated research question, due to fact that the problem area is relatively unexplored. For the quality aspect of our study it is important for us to have the possibility to change, complement and develop our questions under a specific interview and also during the progress of interviewing different

people. We must have the possibility to use the information and knowledge, which we obtain during the interviewing process, and adopt new and different approaches in order to increase the relevance related to our problem area. Qualitative interviews is according to Andersen (1998) characterised as being open-end and unstructured. The degree of structure depends on the given situation and how the questions are stated before the interview.

## **2.4.2 Semi-Structured and Unstructured Interviews**

Interviews can take a wide range of different approaches, the most common are: *structured*, *semi-structured* and *un-structured* (Andersen, 1998).

We have chosen both semi-structured and un-structured. The un-structured interviews are used as a pre-study in order to increasing the knowledge base and narrow down the problem area. By carrying out unstructured interviews in the initial stage we will gather more information which then enables us to further explain and follow different directions that were not intended from the beginning. The accumulated information from the initial interviews will be used to specify the latter interviews.

The reasons for choosing semi-structured interviews in the latter stage where partly to give the respondent the possibility to further develop the discussion and partly to have a formalised frame, which would make it possible to compare the result and draw up conclusions. There is a natural dividing up of the calculation process; from costing to pricing a specific product/service object. For example you normally divide the calculation object into direct cost, overhead cost and profit margin. Deriving from this dividing of the calculation process it creates a possibility for us to generate a structure of our problem area in a systematic way. By having a general outline, that links the structure of the questions to the theoretical framework will increase the quality of the analysis, due to fact that this technique will enable us to compare the interviews with each other in a systematic way.

## **2.5 Selection Methods**

There is usually a large quantity of respondents available in most studies and it is seldom possible to include all respondents in the study, due to time and resource limitations. Therefore it becomes necessary to make a selection of the total amount of available respondent (Lundahl & Skärvad, 1992).

We have selected to conduct our qualitative case study at SKF Service Division Nordic Region, based on the fact that they have explicitly stated problems related to service costing and pricing. Our aim is to use SKF as an illustrative example for this specific problem area.

### **2.5.1 Selection of Case Company**

There are several reasons why we chose to make our case study at SKF. Primarily there was a personal interest from both of the authors to get an insight look of SKF as an organisation. We both consider SKF as a striking example of a Swedish company which achieve an enormous position both in Sweden and on the international arena. At the same time we were talking to

our tutor, Urban Ask and he mentioned that SKF is moving from being product oriented towards becoming more service oriented and that SKF have stated that there is certain problematic involved in this transition. The primary problem was related to calculation of services, whereupon we contacted SKF. That there was a problem related to calculation of services was confirmed within our early conversations with SKF. However the problem was not clearly defined. From this starting point we had some discussions with Henric Widén, Business Controller for Service Nordic Region. Together with Henric we discussed different problem areas and possible approaches for a case study at SKF. In other words we did not have a well defined problem area; rather it developed through a working interplay between SKF and us. We came to the conclusion that we should focus on the calculation process of their industrial services.

## SKF Group

The SKF Group is the leading global supplier of products, solutions and services in the area of rolling bearings, seals, mechatronics, services and lubrication systems. The SKF Group's service offerings, also includes technical support, maintenance services, condition monitoring and training.

SKF was founded in 1907 and from the very beginning focused intensively on quality, technical development and marketing. The results of the Group's efforts in the area of research and development have led to a growing number of innovations that has created new standards and new products in the bearing world.

SKF has 100 manufacturing sites distributed all over the world. With its own sales companies in 70 countries, supported by some 15 000 distributors and dealers worldwide. The SKF business is organized into three divisions; Industrial, Automotive and Service. Each division serves a global market, focusing on its specific customer segments.<sup>2</sup>

## Service Division Nordic Region

The service division is responsible for sales to the industrial after market and support to the industrial customers with knowledge based service solutions with the objective to increase efficiency in there production recourses<sup>3</sup>. Service is that division which characterises of having the highest proportion of services related to the total turnover<sup>4</sup>.

It is around 200 employees within the Service Nordic. The starting point for the business is to use the strong product position in the Nordic region in order to increase the volume of industrial services. The business strategy is to be positioned in the segment with high complexity and high level of competence. The vision that SKF strive upon is; *"To equip the world with SKF knowledge"*.<sup>2</sup>

The Nordic market is today mature when looking to SKF:s products and therefore is service a prioritised business area. Service is also important for SKF in generating increased value to product offerings. Within the service organisation, with few exceptions, no products are manufacture. Almost all of the products are bought from the other divisions.<sup>2</sup>

---

<sup>2</sup> SKF homepage

<sup>3</sup> SKF Annual report 2005

<sup>4</sup> Interview with Henrik Widén

## 2.5.2 Effects of Having SKF as our Case Study Company

As been stated earlier we have together with SKF and our contact person Henric Widén developed the guidelines and approaches for our study. Our priority has been to conform the study after SKF:s desire to conduct a study with a great practical benefit. At the same time this adjustment has consistently been balanced against the academically requirements, which SKF and Henric Widén have shown a great understanding of. To be able to fully understand our thesis it is however important to describe which adjustments that have been made and what effects they have caused. Below we have described the effects that have been most relevant for the study.

Concerning the empirical investigation SKF has seen a value in carrying out as many interviews as possible. The interviewing process has been from our contact person point of view a way to spread an awareness and knowledge around the calculation process. This has lead to a realization of 17 interviews with 22 persons in three different countries. Although all these interviews have not been included in our final selection for our empirical study, but it can not be excluded that the general impression has affected our analysis and conclusions. We have also been stationed in the same building as SKF Service division in Gothenburg during the whole study period and on daily bases talked to both respondents and other personnel. The picture that has come into light during these discussions can also unintentionally have affected our study. To sum up we can state that our extensive investigation have created a great empirical substance, but concurrently it has been time consuming and therefore less time has been available for the study's other parts. Another time consuming consequence of having SKF as our case company is the demand to write the thesis in English.

The theoretical framework is another area which in some way has been affected and adjusted after SKF:s need and desire. SKF saw a value in increasing the knowledge and understanding concerning the calculation process through our theory study. Our main purpose with the theoretical framework has partly been to give a structure for our empirical investigation, partly to make it possible to categorise and deduce any identified problems. To also satisfy SKF:s need we have at the same time tried to describe the theory as detailed and extensive as possible.

Finally we can establish the fact that our decision to conduct a case study at one company has excluded the possibility of generalising our empirical findings. Instead of generalising our purpose with this study has been to exemplify.



## 2.6 Realization of the Study

In this section we will describe how we worked with our method in practise. For example; how we prepared and how we practical carried out the interviews, which people we interviewed, which problems that came up and how we handle it etcetera.

### 2.6.1 Developing the Questioner

Initially we decided to create a basic questioner based on a wide analytical spectrum, due to fact that we did not know where in the calculation process the potential problems might occur. The first questioner was then used during three pilot interviews, with focus to identify potential problem at SKF.

The information that emerged during the pilot interviews created the base for our first formalisation of the questioner. From this information together with our knowledge from the research literature we focused on creating a general model, based on four different areas in the calculation process, which was used through out the study. (See model to the right.) Our contact person at SKF, Henric Widén, gave his approval to this approach, but he wanted us to focus on the first three areas; direct cost, relation cost and overhead cost. We agreed on this priority.

Cost object	Problems/Viewpoints
Profit margin	<p>“Gut feeling”                      DSP                      Which criteria is the profit margin based on for a specific project?</p>
Overhead cost	<p>How big are the overhead costs (what should be included in the standard cost and what should be included in the overhead cost)?</p> <p>Keys for distributing cost</p>
Relation cost	<p>The customers level of organisational maturity (time appraisal)                      Variation in time consumption and cost, due to the specific customer.                      Transaction vs relationship perspective</p>
Direct cost	<p>Standard cost; the same valuation of all working hours.</p> <ul style="list-style-type: none"> <li>• experience, education</li> <li>• overhead cost</li> </ul> <p>Problems related to distributing and allocating costs (Investments in special program/equipment)                      The direct cost related to make an offer</p>

Figure 1: A structural frame for our study. (Source: Developed by the authors)

During the study some interesting perspectives and problems occurred, which we had not forecasted when we created our formalised questioner. At the same time as we tried to update our questioner so it focused on relevant areas, we were aware that if we changed it to much the answers would not have been comparable. For that reason we choose not do more than two updates during the whole investigation period. The first update was made after the fourth interview. At this time we added some new questions and developed some of the old ones. See appendix 1. The second update was made before the control interview with the business controllers. At this time we developed those questions we thought were more related to their knowledge area. The first and last questioner is not in the appendix since the differentials are so small compared to appendix 1.

### 2.6.2 Guidelines for Interviews

As been stated earlier we have chosen a qualitative interviewing approach with a semi-structured questioner. Flexibility has been an important aspect through out our empirical investigation, but at same time we have applied some general guidelines for all interviews in order to create some structure. One common guideline has been the fact that both authors

participated in every interview, in order to minimize the risk of subjectively guiding the respondent in any direction. As a consequence of this the period for gathering data became rather time consuming. During all interviews both authors have taken turns in asking questions and writing interviewing notes. One of us has used a computer and one has used pen and paper. We have not recorded the interviews, based on the possibility that the respondent could have felt restraint of being recorded. We are at the same time aware that not recording the interview increases the possibility of leaving out information.

In an early stage we decided that the interviews would be presented anonymous. Our plan from the beginning was to present the answers per nation but this faded out, due to the fact that the empirical result ended up with only including Sweden.

### 2.6.3 Realization and Selection of Interviews

	Pilot study	Case study	Thesis selection	Total
Individual interviews	3	11	7	14
Group interviews		2		2
Control group interviews		1	1	1
Total people	3	19	10	22
Total hours	6	32	20,25	38

Figure 2: Summary of interviews. (Developed by authors.)

When selecting respondents the fundamental requirement was that they had to be involved in the calculation process of industrial services. Since we did not know the organisation well enough, it was mainly up to our contact person at SKF to make the selections. Our contact person in his turn saw a value in having as many people as possible included in the selection, due to the fact that we would spread an awareness and knowledge through our investigation. The basic idea from the beginning was to apply a Nordic perspective and compare the calculation process between Sweden, Norway, Denmark and Finland. Due to time and coordination issues such a comparison was never conducted. Two interviews were carried out in Norway, but since the respondents services differed from the final selection, they became excluded. Two group interviews with five respondents were carried out in Denmark but since these interviews were held the week before the thesis should be ready they were excluded. Finland did not have the possibility to participate during the actual period for the empirical study. For our study this meant that we changed focus and exclusively concentrated on the service division in Sweden. In Sweden we carry out nine individual interviews and one group interview consisting of three persons as a control group.

#### Individual interviews

All individual interviews and those who are named group interviews in the table above were in both pilot and case study carried out with people who work as Business Managers or Account Managers. Common for all these people is that they work or are involved in the practical process of calculation industrial services.

The majority of these persons did not have a full insight or knowledge around the process of determine certain economical variables, such as standard cost, overhead percentage etcetera. Therefore we saw a relevance to increase the interviews to also including people who have

that insight or knowledge. To do that we conducted a group interview and we named this persons as a “The Control Group”.

### Control group interviews

The control group consisted of three Business controllers, whom determined guidelines and economic variables such as those stated above. Our primary objective with this interview was to develop those questions which seemed to be interesting and that were more connected to the Business Controllers responsibility. Our secondary aim was also in a way to control and compare their opinions and viewpoints with the answers from the other respondents.

### Design of Matrix for Selection

Already during the pilot interviews we saw a tendency that a respondent could offer different types of services. Therefore we saw it necessary to classify the respondent’s services. Based on this notion we developed a service classification matrix, which became our final selection mechanism.

When designing our model for categorising services we have used earlier scientific models as starting point. In first hand we have study Schemer’s framework. Schmenner’s framework is considered by the service operations literature to be the reference model for this type of classifications. Numerous attempts of classifying services have followed. Most attempts have striking resemblance with Schmenner’s classification. At the same time voices has been raised that Schmenner’s classification does not handle that type of industrial services, as the ones being studied at SKF (Johansson, 2006).

Therefore we chose to develop our own matrix, which is inspired by the research from Oliva and Kallenberg (Oliva & Kallenberg, 2003). They have explicitly studied industrial services and their unique characteristics. From their research and in consultation with SKF we identified the two most important factors regarding an industrial service, in order for us to be able to separate them into different classifications. These two factors were; Degree of Labour intensity and Utilization of technical skills.

Degree of Labour intensity is based on the cost of labour in proportion to the total cost of the specific service. We have not personally looked at any real figures. The proportion between material cost and labour cost has been appreciated by the respondents own perception. With regards to their perception about their service, they have stated if it is a labour or material intensive service.

The second axle; Utilization of technical skills, focus on the competence in a specific service. From this axle the respondent have made a distinction if his service is containing few and low skills or many and high skills. In those situation where the respondent have argued that his service is characterized as being for example; high and few skills, then the respondent has been forced to chose between them. This is a factor that might reduce the accuracy in our classification matrix, but the intention has not been to be “spot on”, rather it has been to enable a better structure and selection base.

		<i>Degree of labour intensity</i>	
		<i>Low Machine intensive</i>	<i>High Hours intensive</i>
<b>Utilization of Technical skills</b>	<b>Few/Low</b>		
	<b>Many/High</b>		

Figure 3: Service matrix (Source: Developed by authors)

We are aware that our classification matrix contains subjective element, based on the fact that it is up to the respondent himself to describe and classify his service. One person could believe that his service should be in one specific box, while another person would put the same service in a different box based on his specific view of the service. There is a risk that services that should be in different boxes ends up in same box. Therefore we have weighted the respondents discussion against each other when we made our finally selection. Of the nine selected respondent's did eight classify their particular service in the same box. We considered that one of the respondent's service differed to a great extent from the other, why we decided to exclude him from the empirical material.

Finally it is important to point out that the primary objective with our matrix is to make an overall classification, which could separate the major differences between the actual industrial services. In our opinion it would be a research in itself to construct a highly sophisticated and reliable classification matrix.

#### 2.6.4 Analysis of the Empirical Findings

In this section the empirical result will be analysed based on the purpose of this study; *"...to identify and exemplify potential problems in the process of calculating industrial services."* The theoretical framework is primarily used as means of categorising the identified problems in a structured manner.

In an attempt to increase the value of this analysis we have also strived upon applying our theoretical framework, (as far as it is possible) to analyse whether the problems we have identified are related to calculation and at the same time discuss if they can be considered as relevant or not. Our theoretical framework has also been used as a base to try and analyse if the problems we have identified can be considered as organisational specific problems or problems related to the unique characteristics of services.

Finally we would like to point out the fact that this analysis is to a certain degree based on our own indications which we have build up during this case study and therefore the theoretical substance might possibly been reduced.

## 2.7 Evaluation of Study

It is of great importance in research to discuss questions concerning validity and reliability. A researcher should always strive upon reaching as high validity and reliability as possible (Merriam, 1994).

### 2.7.1 Validity

Ryan, Scapens & Theobald (2002) state that validity: Is the extent to which the data are in some sense a "true" reflection of the real world. They further argue that it is unlikely or even possible in a case study obtaining one general true reflection. We have always strived to be as impartial as possible in both collecting the data and presenting the findings. By showing the path of the research and describe the ways taken to reach the conclusions it is believed that the credibility of the research is improved and thus increase the validity.

Merriam (1998) argues that validity can be divided in to two different sections; *internal validity* and *external validity*. Internal validity is in what degree the result of a study matches up with reality. We have conducted a wide selection of personal interviews with respondents who have in-depth practical knowledge in regards to costing services. Their view is therefore regarded as being in accordance with reality. It is always a possibility to misinterpret the respondent, when conducting a large amount of interviews. We have tried to minimize the possibility of misinterpret the respondents by both authors participating at all the interviews.

External validity reflects the possibility of redoing the study in a different situation. In order to strengthen the external validity we have presented a through realization of our study. In this section we have reviled how the study was carried out in practise and how we handled difficulties which we came across along the way.

### 2.7.2 Reliability

Reliability stands for the degree of consistent in the measuring instrument, that is in which way the same value would be received if the measurement would be repeated (Paulsson, 1999). According to Ryan et al. (2002) such a description of reliability is not suited for case studies. Their opinion is that reliability implies an independent, impersonal investigator, which is likely to be meaningless in interpretive research. *"The interpretation of the researcher and his or her relation to the subject is an essential element of the explanations of the case. Case studies starts from the belief that that reality is socially constructed, which rejects the idea of an external objective reality"* (Ibid).

In quantitative research reliability requires an independent and neutral observer; in a case study it is important to know that the researcher has adopted appropriate and reliable methods and procedures. This is known as procedural reliability (Ibid). Further they argue that there are four areas that the researcher should be aware of and describe to demonstrate that there findings are reliable, or at least let another person examine what has been done.

The first area that Ryan et al. (2002) points out is that the research should have a good research design which address clearly specified research questions, in order to be able to answer our research question in a systematic way we have initially prioritised that via pilot

interviews and theory studies create a model for our investigation, see appendix 4. The purpose with the model have been to structure gathering and analysis of primary and secondary data, and also to clearly define in which perspective our research question have been investigated.

The second area that Ryan et al. (2002) points out is that it should be a comprehensive research plan. We have taken this to consideration in that we have in an early stage establish an overall time and activity plan for our study, see appendix 2. Via pilot interviews and theory studies we have also planed and created a structure for theoretical framework, the empirical section and the analysis, see appendix 4. Before the empirical investigation we have set rules and guidelines for the practical realization of the interviews. These have been documented and is reported in section; 2.6 Realization of the Study.

The third area that Ryan et al. (2002) points out is that all evidence should be recorded in a coherent set of field notes. On the basis of our model, which been discussed above, we have worked after a semi structured questioner. The questions have been asked in the same order and the answer has been documented in the same way through the interviews. On the basis of our model we have consistently had a given structure for headings for documentation of the interviews. The answers or discussions which have differed from the questioner have consequently been documented under headings “Other viewpoints...”.

Finally Ryan et al. (2002) points out that the case analysis should be fully documented. Despite the aspect of time restraints, we have prioritised to consequently carry out the interviews with both the authors present, in order to be able to receive as much information as possible from the interviews and at the same time avoid missing anything that has been said we have made a general dividing of the questions between us. When one person has stated a question and focused on resulting answer, the other person has focused on recording the answers. All the interviews are compiled in its fullness but the documents have not been included in the appendix, since the answers are recorded in a way that they could be deduced to a specific person. We have in this case let anonymity affect the degree of reliability.

### **2.7.3 Critique of Sources**

As been stated earlier we have both used primary and secondary data. The secondary data, with exception for SKF homepage and Annual report 2005, is exclusively based on scientific books and articles. The annual report and the homepage have exclusively been used to create a presentation of SKF as a company. For that purpose we believe the source to a great extent is reliable. To increase the consistent in the secondary data we have used first handed sources as much as possible. A critique that could be presented against our choices of secondary data is the fact that we been using some researchers, which do not have cost accounting as their primary research area. For example we have used literature from researchers within Service Management and Service Marketing. The reason for this is that we found interesting and relevant phenomena related to costing services, which have been hard to find in the traditional costing literature.

When gathering primary data we have been careful not to lead the respondents in a certain direction. We have consistently tried to be as objective as possible, although the respondent's answers are to a certain extent based on his own perceptions, which can create some subjectivity. This however is almost impossible to avoid. We would like to stress the fact that

our ambition has been to describe the whole context from discussions and not lifting out specific parts. We have also strived towards consistently describe different opinions in order to reduce the possibility of delivering a biased view.

### 2.7.4 Possibility to Generalise

Possibility to generalise means in which extent the empirical findings are valid for a whole population of persons, processes, groups etcetera (Backman, 1998). Based on the method selections we have made in order to answer our problem question there is no possibility to make any generalizations concerning our empirical findings. We have conducted a case study at one company with the purpose to exemplifying potential problems in calculation of industrial services, with this said we have not had any intention to be able to generalise.

## 2.8 Summary of our Method Selections

The following map gives an overview of our method selections.

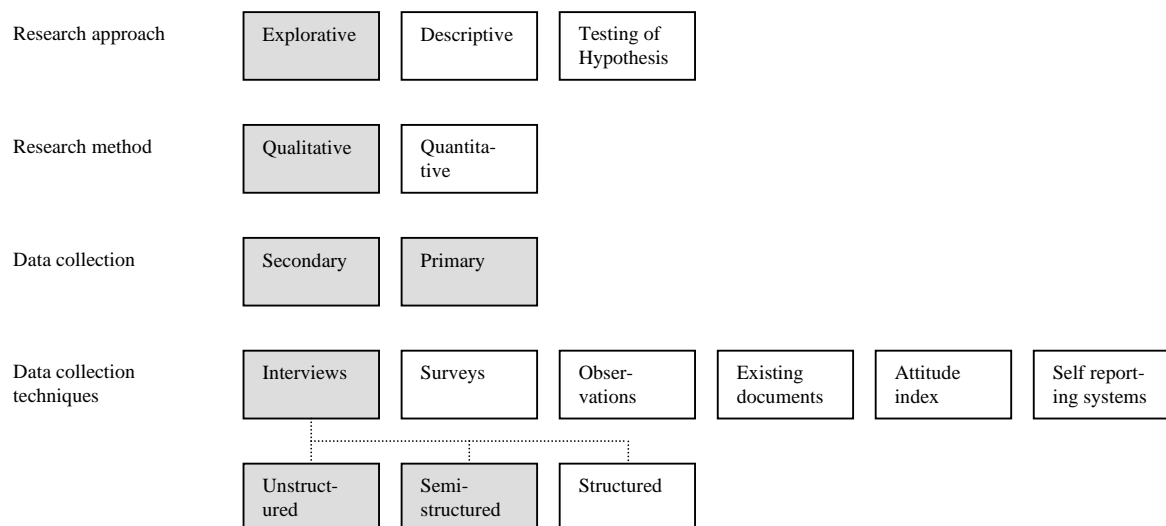


Figure 4: Summary of methods selections. (Developed by the authors)

## 3 THEORETICAL FRAMEWORK

---

*This chapter starts by defining service in general and proceeds with classifying industrial services in specific. The next step is to outline different parts of the calculation process, from costing to pricing. The main purpose of our theoretical framework is partly to give a structure for our empirical investigation, partly to make it possible to categorise and deduce any identified problems. A secondary purpose has also been to provide SKF with knowledge regarding calculation.*

### 3.1 Defining a Service

It has been a dramatic increase of service in today's business environment. According to Edvardsson et al. (2000) services in the private and the public sector account for 70-75 percent of GNP in most OECD-countries. He further argues that services play an increasingly important role in commodity-based manufacturing companies and that some define themselves as service companies rather than mechanical engineering companies.

It seems to be a rather common understanding between most service researchers, that services are becoming an important factor for companies to differentiate themselves and create a competitive advantage (Oliva & Kallenberg, 2003). According to Lovelock, Vandermerwe & Lewis (1999) the complex nature of services has made it difficult defining what a service actually is. He further argues that the way in which services are delivered is often hard to grasp, due to fact that services are intangible. They further argue that most people have little difficulty creating simple definitions of manufacturing: *“physical inputs and outputs are processed or assembled in factory to create goods.* But according to Lovelock et al. (1999) defining services can be eluding.

Early researchers focused on four major generic differences, in order to distinguish services from goods. These are: Intangibility, heterogeneity, perishable and simultaneity (Lovelock et al., 1999; Hansen & Mowen, 2006).

#### Intangibility

Services can include tangible elements, such as sitting in chair in a restaurant or flying in an airplane, but the service performance it self is intangible. The benefit from a service comes from the nature of the performance (Lovelock et al., 1999).

#### Heterogeneity

The heterogeneity of services originates from the fact that the presence of personnel and other customer in the operational system makes it difficult to standardize and control variability in both service inputs and outputs (Hansen & Mowen, 2006).

#### Perishable

A service is a performance, rather than a tangible product that the customer can keep, there for it is not possible to store a service. Thus a service is perishable (Ibid).



## Simultaneity

A service is simultaneously produced and consumed (Ibid).

Researchers, especially from the Nordic school; Edvardsson et al. (1999), Grönroos (1996) and Normann (2000) consider this type of traditional distinguishing of service to be outdated and not sufficient.

Grönroos (1996) argues that services should not be viewed as purely intangible nor is it always and interactive aspect between seller and buyer. Grönroos characterise a service as: *“an activity or series of activities of more or less intangible nature that normally, but not necessarily, take place in interaction between the customer and service employees and/or physical resources or goods and/or systems of the service provider, which are provided as solutions to the customer problems”* (Ibid).

He believes that the traditional distinguishing between service and products are based on; well-manifested terms and concept originating in the manufacturing that do not exactly fit the requirements of services. He further argues for a service perspective, with terms and concepts specifically developed for services, in order to fully understand the importance and complexity of services.

Schmenner (1986) on the other hand believes that it exist a confusion in the service sector. He argues that service companies all too often view themselves as unique and thus have limited the possibility of a common terminology. At the same time he acknowledge that some manufacturing companies also claim that they are unique, but over the years, manufacturers have been unified by their acceptance of certain terminology to describe generic production processes.

### 3.1.1 A Classification of Services

The traditional view has been that the heterogeneity of services means that little communication or learning can take place between different service businesses. Schmenner (1986); Silvestro, Fitzgerald, Johnston & Voss (1992) and Buzacott (1999) argue that the service industry could benefit from applying a unified terminology of services.

According to Johansson (2005) most contemporary services classifications derives from the works of Schmenner (1986). He argues that the confusing surrounding service operations could be lessened by looking at key aspects of the service business that significantly affect the service delivery process. He further argues that there are two major elements that can be used to classify different kinds of service businesses; *labour intensity* and *consumer interaction and service customization*.

#### Labour Intensity

Labour intensity is defined as the ratio of labour cost incurred to the value of the plant and equipment (excluding the inventories). A high labour-intensive business involves considerable worker time and effort, and thus relative little plant and equipment costs. A low labour intensive business on the other hand is characterized by a relative low levels of labour cost compared to plant and equipment (Ibid).

## Consumer Interaction and Service Customization

This key element of service business comprise of two similar but distinct concepts:

1. The degree to which the consumer interacts with the service process
2. The degree to the which the service is customized for the consumer

Schmenner (1986) argues that a service with a high level of interaction is one where the consumer can actively intervene in the service process, at will, and often demand additional service to the original request. A service with high service customization will work to satisfy an individual's particular needs and preferences.

Schmenner has identified four major service business areas; Service factory, service shop, mass service and professional service (Ibid).

**Service factory-** are categorized as being; low labour/low interaction and customization.

**Service shop-** is categorized as being; low labour/high interaction and customization.

**Mass service-** are categorized as being; high labour/low interaction and customization.

**Professional service-** is categorized as being high labour/high interaction and customization.

Schmenner have from this classification created The Service Process Matrix.

		<b>Degree of Interaction and Customization</b>	
		<i>Low</i>	<i>High</i>
<b>Degree of Labour Intensity</b>	<b>Low</b>	<b>Service factory:</b> -Airlines -Trucking -Hotels -Resorts & Recreation	<b>Service Shop:</b> -Hospitals -Auto Repair Service -Other repair service
	<b>High</b>	<b>Mass service:</b> -Retailing -Wholesaling -Schools -Retail aspects of commercial banking	<b>Professional service:</b> -Doctors -Lawyers -Accountants -Architects

Figure 5: The service process matrix. (Source: Schmenner, 1986.)

Schmenner's framework is considered by the service operations literature to be the reference model for this type of classifications. Numerous attempts of classifying services have followed. Most attempts have striking resemblance with Schmenner's classification (Johansson, 2006).

Lately voices have been raised in regards that the traditional classification of services is not comprehensive enough to include contemporary services, such as industrial after-sale activities (Ibid). These types of activities have many names according to Goffin & New (2001) these include customer support, product support, technical support and service. Nordin (2005) label them "product services", Edvardsson et al. (2000) label them "integrated services" and Fransson (2004) uses the term "functional products". Industrial after-sale service is neither a

pure good nor a pure service. According to Johansson (2006) it should be seen as product consisting of both goods and service properties and characteristics.

### **3.1.2 The Service Infusion in Manufacturing Companies**

The service content in various products in the manufacturing industry has had a rapid increase, in recent years. In fact, it is common today that the majority of a workforce in what is generally seen as a manufacturing firm is devoted to various internal and external service activities (Edvardsson et al., 2000).

According to Oliva & Kallenberg (2003) management literature is almost unanimous in suggesting to product manufacturer to integrate services into their core product offerings. They further argue that the literature is surprisingly sparse in describing to what extent service should be integrated, how it should be integrated or in describing the challenges inherent in the process.

The transition from being a manufacturer towards becoming a service/solution provider constitutes a major change throughout the organisation (Nordin, 2005).

Oliva & Kallenberg (2003) have studied 11 companies in the German capital equipment industry, transitioning from product manufacturer into service provider. They have identified two major challenges in this transition. The first difficulty is the required cultural change for a product-centred organisation to become service oriented. The manufacturing firms most learn to value services and how to sell, deliver and bill them. Burnes & Scapens (2000) argues that attempts to introduce new management accounting systems and techniques, without careful consideration of the prevailing institutions within the organisation, is likely to encounter resistance. The second major difficulty reported is the need to create global service infrastructure that is capable of responding to local requirements.

Oliva & Kallenberg (2003) also identified a change in the focus of customer interaction from transaction- to relationship-based. Transaction-based services include basic services such as documentation, repairs and upgrades. Relationship-based services include maintenance service such as preventive maintenance and spare-parts management for which a fixed price is typically paid, covering all services over an agreed period. The different sorts of service are called Basic service, Professional service, Maintenance service and Operational services.

## **3.2 Product Costing**

Ax et al. (2001) state that *Product costing* refers to several different situations such as: Pricing, Profit evaluation, Cost control et cetera. They further argue that product costing can refer to costing of services as well. Hansen & Mowen (2006) argues that traditional cost accounting has emphasized on companies manufacturing physical products and virtually ignored costing of services.

Product costing can generally be divided in two separate philosophies; absorption costing and variable costing. Absorption distribution is by far the most accepted method amongst Swedish

manufacturing companies. A study focusing on the Swedish manufacturing industry by Ask & Ax (1997) state that over 90 % uses an absorption cost distribution method, in some form.

### 3.2.1 Absorption Costing

Absorption costing is sometimes referred to as full costing. Drury (2000) argue that any form of confusion can be avoided by simply remembering that absorption costing and full costing are used to refer to a system where all the fixed overheads are allocated to the specific product or service. Johansson & Samuelson (1997) define absorption costing as; “*the total sum of all cost associated with a specific product, until it has been delivered and paid*”<sup>5</sup>. The cost management literature often divides absorption costing in to two separate categories; Job-order costing and process-costing (Drury, 2000).

#### Job-order Costing

Firms operating in job-order industries produce a wide variety of products/services that are usually distinct from each other. Customized product or service that varies from customer to customer fit this category (Hansen & Mowen, 2006).

#### Process Costing

Firms using a process costing system are characterized by a large number of homogeneous products passing through a series of processes (Hansen & Mowen, 2006). The products are produced in a standardise manner and consume the same amount of direct cost and overheads. It is therefore unnecessary to assign cost to individual units. Instead, the average cost per unit of output is calculated by dividing the total cost assigned to a product or a service for a period by the number of units of output for that period (Drury, 2000).

#### Arguments for and against Absorption Costing

According to Hansen & Mowen (2006) some people argue that the use of absorption costing, by allocating fixed cost to a product will ensure that fixed cost will be covered. Drury (2000) argues that this argument is false. He further argues that if actual sales are less then the estimate used to calculate fixed overhead rate, then absorption costing will not ensure that the fixed costs will be covered.

### 3.2.2 Variable Costing

The alternative to absorption costing is variable costing. Variable costing is sometimes referred to as direct costing and marginal costing (Drury, 2000). Variable costing focuses on the notion that fixed costs (to a certain degree) are independent from the amount of products being produced. Variable costing state that it is only the variable costs that change, when the output change (Johansson & Samuelsson, 1997).

Hansen & Mowen (2006) argues that variable costing assigns only unit-level variable manufacturing costs to the product or service; these costs include direct materials, direct labour and variable overhead. They further argue that fixed overhead is treated as a period expense and should not be allocated to the specific cost object.

---

<sup>5</sup> Translated from Swedish.

The main purpose with variable costing is according to Ax et al. (2001) to only include costs that have been caused by the specific cost object. These are referred to as incremental costs. They can not be established on a general base, thus it has to be determined on an individual base deriving from the specific cost object. Ax et al. (2001) further argues that incremental costs are both variable and fixed cost and it is important that both the variable and fixed incremental costs are included in the costing processes, in order not to underestimate the total sum of the cost.

### Arguments for and against Variable Costing

The main argument for using variable costing is the fact that it is difficult distributing overhead cost objectively and fairly. The distribution of overhead cost can sometimes be based on arbitrary factors. Thus if you choose not to distribute overhead the some arbitrary elements will be reduced (Ax et al., 2001). According to Drury (2000) the separation of fixed and variable cost helps to provide relevant information about costs for making decisions.

## 3.3 Standard Costing

Drury (2000) define standard costs as predetermined cost. He further argues that they are target cost that should be incurred under efficient operating condition.

According to Ask & Ax (1997) standard costing were in the beginning developed for organisation working in stable and predictable manufacturing operations and labour and material comprised the largest part of the total cost. Drury (2000) further elaborate on this fact. He argue that standard costing is most suited for an organisation whose activities consist of a series of common and repetitive operations and input required to produce each unit of output can be specified.

Standard cost can be applied on different objects; direct labour standards, material standard, overhead standards and so forth (Ibid). This thesis focuses explicitly on standard costing in service operations. Services companies often use a standard cost for their staff. The standard cost is often based on an hourly rate for the personnel. This rate is often calculated in different steps. A first step is usually the cost of wages per hour. The next step is to include other direct costs and also indirect costs. The final step is to calculate a profit margin (Ax el al., 2005).

Drury (2000) state that if a standard costing procedure is to be applicable in service operation it is important that the output can be measured. If a service operation is highly customized and differs from time to time increases the possibilities of variances between actual cost and standard cost. Therefore standard costing will not be as appropriate for service operations where input and output differ frequently.

Johansson & Samuelsson (1997) argues that assigning cost to a specific cost object can sometimes be difficult. They further argue that a standard costing system is an effective tool in make the costing process more efficient and quicker.

### 3.4 Direct Costs

Direct costs have traditionally been associated with direct labour and/or direct material (Drury, 2000). The majority of cost management literature all agrees that direct labour and direct material outline the cost base for a specific product or service. Although researchers such as Hansen & Mowen (2006), Ax et al. (2001) and Johansson & Samuelsson (1997) argues that direct cost does not just consist of direct labour and/or direct material costs. Instead they argue that direct costs consist of those costs that can be specifically traced or identified with a particular product/service. Hansen & Mowen (2006) argues that the more cost that can be traced to a cost object, the greater the accuracy of the cost assignments. Ax et al. (2001) agrees with this view point, but at the same time state that assigning cost to a specific cost object, must be done in an economically feasible way.

#### Modes of Identifying, Quantifying and Tracing Direct Cost

All cost can not be viewed as direct cost (indirect or overhead cost will be discussed later on), but as been stated earlier it is a key element in cost accounting to identify and trace cost to a specific cost object (Drury, 2000).

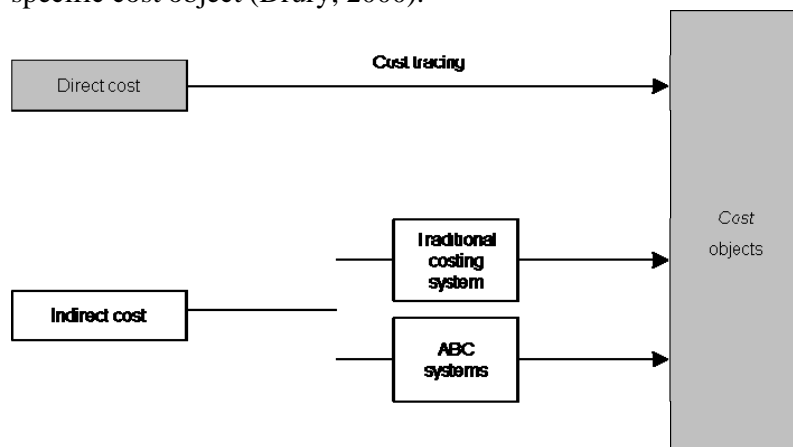


Figure 6: Tracing cost. (Source: Drury, 2000)

Traceability means that cost can be assigned easily and accurately, using a causal relationship. There are two ways of tracing cost to a cost object: Direct tracing and Driver tracing (Hansen & Mowen, 2006).

Direct tracing is the process of identifying and assigning costs that are specifically or physically associated with the cost object. This process can be carried out through a physical observation. For example by counting the material explicitly needed to manufacture a specific product (Ibid). Unfortunately it is not always possible to physically observe the exact amount of resource needed in order to produce a specific product. Instead one could use drivers as means of tracing cost (Drury, 2000). Drivers are factors that cause change in resource usage and thus have an explicit impact on the cost. An example of a driver is “machine hours”. So instead of counting the material used for manufacturing a product, one could use the machine hours needed in order to manufacture a specific product (Ibid).

An important part in assigning direct cost to a specific cost object is to quantify the amount of resource needed. Drury (2000) suggest that a standard time sheet or standardise template could be applied in order to map out and quantify the time spent on providing a service.

### 3.5 Relationship Costs

Relationship costs can be defined as the additional costs on top of the normal manufacturing costs that occur due to interaction with a specific customer. Relationship costs are affected by how relations are formed and they evolve over time (Grönroos, 2000).

The main aspect regarding the relationship cost concept is the time perspective applied when calculating costs. Grönroos (2000) argues that today's time perspective is short-sighted and transaction-oriented. He further argues that calculation and economical reports paid little or no attention to economical factors occurring after the transaction date. Costs that occur after the transaction date are often neglected and instead too much attention is pay on the price. Service companies often view the margin between net price and cost of producing the solution for the customer as the direct economic result of the relationship. The customer on her part only views the price as the real cost.

He further argues that this is far from reality when put in a more long-term and relationship-oriented perspective. Many activities occur after the transaction date for example customer inquiries, complaints and activities that need to be redone. No matter how many and how big these activities are, the price remains the same, but at same time the cost for handling the customer will most definitely vary. A specific price and customer that look right and profitable in a short-term and transaction-oriented perspective can in a long-term and relationship-oriented perspective be regarded as a non-profitable customer with a high amount of add-on costs (Ibid).

In accordance with the discussion above, Grönroos argues that it is important to move from transactions based concepts such as price and production cost. *“Value for the customer and costs for creating customer-value is often a long-term relationship related concept. Therefore one must learn to think and calculate in terms of long-term value”* (Ibid).

What is then new and interesting with Grönroos discussion regarding relationship cost? Costs occur and are registered. Costs are real and they are not possible to ignore whether you like it or not. Have not relationship costs always existed? It could be argued that relationship cost is just another concept based on already existing knowledge regarding direct costing. Although an interesting aspect with Grönroos discussion about relationship cost in regards to this thesis is how relationship cost should be accounted for in the costing process of services.

According to Grönroos (2000) it is common that these types of costs are registered as unspecified administrative costs, in companies costing systems. In this situation relationship costs would be regarded as overhead costs and there for be distributed via a cost centre, instead of being regarded as a direct cost.

Ax et al. (2001) argues in a discussion related to handling direct costs and overhead cost that cost should as far as it is economically feasible be treated as direct costs. The larger the amount of costs that are treated as direct costs the better the precision in the costing process. They further argue that determining the overhead rate to a specific cost object is sometimes referred to as the most problematic factor in cost accounting. They also conclude that distributing overhead costs is the most frequently debated situation in the costing process. In most situations it is not economically feasibly to identify and separate all cost that are directly (incremental costs) associated with a specific cost object, due to fact that it can be very time consuming to conduct the necessary work studies, process mapping, measures and

registrations. One could argue that the cost of identifying all incremental cost associated with a cost object, is higher then the benefit (Drury, 2000). But on the other hand; the higher amount of the total costs that are regarded as incremental cost, the less problems related to distributing overhead costs (Ax et al., 2001). Grönroos (2000) on is part argues that it is important to determine the amount of the relationship cost in order to be able to trace them and regard them as incremental and thus relate them to the specific cost object.

### 3.5.1 Relationship Cost as a Model

Grönroos (1996) have crated a model, where the seller can analyse and calculate the total sacrifice or the total cost over time. As been stated earlier relationship cost are costs that occur above normal manufacturing cost and whose size depends on how well the relationship is with a specific customer. The model illustrates how the relationship costs decreases the potential gross margin. Grönroos have dived relationship costs in three different groups; direct costs, indirect costs and psychological costs.

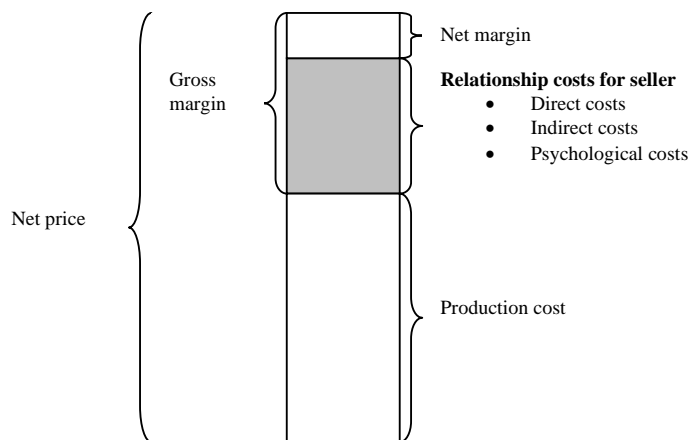


Figure 7: Schematic model how the sellers relationship costs impact on the sellers result. (Source: Grönroos, 2003)

#### Direct Costs

The direct relationship costs of maintaining a customer relationship caused, for example, by the delivery system, invoicing, the complaints handling, technical service, customer training et cetera., which the supplier uses. The more complicated and outdated the systems are the higher the level of relationship cost will be for the supplier (Ibid).

#### Indirect Costs

There are also indirect relationship costs for the supplier in relationship with the customer. Mistakes have to be corrected, complaints have to be attended, incorrect invoices have to be altered, problems have to be looked in to, phone calls and e-mails have to be responded to, and so forth. I the long run this will lead to less productive work, overtime work as to be utilized or can it can possible lead to the hiring of temporary employee (Ibid).

#### Psychological Costs

Psychological relationship costs occur due to fact that the sellers have to “attach” unnecessary mental capacity to a specific customer relation. In the first stage this could be an



overwhelming feeling that something is bound to go wrong. This could be seen as mere “headache” and hard to measure in terms of increased cost. But in the long-run psychological cost can diminish the workers physiological capacity. Task can run late or even be undone, and thus cost will occur and can be measured (Ibid).

### **3.6 Overhead Costs**

Overhead costs can also be referred to as indirect costs. Overhead cost can be defined as; cost which are added on to the cost object via distribution/allocation (Ax et al., 2001). The difference between direct costs and overheads are the fact that direct cost can be traced directly to the cost object, where as overhead costs first need to be distributed to a cost centre and then allocated to the to specific cost object (Ax et al., 2001; Johansson & Samuelsson, 1997).

Companies usually use a “key” for distributing overhead costs to the cost object. There are two main methods in order costing (Ax et al., 2001; Drury, 2000):

- The Traditional- method (sometimes referred to as the Functional-method)
- The ABC-method

The major difference between them is the way overhead costs are being distributed (Ax et al., 2001). According to Drury (2000) ABC-method differ from Traditional-method by having in the first stage a greater number of cost centres and in the second stage a greater number and variety of cost drivers / allocation bases.

#### **3.6.1 The Traditional-method**

The most basic difference between the Traditional and the ABC-method is if overhead costs are regarded as being volume dependent or not. The traditional approach state that all overhead costs are volume dependent. Therefore volume dependent keys are used in order to distribute overhead costs (Drury, 2000). Commonly used keys are direct labour, direct work time and direct service cost (Ax et al., 2001).

There are three central concepts in the traditional method:

- Overhead cost object
- Keys for distributing (or allocating) overhead
- Cost centre

#### **Overhead Cost Object**

In the traditional method overhead are grouped in to a wide area of overhead cost objects. A typical calculation list in order costing for a service intensive company often include the following overhead cost objects; service overhead costs, administration overhead costs and sales overhead costs (Ibid).

The distinction between variable costs and fixed costs is important in the traditional method. Variable costs are distributed based on cause and effect relation. The index (or key) used to distribute variable overhead will vary proportionately with the overhead costs, for example direct labour or direct material. Fixed cost on the other hand are distributed based on value. These cost can not be traced to the cost object based on a cause and effect relation, but one can argue that the cost object beneficiate from the existence of the certain overhead cost such as; a companies general premises and internal service. There for the value creates the base for distributing overhead costs. Some overhead costs are not possible to distribute based on cause and effect, nor are they possible to distribute based on value. Examples of these costs are administration, sales and management. They are sometimes distributed based on how much a specific cost object can “cover” (Ibid). In practise it could though be difficult to apply different basis for distributing fixed and variable overhead. Therefore it could be argued to distribute them after the same basis (Johansson & Samuelsson, 1997).

### Keys for Distributing Overhead

The description of keys for distributing overhead derives from the principle of proportionality, that is; the key for distributing overhead is selected based on the fact that it vary in proportion with the overhead costs. The three main keys for distributing overhead costs are (Johansson & Samuelsson, 1997):

- Time
- Quantity/amount
- Value

The size of the key is the only factor determining how much overhead cost that will be distributed to a specific cost object (Ax et al., 2001).

### Cost Centre

When the relation between the service and the resource utilization is difficult to identify, it is common to use a cost centre in order to distribute the overhead costs. The motives can be the fact that a specific service do not utilize all cost centre or that the service’s relative consumption of resources differ between different cost centres (Ibid). Drury (2000) argues that in most situations an increasing number of cost centres increase the accuracy of measuring the overhead cost consumed by cost objects.

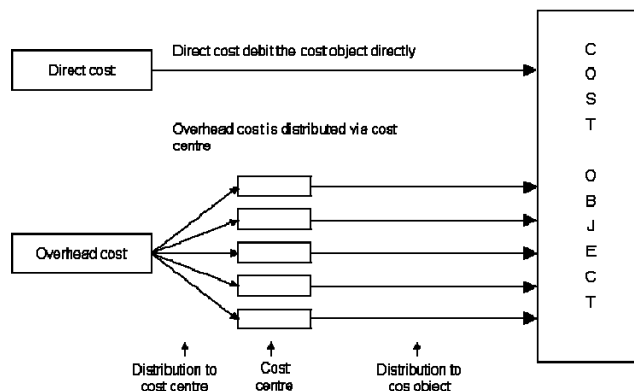


Figure 8: Distribution of overhead cost with the traditional method. (Source: Ax, Johansson & Kullvén, 2005)

Another important aspect in the traditional method is to choose the operational volume. The operational volume comprises the base for the overhead rate. There are usually three types of operational volumes:

- Budgeted volume
- Normal volume
- Practical volume

The most frequently used in practise are budgeted and normal volume. Budgeted volume is based on given time period. An advantage with budgeted volume is the fact that it illustrates the current situation of the overhead costs. A negative aspect is the fact that the overhead rate varies with the size of the operation volume. Normal volume is based on an average over several time periods. Therefore the overhead rate is not affected by variations in the operational volume. A negative aspect with this method is that it might be difficult to determine the normal volume in times with high volatility (Ax et al., 2001).

### **3.6.2 The ABC-method**

The ABC-method does not consider all overhead cost to be volume dependent, as oppose to the traditional method. Instead the ABC-method state out that a large amount of overhead cost are not volume dependent and therefore constitute none volume dependent keys for distributing the overhead. The need for the ABC-method has emerged from complex organisations, which have an increasing level of fixed cost (Ax et al., 2005). Another important factor for the need of the ABC-method is an increasing level of overhead cost (Drury, 2000). To handle these changes in the cost structure the ABC-method considering all cost to be variable and through incorporate none-volume related keys for distributing overhead (Ax et al., 2005). Kaplan & Cooper imply that service companies are ideal candidate for ABC, even more than manufacturing companies. Their explanation for this statement is that most of the costs in service organisations are fixed and indirect (Kaplan & Cooper, 1998 sited from Drury, 2000).

As mentioned earlier the distinction between fixed and variable cost is important in the traditional method. This distinction is not made in the ABC-method; instead a separation is made between variable costs on short term and variable cost on long term. Short- term variable costs are sensitive towards changes in the operational volume. Long-term variable costs are on the other hand sensitive towards breadth and complex related variables. Companies with a complex business operation demand a higher level of support activities. When the breadth of the product/service mix increases the demand for different support activities increases as well. The size of the operational volume does not control the long-term variable cost (called fixed cost in the traditional method), they are instead controlled by the demand for support activities (Ax et al., 2005).

There are two central concepts in the ABC-method:

- Activity
- Cost driver

Activity and cost drivers replaces overhead cost object and keys for distributing overhead, which are used in the traditional method.

## Activity

Activities can either be work operations or tasks, in an organisation. There are both activities which are organisational specific and none specific. In a consultancy firm examples of organisational specific activities are; planning of a customer assignment and performance follow-ups. None specific organisational activities can be; giving an offer and strategy development. The purpose with the ABC-method is to more specific identifying the cause-and-effect relation between overhead cost and the cost object (Ax et al., 2005). Drury (2000) argues that this will lead to the possibility of more accurately cost assigning to cost objects.

The view point in the ABC-method is that costs are caused by activities and that costs objects consume activities. Overhead costs are then allocated with regards to how much the cost object demands from the activities (Ax et al, 2005).

## Cost Driver

The activity cost that should be assigning to cost object is determined by cost drivers. Activity cost drivers consist of three types (Drury, 2000):

- Transaction drivers
- Duration drivers
- Intensity drivers

*Transaction drivers*, such as the number of purchase orders processed, number of customer order processed, number of inspections performed and the number of set-ups undertaken, all count the number of times an activity is performed (Ibid.) This type of cost driver is suitable if the cost object utilize the same amount of time and resources (Ax et al., 2005). *Duration drivers* represent the amount of time required to perform an activity. Examples of duration driver are set-up hours and inspection hours. This type of driver is useful if the different cost object requires different amount of time in regards to the activities. *Intensity related cost driver* are used when neither transaction- nor duration related cost driver are able to identify the amount of activities a specific cost object is consuming. An example of this can be if the cost object is in need of special activities such as variation in demand for expensive or/and less expensive equipment (Ibid).

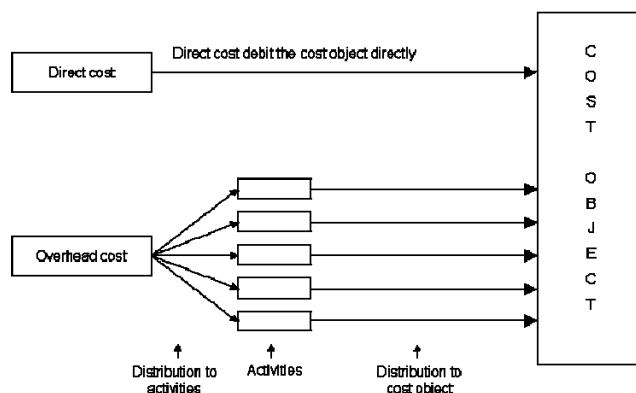


Figure 9: Distribution of overhead cost with the ABC-method. (Source: Ax, Johansson & Kullvén, 2005)

The ABC-method uses only one operation volume to calculate the overhead rate, that is practical volume, as oppose to the traditional method where there are three different operational volumes (budgeted, normal and practical) which can be used to calculate the

overhead rate. The practical volume consists of the theoretical volume minus normal events such as delays, stops, maintenance et cetera (Ibid).

### 3.7 Profit Margin

A company usually chooses from three major pricing strategies (Lovelock, Vandermerwe & Lewis, 1999; Kotler, Armstrong, Saunders & Wong, 1999):

- Cost-based
- Value-based
- Competition-based

The price of a service will be somewhere between what is too low to generate any profit and what is too high to produce any demand. The service cost set the minimum level to the price and the perceptions of the service's value set the maximum level to the price. Besides these two limits companies also have to consider competitors' prices and other external and internal factors (Kotler et al., 1999). The following figure summarizes the primary considerations in setting price.

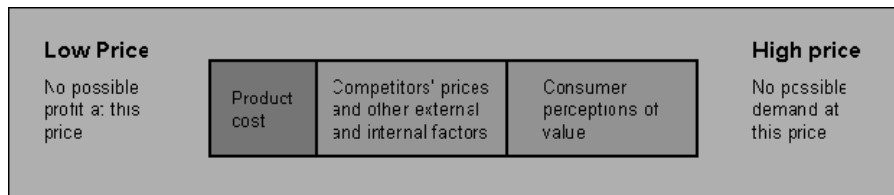


Figure 10: Primary considerations in price settings. (Source: Kotler et al., 1999)

#### 3.7.1 Cost-based

In this approach companies set prices relative to financial costs. From the full cost, including variable, semi variable and fixed cost, companies seek to add a margin that cover a satisfying profit (Lovelock et al., 1999). This method is called, cost-plus pricing, and it is considered being the simplest and a most frequently method of pricing a service or a product. From the full cost you add a standard mark-up for expected profit in following way (Kotler et al., 1999):

$$\text{Mark-up-price} = \frac{\text{unit cost}}{(1,0 - \text{disired return on sales})}$$

When is it then good to use a cost-plus pricing method? According to Kotler et al. (1999) it only works if that price brings in the expected level of sales. *“Any pricing method that ignores demand and competitors’ prices is not likely to lead to the best price”*. If the sales amount get lower then expected, the cost per unit get higher and the realized mark-up percentage get lower. Why then is it so popular? One factor is that sellers are more certain about cost then demand. Another factor is the simplicity aspect of using this method.

### **3.7.2 Value-based**

In value-based pricing you set a price for a service after what the customer thinks it might be worth. To set the price you need to conduct some research and determine how customers perceive the value of the services' (Lovelock et al., 1999). "*Value-based pricing uses buyers' perceptions of value, not the seller's cost, as the key to pricing*" (Kotler et al., 1999).

A value-based approach can be used when you want to justify a premium price of services. The problem when using value-based pricing is though that's difficult to measuring the perceived value (Ibid).

### **3.7.3 Competition-based**

In this approach companies are determining the price based on how the firm thinks competitors will price rather than on its own cost or demand (Kotler et al., 1999).

When you are pricing services that are relatively undifferentiated from competing offerings it could be appropriate to use a competitions-based approach. In this situation you need to keep an eye at the competitor and try to price accordingly to them (Lovelock et al., 1999). Competition-based pricing is also used when companies have to bid for jobs. In order to win a contract you need to price less than others companies at the same you want as high profit margin as possible. To handle this contradictory there are techniques such as: "expected profit", where you relate the company's potential profit to probability of winning with this bid. This type of technique is useful in big company's that makes many bids, which in the long run can maximize the profit in playing the odds (Kotler et al., 1999).

## 4 EMPIRICAL RESULTS

---

*In the following section our empirical findings will be presented. As been stated in the methodology section our final selection consisted of seven individual respondents and one group interview. The seven individual respondents worked practically with calculating services and the Control Group determined the guidelines and economic variables which the individual respondents used in their calculation process. The main purpose by including the Control Group has been to further elaborate on the findings from the individual interviews.*

### 4.1 Defining Services at SKF

#### 4.1.1 Current Definitions and Classifications

The interviews with the seven respondents indicated that the service division at SKF is lacking a comprehensible definition of their services. The one common attribute in terms of using a classification of their services is between *standardised and complex services*. Four out of the seven respondents mentioned this type of categorisation; with out really give any further explanation. Although one of the respondents stated that the dividing between standardised and complex service was initially developed for another division at SKF. He further argued that it was only related to the sales aspect of services, in other words it had no connection with the costing process of service. None of the respondents applied any classification of their services in the calculation process; instead they applied the same calculation process regardless if it was a standardised or a complex service.

Some of the respondents applied individual service classifications, which could not be directly linked to the calculation process. One respondent used the following; *New machine development, Design verification and Rot-cause analysis*. A second responded stated the following; *Special service, Machine related-strategy/development, Switch of pumps, and Commodity*. A third divided between; *Condition monitoring and Mechanical projects*.

#### The Control Group

The control group stated that there is a separation of services which is determined by departments and how the services are being reported; Bearing projects, COMO projects, LAB, services (chemical and metallurgical), Measure and analysis, Mechanical and Education.

The control group further argued that it did not exist any classification of their service in relation to the calculation process. *“Nothing has been stated.”* Although one of the respondents in the control group stated that there is a general difference between projects that are more complex and standardised service which only consists of labour hours.

#### 4.1.2 Problems Related to Insufficient Service Classification

Four out the seven respondent argued that there are shortages in their current service classification. One respondent stated the following; *“We are lacking a clear categorisation of our services and therefore lacking a clear service offering to our customers”* The respondent further argued that the lack of standardised service concepts in some cases forced them to develop new service concepts on a customer bases. *“In many cases we have to start over from the beginning, when we are presenting a service solution to our customer.”*

One respondent argued that the lack of clear classification often led to a strong individual dependency, in the sense that a service if often developed by one or a small amount of people and that a service is seldom similar to the other. He further argued that it would be easier for a person who was not involved in the initial stage of the development of a service to be a part in the latter stage if the processes were better defined.

Several of the respondents considered that the indistinct categorisation caused a more inefficient calculation process. One respondent stated that a more distinct classification could be a step towards creating a more standardised calculation process. He further argued that a more standardised process could be carried out by creating a wide costing template, which could be broken down in smaller parts in order to fit the specific service.

Three respondents could not see any use or need for a distinct and unified service classification. One respondent doubted it would even be possible to carry out a more distinct classification based on the fact that his services were to complex and unique. *“It is the customers need controlling, not the calculation process.”* Another respondent argued that a more unified classification has to be carried out in accordance with economical feasibility. The respondent concluded that it would be difficult to measure the benefits of more distinct service classification.

#### The Control Group

The control group stated a need for a more distinct and unified service classification in order to improve the calculation process. They also stated a need for a more unified service classification in terms of a sales point of view: *“A classification is also important with regards to how we should price and find the right profit margin.”*



### 4.1.3 Practical Categorisation

With regard to our Service classification matrix (see section 2.6.) we have tried to “match” the SKF service division’s different service in order to increase the possibility of comparing the same services with each other and in the latter stage creating a more structured analysis. The selected respondents service are characterized as being; **Hours Intensive and Many/High Skills**.

		<i>Degree of labour intensity</i>	
		<i>Low Material intensive</i>	<i>High Hours intensive</i>
<b>Utilization of Technical skills</b>	<b>Few/Low</b>		
	<b>Many/High</b>		<b>X</b>

Some of the respondents stated the fact that they sometimes calculated services belonging in the matrix other boxes. They regarded those types of service as more standardised and easier to calculate. One respondent argued that the biggest difference in the in terms of calculating different types of service was quantifying the labour hours. He further argued that the more labour hours needed to be taken in to consideration, the more difficult the costing process would be.

All respondents focus on the importance of skills and competence when executing industrial services. One respondent argued that SKF only has the possibility of competing in a competence intensive service segment; based on the fact that the work force has such a high level of build up knowledge. He further argued that SKF would have difficulties competing in a more standardised service segment (material Intensive and Few/Low Skills); “*We would price our selves out directly, if we competed against more standardise services.*”

#### The Control Group

The control group agreed on the fact that most of their frequently offered services is characterized as being; Hours Intensive and Many/High Skills. The control group emphasized high skills rather than many skills. The control group pointed out that the only type of service that SKF did not offer was the one characterized as being; Material Intensive and Few/Low Technical Skills.

## 4.2 Practical Guidelines for Calculating Services

### 4.2.1 Standardised Template/Checklist

All respondents stated that there exists some form of checklist with regards to the calculation process. One respondent mentioned a standardised process with regards to offering process. He described this process in four steps; 1. Determine customer need. 2. What activities will be included? 3. Identify costs and 4. Setting the price. The respondents made it clear that most checklists were individually developed and it did not really exist a standard checklist. One respondent stated; *“it exists a calculation template in the organisational quality system, although it has been used poorly.”* The same respondent further argued that business managers and project leaders more often use self developed checklists. It is rather clear from several respondents that the checklists being used are not able to cover the whole offering process. One respondent stated that it exist a standardised offering template, but at same time he argued that it was rather limited, based on the fact that it did not include a checklist for the calculation process. Another respondent stated; *“There are checklists to a certain degree, but they do not include the whole offering process.”*

Four respondents explicitly pointed out limitations and needs for templates and checklists related to the calculation process. One of which stated; *“There is a massive need for a standardised checklist.”* This respondent’s need for a standardised checklist was based on the wish to create a more efficient costing process, increase the accuracy and reduce the risk of leaving out certain cost objects. He further argued that a more standardised checklist would reduce individual dependency and by creating more structured checklist it would be possible to conduct better cost analysis, which in the long run could be beneficial with regards to future cost estimations. One respondent stated that he sometimes guesses the amount of cost for a specific service, despite the fact that he has developed an offering template.

Another respondent stated; *“There is a need for developing more distinct templates/checklists in order to minimize the risk of excluding cost objects in the calculation.”*

The third respondent saw a limitation in his calculation template due to fact that it only accounted for the costs and did not include pricing. *“There is no part in the calculation template that point out which percentage should be applied on the different activities or components in the service offer.”* He further argued that in the same way as there is a procedure for calculating the different cost it should be a procedure for pricing them as well, instead of just applying a total profit margin on the total service cost.

The fourth respondent stressed the need for packaging and classifying services in order to be able to create calculation templates for each service package.

One respondent, out of the remaining three, mentioned that he is in the process of creating internal concept templates in order to make the offering process more efficient. The remaining two did not mention any shortages or need for standardised checklist/templates.

## The Control Group

The control group was not sure if it existed a standardised checklist. So they did a quick check on SKF:s Intranet and found a checklist in the quality manual section. They agree that the existence of that checklist had not been communicated through out the service organisation. They further argued that the checklist most likely had been developed at another division and probably needed to be upgraded.

### 4.2.2 Full Cost Distribution versus Variable Costing

None of the respondents were familiar with the terminology full cost distribution and variable costing, so the authors of thesis had to explain their meaning.

All of the respondents, with the exception of one, stated that they use a form of full cost distribution. The exception argued that his calculation process is more towards the variable costing method. At the same time the respondent stated that he in fact applied a percentage which should account for more then pure profit. Therefore the authors concluded that the respondent in fact was using full costing with out realizing it.

There was a difference in the respondents' perception regarding if it was stated from management which method should be applied. Five respondents argued that there are no guidelines or directives from management. One of them stated: *"It is up to the individual to choose which method he prefers."* This was a recurrent view between several respondents. Another respondent stated: *"I do more or less as I wish...I asked a controller once, but I did not get a clear answer."* The two other respondents meant that it in fact was stated from management that they should apply a full costing approach. Although one of them also stated that he felt rather free to form his own costing process.

## The Control Group

There was a certain amount of uncertainty amongst the respondents in the control group, whether they are using a full cost method or not. They argued that the standard cost which is used together with an overhead rate covering Sales and Administration, are suppose to cover all costs. Although one respondent in the control group stated that all cost are not included, based on the fact that service division is not profitable and therefore some cost have been excluded. Despite this fact the control group concluded that it has in fact been formalized through out the service division that all personnel should apply a full costing method, when calculating services.

### 4.3 Standard Costs

Five of the respondents stated that they apply different standard cost per work hour depending on who is performing the service. The other stated that they use one standard cost regardless of who is performing the service. Three of the respondent using different standard costs argued that the standard cost is related to the work role/division/competence. Amongst them the amount of different standard cost used differed from 7 to 10-15. A fourth respondent who could not state what the standard cost was based on, argued that his personnel had up to 15-16 different standard costs to consider. The fifth respondent argued the he have several different

standard cost for different work roles and that the standard cost could differ amongst a specific work role, depending on the service being performed. He further stated that the operative personnel are supposed to be able to perform a wider set of service activities in the future; "...become more differentiated in their service performance." The respondent concluded that a standard cost could be a potential problem if the service performance becomes more and more diverse.

From the interviews it became clear that individual work-experience has no impact on the standard cost. One respondent stated; "A newly graduated trainee can have the same standard cost as an employee with thirty years of working experience."

There was a certain amount of uncertainty among the respondents with regards to which costs that are included or not in the standard cost. At same time a majority of the respondent assume that the standard cost covers all costs except Sales and Administration cost. One respondent spontaneously, without the authors asking a question, stated that he would like to know which costs are included in the standard costs in order to create an easier pricing process. The two respondents who knew what was included in the standard cost had been involved in the process of determining the standard costs.

### The Control Group

According to the control group there is at least one standard costs per service unit. They further stated that the level of working experience has no impact on the standard cost. "We should have difference in the standard cost between junior and senior employees." One respondent argued that there should be different standard costs for an employee depending on the service he/she performs.

All costs except Sales and Administration are included in the standard cost, according to the control group.

In questions concerning the utilization rate in relation to standard costs, the control group concluded that the calculated utilization rate varies from 75-80 % between different standard costs. One respondent stated: *It is almost unrealistically high; nearly none of the employees achieve it.* The respondent further argued that the real utilization rate often is 6-7 % below the calculated utilization rate. The control group argued that they sometimes fail to take new employees into consideration, when they are calculating the utilization rate. The control group further stated that they calculate with a current utilization rate which is based on a future target, at the same time they argued that it would be better to use the normal/actual utilization rate when determining the standard cost. "We are using a target when we should be using the normal rate."

The control group stated that standard costs are adjusted or re-evaluated ones a year. At the same time they concluded that it should be adjusted every three month, in relation to the utilization rate in order to create a more accurate calculation process.

### 4.3.1 Standard Costs in Relation to Development Costs

There were different viewpoints between the respondents in how investments or rather different forms of development costs<sup>6</sup> should be managed in relation to the standard cost and the service calculation process in general. *“Sometimes investments are handled by the standard cost, sometimes they are included in the overhead cost and sometimes they are applied directly on to the specific customer.”* Another respondent argued that development costs are included in the standard cost. At the same time he stated: *“Should specially developed components be needed, then these costs are applied directly on to the customer.”* These two respondents argued that development costs are accounted for differently depending on the specific situation. The other respondents had a more determined opinion, although their opinion differed between them.

One respondent argued that development costs always are managed by the standard costs. He further stated that all costs are included in the standard cost except Sales costs. For example training cost for a specific project should not be included in the calculation, because they are already managed by the standard cost. Two other respondents argued that development costs are included in Sales and Administration. One of them exemplified by stating that creating new service concepts has by tradition not been regarded as an investment: *“This type of cost has been considered as a general overhead cost.”* The general overhead in this case was Sales and Administration. The remaining two both argued that development cost should be applied directly on to the customer. One respondent argued that it is common that costs occur which are not included in the standard costs such as; education and one-time investments in tools. He further argued that it has been stated that these cost should be traced to the specific customer.

To summarize it can be stated that development costs are managed differently in the calculation process, by the respondents. Two respondents argued that development costs are included in the standard costs. One respondent argued that development costs are sometimes managed by Sales and Administrations overhead and sometimes applied directly on to the customer. The last respondent argued that development costs are sometimes managed as an overhead costs, sometimes included in the standard cost and sometimes applied directly on to the customer.

#### The Control Group

According to the control group development costs are accounted for as a deviation in the standard cost. One respondent mentioned that development cost sometimes is traced directly to the customer or the specific cost object. One respondent stated the following with regards to a question concerning if the development costs are of a considerable amount or not: *“They are relevant and significant.”* Another respondent stated: *“There should be a file in the standard cost in how we should manage depreciation of human resources.”* The same respondent exemplified by referring to a reclamation cost of significant size, which had occurred during a prior project. He argued that this type of cost should be regarded as an investment in human resources, which would be depreciated over a certain amount of years.

---

<sup>6</sup> This specific topic was first included in the adjusted questioner from 2007-03-01. Therefore it has only been discussed explicitly in 5 of the 7 interviews. Although development cost did appear in the first two interviews as well but without any follow-up questions.

## 4.4 Direct Costs

### 4.4.1 Identifying and Quantifying Direct Costs

The result of the interviews indicated that the process of identifying direct cost for a specific cost object is sometimes done individually and sometimes in consultation with a service college. The extent it is made on an individual base or in consultation with a college differed between the respondents and depending on the calculation situation. Who is responsible for identifying the cost has not been thoroughly investigated in this study, but it seemed to vary from time to time.

One respondent argued that the project manager is responsible for a specific offer/tender. He sometimes consults with operational personnel in order to map the cost in a specific project. Another respondent stated that he sometimes identifies the direct cost himself and other time uses the operational personnel in order to accurately identify the direct costs. A third respondent stated that he normally conducts a pre-study on his own in order to identify the direct costs and after that it is up to the project leader to further develop a more detailed project plan. A fourth respondent saw a difference between standardised and complex services. He stated that if it is a complex service then a work-group is put together consisting of the respondent himself, a project leader and technicians. He further argued that he himself identified the costs when offering standardised services. A fifth respondent stated: "*Communication is most often made of the person that conduct the offer but it is also common that a project leader and operative employees identifies costs*"

Another respondent argued that his primary role was to map out the different cost included in a specific project. He further stated that he sometimes did this in consultation with the project leader, although he considers himself to be responsible for the total project. The last respondent stated that the Business Manager normally identifies the costs and calculates the service in consultation with the project leader.

The general view from our interviews is that identifying costs are normally based on knowledge and experience. Checklist or standardised templates are hardly ever being used. Although one respondent stated that he uses a standardise checklist with pre-defined costs, which is being used for all types of his service offerings. He further stated that if a service demands activities or costs which are not pre-defined, then these are added in regards to the specific customer's preferences. Two other respondents' mentioned that standardised checklists do exist, but that they are not used to a great extent. One of them stated: "*It would be an enormous benefit to have a wide list over activities, which then can be marked of for the specific service.*" The other respondent stated that he think it might exist certain checklists to help identify costs, although he had no perception regarding how good they were, how inclusive they were or how standardised they might be. He further stated that identifying cost is based on experience and that the knowledge is: "*stored in the back-side of the head.*"

One of the other respondents state: "*The hard part is to identify the costs and communicate what is included and not included in the service offering.*" Another respondent stated that there is a need to package the services in order to be able to create more standardised checklists with pre-defined costs.

In terms of identifying/quantifying costs our interviews indicated that the majority of the respondents use their own experience, to identify and quantify costs. Only one out of the seven respondent stated that he uses a systematic model in order to quantify the direct costs for a specific service. The model is based on historical average costs. He further stated that he had received this model from colleges in Finland and that the model helped him estimating material usage and time estimation for installing different components.

Five respondents stated that they use experience in order to estimate/quantify the costs and that this experience is not documented. One respondent stated: *“The experience exists in the backbone and it is an important factor in terms of estimate and quantify costs.”* He further brought up the fact that he is starting to look at prior projects and their results in order to create documented “experience bank”. He further stated that there is great need for a cost variances tool, which could help improve future cost estimations. Another respondent shared this view. He stated that quantifying costs is normally based on individual experience. He further stated that the dream-scenario would be that the Business Manager could calculate the total offer himself, without using valuable time from the project leader and the other operative personnel. He argued that they have to create a documented experience-bank, for this to be possible. A third respondent state that the people calculating the services generally have rather good control in terms of quantifying the costs. But at the same time he brought up the fact that the real costs tend to vary from the calculated costs in some projects. He also argues that more documented cost information would be beneficial with regards to create a more accurate cost quantification process.

The final two of the respondents agreed with the fact that the methods to identify and quantify costs are usually based on “backbone” experience. One of them concluded: *“The difficulty with calculating direct costs is quantifying them.”*

#### **4.4.2 Purchasing**

One of the seven respondents stated that he felt more or less forced to purchase certain material from SKF:s sister companies, regardless if the price where above market price. Although the respondent did not view this as being a problem based on fact that the profit in any circumstances remains inside the SKF organisation. All other respondent stated that they had the possibility of buying material from external companies. Two respondents stated the fact that the calculated costs sometimes varied from the real cost when using a subcontractor to perform a service. One respondent argued that he sometimes received rather unspecified cost information from his subcontractor and therefore had to quantify the costs himself. He further argued that the real costs sometimes vary from the calculated. The other respondent stated that he sometimes had to purchase a service on an hourly rate from a subcontractor and at the same time he himself offered his customer a fixed price. The respondent estimated that 10% out the total offerings when using a subcontractor had a variation between calculated cost and real cost. He argued that this cost variation reduced the final profit margin in some projects. The respondent argued that this problem could be solved if he had the possibility of always buying the services to fixed price.

The other respondents all argued that if they offer their customer fixed price, then they themselves demanded fixed price from their subcontractors, regardless if it is an internal or external subcontractor. Based on this fact the respondents did not regard the cost variation when using subcontractor as being a problem. Two respondents saw a problem in the fact that

SKF applies internal profit margin amongst different business units. One of them argued that they sometimes lose customer because the end price becomes too high, due to the fact that a profit margin is applied in several different step. He further saw a potential in sharing the final profit margin, instead of adding an individual profit margin in three different levels; production, retailer and service division.

### The Control Group

The control group argued that the calculated costs of purchasing services and material from subcontractors sometimes tend to vary in project offered to fixed price. The control group did not regard this as being a big problem, based on the fact that the people calculating the services had not stressed this as being a big concern. But at the same time the control group stated that it is an area which needs to be investigated further in order to determine the actual cost variation when using subcontractors.

#### 4.4.3 Other Viewpoints Concerning Calculation of Direct Costs

Three of the respondents highlighted other problem areas in addition to the predetermined focus areas. One respondent argued that there is a certain amount of “muddle factors” involved in the process of handling and controlling services. The respondent exemplified this by describing the fact that the workforce sometimes changed from the time when the service is calculated until the date when the service was set out to be performed. The respondent has calculated with a certain workforce, but when the service was about to be performed the calculated workforce was not available; instead he had to use other operative personnel. The respondent also stated that the workforce sometimes changes during the process of a services being provided. He further argues that “muddle factors” such as these should not affect the costs of the project being performed; rather any additional cost should be applied on the other project demanding the personnel.

Another respondent argued that there was problem in terms of calculating travelling and hotel costs, based on the fact that they tend to vary depending on mode of transportation and the standard of the hotel. The respondent saw a potential in using certain standardised methods or techniques in order to make it easier to estimate those types of costs.

The third respondent regard the lack of specification levels in the invoices as being a problem. The respondent exemplified by stating that; if for example the calculation is divide in three different activities, then these are all invoiced as one common activity. The respondent further argued that the lack of specification in the invoice reduces the possibility of conducting costs variance analysis and therefore the possibility of creating a “knowledge bank” also reduces.

### 4.5 Relationship Costs

The term relationship costs as such were not familiar to any of the respondent; instead it had to be explained by the authors. Six out of the seven respondents stated that it is very likely that relationship costs do occur in a specific customer relation. One respondent stated the following: “*It is without doubt certain that relationship costs sometimes diminish the gross margin in some projects. It could be enough with an insufficient invoicing process, in order for the profit to be less then what we had accounted for.*” Another respondent stated: “*We*



*have different cost depending on the customers internal processes, how easy they are to work with and if we get fast access or not.*” (by access the respondent is referring to getting access to the customers information related to machines that need to fixed.) A third respondent stated: *“We don’t consider these types of cost when we are calculating.”*

Three out of the seven respondents argued that prior business relation with a customer has an impact on the future costing process of a service with that specific customer. Four respondents argued that they adjust the calculation based on prior relation with a customer, by adding on labour hours in order to be certain to include those costs which were excluded in the first calculation.

Only one respondent explicitly stated that he tries to map and identify the relationship costs in a more long-term perspective, when he is calculating a service. The other respondents acknowledge that they apply a more short-term calculation perspective. At the same time three of those respondents stated that costs sometimes occur after the invoicing date, which had not been included in the calculation. One respondent argued that it is common that he has to spend a certain amount of telephone contact with the customer after the date for the invoice. He further argued that this type of service is difficult to charge the customer for.

All the respondents had difficulties estimating the size of relationship costs. One respondent argued that this might be due to the fact that the current cost analysis is not good enough to enable an analysis regarding the size of the relationship costs.

One respondent stated that he saw a potential in using the relationship perspective in order to create a risk classification of the customers. The authors of this thesis suggested a risk classification of the customers in A-B-C classes, in order to enable a more general base for applying a certain relationship cost rate. The respondent had a positive attitude towards this suggestion.

Another respondent stated: *“We are doing business in an organisation which is completely focused on transactional business.”* The respondent further argued that it is of great importance to incorporate a more long-term business perspective when dealing with complex service, based on the fact that it is most likely that more business opportunities will occur with the same customer. He concluded that this is something that needs to be accounted for in the early stages of any customer relation.

### The Control Group

The control group concluded (after the term relationship costs has been explained), that relationship costs is a relevant issue which needs to be further analysed in relation to the calculation process. One respondent stated that relationship costs tend to increase if the customer is new. The respondent further states that relationship costs are not regarded as direct cost instead they are treated as overhead costs. Another respondent stated that the Industrial division at SKF uses an A-B-C classification of their customers and that this classification might be applicable on the Service division’s customers as well in order to be able to manage relationship costs.

## 4.6 Overhead Cost

### 4.6.1 Overhead Cost Object

All respondent shared the view that there is an overhead cost object which should be accounted for. The majority of them referred to it as; Sales & Administration.

One respondent stated that Sales & Administration account for the cost of business managers and other costs which are not included in the standard cost. Another respondent stated that Sales & Administration included costs such as; business managers, management, parts from the total organisation, customer service and sales support.

#### The Control Group

The control group also stated that there are costs in addition to the standard cost called Sales & Administration. They argued that Sales & Administration include administration cost which originates further out in the general organisation, and on the other hand sales costs which are closer linked to the service division, such as cost for the business managers.

The control had difficulties stating the percentage of which the business managers accounted for of the total sales overhead costs. But after a discussion among the three of them, they estimated that the business manager cost is roughly 90 % of total Sales & Administration. At the same time the control group argued that some overhead costs are not accounted for in their service division, which in reality should be accounted for.

### 4.6.2 Keys for Distributing Overhead Costs

All respondents had a common view that the traditional method should be used for distributing the overhead costs. Although one respondent mentioned that there are two methods, he could only describe one of them (the traditional method).

In a question about practical guidelines for setting an overhead rate/percentage which would cover the overhead costs the answers differed between the respondents. Two respondents argued that there are practical guidelines for the size of the overhead percentage, but none of them could state the size of the percentage. Three respondents stated that there is a standardised overhead rate which is 15 %<sup>7</sup>. One respondent initially stated that the overhead rate was 8-10 % then he change his mind and said 12 %. He finally argued that the overhead rate was 20 %. He further argued that the overhead rate should not only cover the overhead costs, but also generate a profit margin.

From the interviews it could be concluded that all respondent does not regard the overhead rate as being a fixed percentage instead it tend to vary between the respondents. One respondent stated: *“There is a possibility to adjust the overhead percentage depending on the size of the project.”* One respondent stated that he sometimes accept business opportunities that has an overhead percentage which is below 15 %, for example if there is a stagnation on the market or when the utilization rate is running low. A third respondent argued that he

---

<sup>7</sup> The percentages are made up by the authors in consultation with Henric Widén at SKF. They are only used in order to make it more illustrative.

accounts for sales overhead cost directly from the customer by conducting a pre-study (an investigation where he examines the machine that needs to be fixed), at the same time as he add an overhead rate on top of the total offering.

Another difference which appeared during the interviews was how the overhead rate was mathematically calculated. One respondent stated that he uses 15 % as an overhead percentage. He further mentioned that he multiplies the cost of a specific offer with 1.15 in order to cover all the overhead costs. Another respondent stated that he uses 20 % as an overhead rate. He, on his part, divided the total costs of a specific offer with 0.8 in order to cover all overhead costs. At the same time the respondent mentioned that he is uncertain in how he is supposed to do it. This was highlighted by the fact that the respondent asked an open question: *“Is the overhead rates suppose to be calculated from the top or from the bottom?”* Neither of the two authors stated a question with regards to this issue, it was brought up by the respondent.

In the question of choosing a key for distributing the overhead cost the following answers has been received: Six respondents argued that the total cost in a service offer is used as a key for distributing the overhead costs. One of those respondents was not sure, but he believed it was the total cost of the service offer that is the key for distributing overhead costs. He stated: *“There are no clear guidelines in how you are supposed to calculate.”* One respondent differed from the other based on the fact that he uses productive labour hours as a key for distributing overhead.

There was a difference between the respondents' opinions whether the key for distributing overheads are fair or not. Four respondents did not regard the distribution of overhead as a problem area. One of them argued that the overhead was pretty fairly distributed. He further stated: *“Distributing overhead is not the big concern. There are other areas which are much more important.”* The respondent referred to pricing services as their biggest concern. One respondent argued that there are shortages in the process of distributing overhead. But at the same time he preferred the current more standardised and simple method for distributing overhead. Another respondent shared this view, he stated: *“A percentage rate for distributing overhead is good because it has a positive impact on new and smaller businesses.”* The fourth respondent argued that the current method for distributing overhead can sometimes have an imbalanced impact on the service offering. At the same time he stressed the fact that he tries to trace as many direct costs as possible to cost object. He stated: *“It is possible that I separate more direct cost from the overhead then the others do.”* At the same time the respondent argued that it is not necessary to conduct a further separation between overhead cost and direct cost, based on the notion that it is likely that the process of separating the cost would be more costly then the benefits received from it.

Two respondents were uncertain whether the overheads are distributed fairly or not. One of them had difficulties determining if the key for distributing them is balanced, although he mentions that it is an area which should be further investigated in order to determine if in fact it is balanced method of distributing the overhead or not. The other did not regard this as being a problem, even if the overhead percentage which is added onto the service offering sometimes differed from the real cost: *“It can vary in the short-term but it will even out in a more long-term perspective.”*

One of the seven respondents explicitly stated that there is an interest in using time and resources in order to create a more fair and balanced distribution of the overheads. The

respondent would like to identify and separate more direct costs from the sales overhead costs. He argued that a civil engineer sometimes receives a quotation over the telephone and even though no business manager has been involved in this quotation the sales overhead cost for the business manager is still added to the total cost of that service offering.

### The Control Group

The control group was uncertain about the size of the overhead percentage used in the service division. The authors mentioned to the control group that most individual respondent use 15 % as their overhead rate. This overhead rate was not familiar to the control group. The control group was also uncertain regarding which key for distributing the overhead is being used in the service division. *“It should be the total cost a service offering.”*

In the question regarding the method of mathematically calculating the overhead rate, that is if one should multiply with 1.15 or divided with 0.85, the control group argued that the first method is the one which should be applied.

### 4.6.3 Other Viewpoints Concerning Calculation of Overhead Costs

One respondent felt that the economical maturity or awareness was rather limited. *“The terminology has not been anchored through out the service division.”*

One respondent saw a potential in revising the cost and income distribution between the different sister companies within the SKF organisation. He saw a problem in the fact that the service division sometimes generates business opportunities for their sister companies without receiving any part of the profit. He further argued that the profit margin sometimes decreased when using a sister company as a subcontractor.

One respondent argued that the service division could not take on more standardised services, based on the fact that SKF have such a large organisation and thus a large amount of back-office operation. *“Our back-pack is too big.”* He further argued that they are lacking a strategy in terms of which services they should focus on. Another respondent stressed the importance of competence: *“The employees most prioritize further education, which we are not.”*

## 4.7 Profit Margin

### 4.7.1 Practical Guidelines for Setting the Profit Margin

None of the respondents stated that the service division had any standardised practical guidelines for setting a profit margin. Despite this fact four of the respondents stated that they apply a given profit margin when they are pricing their services, although all of the respondents applied different profit margins. For example, one of the respondents stated that he does not apply a separate profit margin instead he uses a combined margin which includes both a profit and the overhead costs.

All respondents stated that it is up to the person calculating the service offering to determine the profit margin. They also concluded that the profit margin can vary from service to service. Three of the respondents argued that setting the profit margin is mostly based on experience and “backbone-knowledge”. Another respondent stated that the price is affected by the uniqueness of the project, competition on the market and the length of the customer relation.

### Control Group

The control group confirmed that there are no standardised practical guidelines for setting a profit margin. But at the same time one respondent in the control group stated: *“We should have it. It should not be up to the individual salesperson.”*

### 4.7.2 Pricing Strategies

None of the respondents stated that the service division applies a standardised pricing strategy. One respondent explicitly stated the need for a pricing strategy: *“When are we supposed to use a market price, a cost price or a value based price? This is something we would like to know. How could we create a dividing between different price strategies in relation to different services?”*

It was a common view among the respondents that a cost based pricing strategy is the preferred method, despite the fact that the service division is lacking a clear pricing strategy. One respondent stated that a cost based method is used in 8 out of 10 service offerings. The underlying opinions why the cost based method is the general method differed amongst the respondents. One respondent argued that tradition had an important impact on the choice of pricing strategy; partly because SKF have used a cost based pricing strategy for a very long time and partly due to fact that the industrial service market generally uses a cost based pricing strategy. This view was shared by another respondent, who argues that it would be difficult to adopt a value based pricing strategy due to fact that most competitors use a cost based price. He further argued that the customer most likely would focus purely on the price instead of focusing on the value creation aspect. According to the respondent it would therefore be difficult to justify a premium price based on customer value.

At the same time as the majority of the service offerings are priced with a cost based method, many of the respondents saw a potential in adopting a value based pricing strategy. One respondent even argued that it is a formalized strategy from management that the service division is supposed to adopt more value based pricing. He mentioned that SKF has developed a value based pricing model called DSP. A majority of the respondents had heard of DSP, but at same time not many of them had used it in order to price a service. One respondent mentions that he sometimes uses DSP in order to “create a sale”, in a sense that he is using DSP to illustrate the cost reductions which the customer would get from buying a particular service. He further stated that he always uses a cost based pricing method when setting the final price. A recurrent statement why the cost based strategy is used was the fact that the market as such is not ready to except any other pricing method apart from the cost based. At the same time one respondent argued that SKF as an organisation does not “dare” to differentiate their pricing strategy from the competitors and adopt a value based pricing strategy, due to fact that they might risk losing customers: *“If we adopt a value based pricing strategy and our competitors does not, then it becomes difficult to motivate a higher price.”*

One respondent concluded that if it is going to be possible to fully adopt a value based pricing strategy then the service has to be more or less unique.

### **4.7.3 Risk Analysis**

None of the respondents stated that the service division applies a standardised risk analysis prior to the start of a project. One respondent stated that a risk analysis model had been developed a few years ago, but he further argued that this model was adjusted for a prior service organisation at SKF and it had not been adopted in the new service division. He further argues that there is a great need for a risk analysis model and a risk rate that can be used in order to reduce the risk in projects which are difficult to estimate and calculate.

Four of the respondent stated that they use individually developed risk analysis in certain projects. One of them argued that he eliminated the risk in project by writing good offers/tenders. He pointed towards the importance of specifying what is included and not included in the service offering. At same time he mentioned that he sometimes increases the profit margin in certain projects, if he felt that there was an inherent risk in that particular project. Another respondent applied an hourly rate instead of a fixed price, if he felt uncertain about a specific service/project. A third person argued that his risk analysis was based on “backbone-experience”.

#### **Control Group**

The control group argued that a risk analysis should be conducted which might have an impact on the end price. The control group argued that the en-price should vary in accordance with the risk inherent in specific project. They further argued that it should be regarded as a tool to determine whether to accept or decline a specific service/project. The control group assumed that it is stated throughout the service division that a risk analysis should be conducted prior to a project/service.

## 5 ANALYSIS

---

*In this section the empirical result will be analysed based on the purpose of this study; “...to identify and exemplify potential problems in the process of calculating industrial services in a manufacturing company moving towards becoming more service oriented”. The theoretical framework is primarily used as a means of categorising the identified problems in a structured manner.*

*In an attempt to increase the value of this analysis we have also strived for applying our theoretical framework in order to analyse whether the problems we have identified are related to calculation and at the same time discuss if they can be considered as relevant or not. Our theoretical framework has also been used as a base in order to try and analyse if the problems we have identified can be considered as organisational specific problems or problems related to the unique characteristics of industrial services.*

*Finally we would like to point out the fact that this analysis to a certain degree is based on our own indications which we have build up during this case study and therefore the theoretical substance might have been reduced.*

### 5.1 Defining and Classifying Services

<b>Calculation problems</b>	<b>Other problems</b>
Inefficient costing process	Lacking clear service offerings
Individual dependency	

Schmenner (1986) believes that it exist a confusion in the service sector. He argues that service companies all too often view themselves as unique and thus have limited the possibility of a common terminology. Despite the fact that SKF cannot be characterized as a typical service company, they have indeed a similar problematic with regards to fact that they are lacking a clear classification of their services. Our empirical data show that all respondents use different types of definitions and classifications for their services. It could be argued that all their services are inherently so different that a standardised classification would not be beneficial with regards to the costing process. At the same time one cannot overlook the fact that a majority of the respondents all agree upon the fact that the current classification lead to an inefficient costing process. Silivstro et al. (1992); Schmenner (1986); Silivstro (1992) and Buzacott (1999) argue that the service industry could benefit from applying a unified classification of services. It could be argued that SKF would benefit from a more unified classification as a means of creating a more unified costing process. We cannot state that a more unified service classification will lead to a more efficient costing process, but at same time it cannot be ruled out.

One respondent pointed out that the current classification sometimes can lead to high individual dependency in the offering process. This might be due to what Schmenner refers to as; confusion in the service sector, where everyone applies their own terminology. Although we have to point out that only one of the respondents stated that the lack of classification

leads to individual dependency in the offering process. But at the same time one cannot disregard the fact that a more unified classification might be a tool for creating a more general accepted terminology, which can be used to create a more standardised offering process and thus decrease the individual dependency.

Another problem related to the lack of service classification was the fact that SKF had no clear service offerings to their customers. One respondent stated that “*We are lacking a clear categorisation of our services and therefore lacking a clear service offering to our customers*”. Yet again we have to point out the fact that only one of the respondents stated this problem and it cannot be regarded as a general concern with regards to the lack of a unified service classification. But one can argue that if you have difficulties defining the service internally you might have problems defining it externally to the customer.

Our classification matrix indicates that there is a rather common view with regards to the main characteristics of their services, with a strong focus on high technical skills. This awareness could be used to further develop a more accepted terminology and thus create a more unified service classification, which might be beneficial both internally and externally.

## 5.2 Practical Guidelines for Calculation

The main findings in this study with regards to practical guidelines indicates that all respondents apply some form of full cost distribution method and that the respondents use self developed checklist or templates. We have identified the following problems which can be associated with the lack of standardised checklist/templates.

Calculation problems	Other problems
Cost objects left out/less accuracy	
Inefficiency	
Individual dependency	
Less possibility to follow up – limited support to make future assessments	
Uncertainty in pricing	

A majority of the respondents thought that the lack of standardised calculation templates constituted a problem. Although there is no unanimous view of what the problems is. Only one problem area is shared between two respondents, which was; the risk of leaving cost objects out of the calculation. The other four problem areas associated with lack of standardised checklist/template are stated by individual respondents.

If the lack of using standardised calculation templates/checklist is a relevant problem or not is difficult to state with regards to the findings of this study. Although our indications point towards a need for more standardised calculation templates, based on the fact that it has been expressed both from the respondents costing the services and by the control group.



All problems which we have identified in this section are according to us related to the calculation process. One respondent stated that the first thing that has to be done in order to be able to create more standardised calculation templates, is to create a more distinct classification (or packaging) of their service offerings. According to Lovelock et al. (1999) there are difficulties defining services, due to their intangibility. We can not conclude from this study that the lack of standardised calculation templates is due to the lack of a unified service classification. Although if it this was in fact the case, one could from Lovelock's discussion argue that the lack of standardised calculation templates would be more common for service costing compared to product costing, due to the fact that services are more difficult to define.

We could not identify any direct problems in terms of applying costing method; Full cost distribution or Variable costing. Although an interesting aspect was the fact that some of the respondents argued that it was up to the individual to choose costing method, at the same time as the control group argued that the full costing method should be applied. The control group was also able to confirm that it in fact exists a standardised calculation template in the quality manual. It should be stated that the control group had to look it up at the local Intranet in order to be sure. The control group further stated that this template needed to be updated and communicated through out the division.

Our analysis concerning practical guidelines in the calculation process indicates the service division is lacking a unified and accepted process and that the respondents often apply individually developed calculation processes.

### 5.3 Standard Costs

Calculation problems	Other problems
The standard cost does not take the level of experience into consideration	
The standard cost does not take the specific services performance into consideration	
The standard cost is based on utilisation rate which is too high	
Handling development costs	

There is a common view among the respondents at the service division in that the standard cost being used does not take the level of experience into consideration and six out of the seven individual respondents also argue that the standard cost for a specific employee is independent from the service being performed. The seven respondents did not regard this as being a problem, although the control group considers it to be a problem.

As been stated in the empirical section it is possible for a trainee who just finished his training period to have the same standard cost as an employee with thirty years of work experience. Our study does not show if these two (experienced and non-experienced employee) can perform the same activities, or if the more experienced employee can perform a task which the less experienced cannot. If this was the case and if the differences between standard cost and

actual cost were high with regards to the different levels of experience, then our opinion is that it could be a problem in the calculation process.

A similar analysis concerning the standard cost could be conducted regarding the possibility that an employee could perform different services. That is; if a specific employee with a given standard cost, can perform clearly different services/activities which have relevant cost differences, then one might argue that it would constitute some problems in the costing process, based on the fact that it could occur cost variances between standard cost and actual cost (Drury, 2000). This potential problem has to be placed in relation with the fact that standard costing is a tool for creating a faster and more efficient costing process (Johansson & Samuelsson, 1997). Potential variances in the costing process caused by standard costs can sometimes be regarded as subordinate to having an efficient costing process. If the alternative is to increase the amount of standard costs and include a variable such as work experience, it is then important to compare the benefit of having a more accurate cost accounting in relation to the economical feasibility of applying a wider set of standard costs.

The control group also stated that the standard cost is based on a utilization rate which is too high. This aspect has not been discussed with the seven respondents. The control group further stated that the calculated utilization rate is 6-7 percentages higher compared to the actual utilization rate. Is this aspect a calculation problem or an efficiency problem? We argue that it is a calculation problem based on the fact that the control group explicitly stated that the utilization rate is calculated on a target which is not realistic. Our study indicate that the consequence of using an unrealistically high utilization rate is that the total cost is calculated on too many hours, which in the long run leads to a calculated cost/hour that is lower the actual cost/hour.

The final potential problem area, which we have identified in this section, is the managing of development costs with regards to the standard cost. If this is problem area or not has not been explicitly stated by the respondents, but our study clearly indicates that the service division is lacking a structured method how to handle development costs. Development cost is currently being managed in different ways depending who you ask. Some of the respondents assumed that development costs were included in the standard cost and some argued that they were additional costs. Examples of development costs are employee training and specially made equipment for a specific service. One respondent in the control group stated that development cost such as these can sometimes be of a large amount.

Our study indicates that the problems concerning development cost is mainly due to lack of communication and guidelines in the organisation, which in a latter stage could have an impact when costing services. One risk today is that development cost could be accounted for twice, that is if they are both included in the standard cost and at the same time added on to the specific service cost object. Another risk is the possibility of not including them at all, that is if the person costing a service assumes that development cost are included in the standard cost, but in reality they might not be.

In conclusion of this section we would like to discuss the relevance of using standard costs in services which tend to vary from time to time. Standard costing was according to Ask & Ax (1997) developed for organisations with a steady and predictable manufacturing environment. Drury (2000) further argues that standard cost is most suitable in organisations consisting of standardised and repetitive activities. Our indications regarding the industrial services at SKF is the fact that they often include a certain set of activities, but the way they are performed

tends to vary from time to time. The person calculating a specific service does not always know which personnel is available when the service is set out to be performed. A possible scenario is that a person has calculated with a certain work force, but when the service is set out to be performed, the calculated personnel are not available.

We cannot conclude if this is a relevant problem or not, but from the discussion above it would be of interest to further study the relevance of using standard costs in service organisations with such a high variability in their service offerings.

## 5.4 Direct Cost

<b>Calculation problems</b>	<b>Other problems</b>
Difficulties identifying cost objects	Variances in cost when using subcontractors
Difficulties quantifying direct costs	Internal profit margins

There is a general agreement among the respondents at SKF that the identification and quantification of direct costs is based on prior experience. Only one of the respondents explicitly stated that he applies a standardised model with predefined average costs as a method for quantifying direct costs. The fact that most respondents use experience as a method to identify and quantify direct cost might be based on the fact that the input and output for their specific service tend to vary from time to time. Hansen & Mowen (2006) argue that the heterogeneity of services makes it difficult to standardize and control variability in both service inputs and outputs.

Our empirical research indicates that the main difficulty concerning direct costs is quantifying them rather than identifying the specific cost objects. One respondent explicitly states that the actual cost often differ from the calculated cost. As been stated earlier the quantification of direct cost is generally based on individual experience and not so much on documented cost information. One respondent argues that they have started to look at prior projects in order to create a “knowledge bank”, which could be used to improve the quantification of the direct costs. It seems to be a common view among the respondents that documented information from prior projects could be helpful in order to improve the quantification process.

A problem area that came up during the empirical study was the fact that the calculated costs sometimes varied from the real cost when using a subcontractor to perform a service. One respondent argued that he sometimes received rather unspecified cost information from his subcontractor. There are no indications that this is a problem directly linked to the costing process of services. One respondent stated that he sometimes had to purchase a service on an hourly rate from a subcontractor and at the same time as he offered his customer a fixed price. This might be an indicator that it is more a matter of negotiating the contracts between the seller and the buyer and not a problem specifically associated with costing of services.

Two respondents argued that the internal profit margin applied at SKF different units is a problem due to the fact that the end price becomes too high. This cannot be regarded as costing problem, but rather an organisational issue.

## 5.5 Relationship Costs

Calculation problems	Other problems
Relationship cost is treated as Sales & Administration costs	
Short and transactional focused costing	

The term relationship costs as such were not familiar to any of the respondents. We explained that relationship costs are additional costs on top of the normal manufacturing costs that occur due to interaction with a specific customer and that they evolve over time (Grönroos, 2000). All respondents agreed that these types of costs are common in their service operation. The control group explicitly stated that relationship costs are a relevant area which needs to be highlighted with regards to the costing process of their industrial services.

Our study indicates that there are no guidelines or structured way of dealing with relationship costs. According to Grönroos (2000) it is common that these types of costs are registered as unspecified administrative costs in companies' cost accounting systems. The result of this study indicates that such is the case at SKF: service division. The control group stated that relationship costs are included in Sales & Administration. It should be stated that some of the respondents mentioned that they sometimes add a certain amount of labour hours in the calculation, based on prior relations with the customer. An example of this could be if a specific customer has a tendency to be difficult to work with. This is an aspect indicating that it exists a certain amount of "active" differentiation towards different customers and that it has an impact on the costing process.

Our interpretation of the results from the interviews is that service division is lacking a common perception regarding the quantity of the relationship costs. The following statement (stated by one of the individual respondents) highlights the fact that it exist an interest to identify and quantify the relationship costs; *"It is without doubt certain that relationship costs sometimes diminish the gross margin in some projects. It could be enough with an insufficient invoicing process, in order for the profit to be less than what we had accounted for."*

According to Ax et al. (2005) costs should be treated as direct cost as far as possible. At the same time they point out that the process of tracing direct costs should be carried out in accordance with economical feasibility. We can not state if relationship costs is a relevant calculation problem, without knowing; how big they are, if they tend to differ between the customers and the cost of identifying them.

The second potential calculation problem, which we have identified with regards to relationship costs is the fact that the calculation tend to have a transaction based perspective. It has not explicitly been stated by the respondents that this is a problem, although our study indicates that all respondents with the exception of one, use a short-sighted and transaction based calculation perspective. At the same time several respondents state that it is in fact common that different activities and costs tend to occur, after the transaction date. The respondents further argue that these costs seldom are billable.

Grönroos (2000) argues that today's time perspective is short-sighted and transaction-oriented. He further argues that calculation and economical reports pay little or no attention to economical factors occurring after the transaction date. He further argues that service

companies need to be able to think and calculate in a more long-term perspective, based on the fact that what is sometimes regarded as profitable in a transaction based perspective can in more long-term and relation based perspective be regarded as unprofitable.

One respondent pointed out the fact that his customer relations tended to go on for several years. Based on the findings in this study our opinion is that long-term relations are a common aspect of several of our respondents' customers' relations. This fact increases the interest of further identifying customer specific relationship costs, in order to able to determine if a customer is profitable or not.

With regards to the discussion above we cannot with certainty conclude that a transaction based calculation perspective is a relevant problem or not. In order to do this, one must first determine how large the long-term relationship costs are, how big the differences between the customers are, and how much it will cost to identify these types of costs.

## 5.6 Overhead Cost

Calculation problems	Other problems
Difficulties identifying overhead costs	Large amount of back-office operation
Using different overhead percentages	

The empirical result show that SKF have an overhead cost object called Sales & Administration. All respondents have a common view that the traditional method should be used for distributing the overhead costs. The fact that the service division uses the traditional method could be due to the fact that SKF have a long tradition of using the traditional costing method in their manufacturing operation and have been reserved towards the ABC-method (Ask et al., 1992).

An interesting aspect was the fact that some of the respondents stressed the fact that SKF is such a large organisation. One respondent argued that this fact had an impact on the service division's ability to conduct business. He argued that they (the service division) could not take on more standardised services, based on the fact that SKF have such a large organisation and thus a large amount of back-office operation. "*Our back-pack is too big.*" If the "back-pack" is too big or in other words, if the overhead cost is generally high at SKF in relation to competing actors is something we cannot argue for or against from our research. However our analysis indicates that regardless which way it is, this is not an area that is directly related to costing. From our point of view this is rather a matter related to organisational efficiency or sales strategy.

Another interesting aspect with regards to identifying overhead cost was the fact that the control group had difficulties identifying the amount of fixed overhead in relation to the variable overhead. From the information we received we can not in any way argue for or against the traditional method, nor can we argue that SKF should apply the ABC-method. But the fact that the amount of fixed overhead cost is not clearly mapped out is interesting in itself. If a "mapping" is conducted and shows that the overhead cost stands for an important part of the total costs and that the fixed costs at the same time are a considerable part of the overhead

cost, then it could in accordance with Ax et al. (2005) be a complexity which motivate an allocation method such as ABC-costing.

There is a common view between the respondents that the total cost for a specific service should be used as the allocation base for distributing overhead. The respondents could not determine if this was a fair allocation base or not. But an interesting aspect was the fact that one of the service divisions business controllers estimated that 90 percent of the total Sales & Administration where cost for the business managers. If this was accurate one could argue that it would be more appropriate to directly trace the cost for the business managers, by using actual (sales) time spent for a specific service/project. In accordance with Ax et al. (2001) the more costs which can be directly traced to the specific cost object the more accurate the cost accounting will be. It should be clearly stated that it should be carry out with regards to economical feasibility (Drury, 2000).

The percentage applied on the allocation base differed between the respondents. Two of the respondents stated that no clear guidelines where given in terms of what percentage should be used. Our study indicated a certain amount of uncertainty between the respondent in how to apply and use an overhead percentage. The fact that none of the respondents could clearly state which cost were included in the Sales & Administration could be a reason for this uncertainty. It is also clear that the lack of communication between the business controllers and the ones costing the services have an impact on the costing process. This however is most likely an organisational issue and not a specific problem for costing services.

## 5.7 Profit Margin

Calculation problems	Other problems
Lacking guidelines for setting the profit margin	
Difficulties choosing pricing methods	
Lacking a risk analysis	

Our study indicates that the service division is lacking a standardized procedure for determining the profit margin of a service. All respondents applied different profit margins on their services. A majority of the respondents stated that the final profit margin is based on prior experience and specific knowledge about the market. We cannot conclude that the reason why all the respondent applies different profit margin is due to fact that they are offering industrial services, although Fuller & Morris (1989) argues that the fact that industrial service differ from products in many ways hold important implications for the development of pricing programs. Yet again our analysis indicates that it is more a matter of poor communication between the business controllers and the people costing and pricing the services. This analysis is based on the fact that the “controlling group” at SKF all stated that they had not given any guidelines to the people pricing the services. One business controller explicitly stated that it should not be up to the individual to determine the profit margin. He further argues that it should be standardised minimum for the profit margin.

From our empirical data we can conclude that the service division is also lacking a clear pricing strategy. One respondent explicitly stated the need for a pricing strategy: *“When are we supposed to use a market price, a cost price or a value based price? This is something we would like to know. How could we create a dividing between different price strategies in relation to different services?”*

Despite the fact that the service division is lacking a clear pricing strategy it is rather evident that the respondents in general uses a cost based pricing strategy. This might be due to fact that SKF as an organisation have a history of using traditional cost accounting methods (Ask et al., 1992), but also due to the level of pricing maturity in the industry. One respondent argues that it would be difficult to adopt a value based pricing strategy due to fact that most competitor’s adopted a cost based price. Another respondent stated that the customers are not ready to accept any other price then a price based on actual cost.

The fact that SKF have developed a value based price model can be an indication that they are shifting towards incorporating a more value based pricing strategy. At the same time many of the respondents argues that cost based pricing is the most commonly used pricing strategy a majority of the respondents see a potential in adopting a value based pricing strategy. Lovelock et al. (1999) argues that in order to adopt a value based pricing strategy you need to make some research and determine how customers perceive the value of your service. We have received indications that some of the respondents in certain situations have attempted to determine the perceived value by applying SKF:s value based model for a specific service. But the respondents who have used SKF:s value based model have only used it in order to justify the prices for a given customer. The end price was in the later stage based on the cost.

If in fact their services are as unique as many of the respondents pointed out, then one might argue that value based pricing would be an alternative in order to justify a premium price (Kotler et al., 1999).

## 6 CONCLUSION

*In this final chapter we will discuss those findings that we consider be of the most interest and also suggest future research topics related to our study.*

### 6.1 Conclusions

The purpose with this case study has been to: “...identify and exemplify potential problems in the process of calculating industrial services in a manufacturing company moving towards becoming more service oriented”. The following figure is an attempt to illustrate all potential problems that we have identified during our case study at SKF Service Division Nordic Region.

Costing problems	Other problems
<b>Definition of services</b>	
<ul style="list-style-type: none"> <li>• Insufficient classification               <ul style="list-style-type: none"> <li>- Inefficient costing process</li> <li>- Individual dependability</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>- Lacking clear service offerings</li> </ul>
<b>Practical guidelines</b>	
<ul style="list-style-type: none"> <li>• The lack of a standardise checklist               <ul style="list-style-type: none"> <li>- Cost objects left out</li> <li>- Inefficiency</li> <li>- Individual dependability</li> <li>- Less possibility to follow up – limited support to make future assessments</li> <li>- Uncertainty in pricing</li> </ul> </li> </ul>	
<b>Standard costs</b>	
<ul style="list-style-type: none"> <li>• The standard cost does not take the level of experience nor the specific services performance in to consideration</li> <li>• The standard cost is based on utilisation rate which is to high</li> <li>• Handling development costs</li> </ul>	
<b>Direct cost</b>	
<ul style="list-style-type: none"> <li>• Difficulties identifying cost object</li> <li>• Difficulties quantifying direct costs</li> </ul>	<ul style="list-style-type: none"> <li>• Variances in cost when using subcontractors</li> <li>• Internal profit margins</li> </ul>
<b>Relationship costs</b>	
<ul style="list-style-type: none"> <li>• Relationship cost is treated as Sales &amp; Administration costs</li> <li>• Short and transactional focused costing</li> </ul>	
<b>Overhead cost</b>	
<ul style="list-style-type: none"> <li>• Difficulties identifying overhead costs</li> <li>• Using different overhead percentages</li> </ul>	<ul style="list-style-type: none"> <li>• Large amount of back-office operation</li> </ul>
<b>Profit margin</b>	
<ul style="list-style-type: none"> <li>• Difficulties choosing pricing methods</li> <li>• Lacking guidelines for setting the profit margin</li> <li>• Lacking a risk analysis</li> </ul>	

Figure 12: Summary of our findings. (Developed by authors)

The goal with this final discussion is to highlight those calculation problems which we consider most important and could possibly be found in manufacturing companies similar to SKF.



One of the most interesting problem areas which we have encountered along the way is the difficulty of defining and classifying industrial services. The complex and diverse nature of this type of service might be an explanation why the respondents at SKF have such difficulties classifying them. Based on the notion that industrial services as such have not yet reached a high level of maturity in practice compared to industrial products, in combination with the lack of a common terminology in theory could well be indicators that those companies being in the same situation as SKF might have the same difficulties defining their industrial services.

We consider the possibility that the lack of classification constitute a “chain reaction” of problems. Firstly it decreases the possibility of a unified terminology, which in turn reduces the possibility of a unified costing process and together creates an inefficient costing process.

Another interesting aspect is the notion of relationship cost and the potential they might have in creating a more accurate costing process of services. Relationship cost is most likely more common in service operation compared to physical products, based on the fact that services often constitute a higher degree of interaction between the seller and the buyer. Our study illustrate that relationship cost most likely exist in industrial service operations. The fact that a relation with a customer tend to go on for a long period of time, indicate that this is a phenomenon which one should not overlook. As it is today, SKF is lacking a structured approach in how to identify and take in to consideration the potential relationship costs in a specific customer relation. One way of doing this might be to classify their customers in A-B-C customers, depending on their level of maturity, internal process, prior business encounters et cetera.

The fact that none of the respondents had ever encountered the term relationship cost is an indication that it is not yet accepted in practice and therefore it is not likely that other industrial service organisations have incorporated it in their cost accounting process.

Setting the profit margin and choosing a pricing strategy has not been a prioritised focus area in this study, although it should be stated that many of the respondents thought this was a major difficulty. We consider the possibility that the level of maturity in the industrial service market could have an impact on the difficulties of pricing their services. This is based on the fact that some of the respondents stated that the market is not ready to accept any other pricing method then cost based pricing, but at the same time the respondents argued that they saw a potential in using a value based price, due to fact that their services are unique. This creates a certain amount of contradiction and thus difficulties choosing an appropriate pricing strategy. The fact that the respondents argue that the market as a whole have not yet reached a high level of acceptance towards value based pricing indicates that other actors on the industrial market might have the same problems as SKF in terms of choosing the most appropriate pricing method for their industrial services.

The use of standard cost is another area where we consider having identified potential calculation problems directly linked to the costing of services. The fact that standard costing is developed for well defined and standardised manufacturing operations could possibly constitute potential problem if applied in service operations with a high degree of variability. Our study indicates that industrial services are hard to define and tend to vary from time to time in terms of labour and material need to perform the service. Another interesting aspect is the fact that the standard cost at SKF does not take working experiences into consideration and at the same time the respondents in this study have focused on the importance of prior

experience and technical skills. One might argue that the standard cost would be more accurate if employee work-experience was included.

The discussion above have focused on problems in the calculation process which we consider having a relation with the unique characteristics of services. The results from our study also indicate that some problems which we have identified most likely are specifically associated with SKF as an organisation. One problem is the lack of communication between business controllers and the personnel calculating the service. The lack of guidelines in terms of allocating overhead cost and setting the profit margin are two major issues which could well have a considerable impact on the costing process. We have found that the lack of guidelines has in some cases required the person calculating a specific service to create his own calculating process and as consequence several independent calculation processes have been developed through out the service division. We cannot state that a more unified calculation process will increase the costing accuracy, but as been stated earlier it can not be ruled out.

Finally we would like to stress the fact that our intention with this case study has been to use SKF as an illustrative example in order to identify potential problems when calculating industrial services. The problems which we have identified cannot be considered as being generic. They should be considered as a base of potential problems, which can be used in other studies related to this area. We also believe that other companies being in the same situation as SKF can use our findings as an inspiration in order to identify potential problems in their process of calculating industrial services.

## **6.2 Suggestions for Future Research**

We believe that it would be of high interest to conduct further research concerning calculation of industrial service. One suggestion would be to conduct a case study at another company, being in a similar situation as SKF, in order to distinguish if one might identify comparable problems.

Another interesting aspect would be to focus on the usefulness of standard costing in industrial services.

## 7 REFERENCES

---

### 7.1 Books and Articles

Andersen, I. (1998) Den uppenbara verkligheten: val av samhällsvetenskaplig metod, Lund: Studentlitteratur

Ask, U. Ax, C. Bergvärn, L-E & Jönsson, S. (1992) Calculative Practice and Cost Accounting in Swedish Industry- Evolution During the 20<sup>th</sup> Century

Ask, U. & Ax, C. (1997) Produktkalkylering i litteratur och praktik: En beskrivande och förklarande studie av svensk verkstadsindustri. Gothenburg: BAS.

Ax, C. Johansson, C. & Kullvén, H. (2001) Den nya ekonomistyrningen, Malmö: Studentlitteratur

Ax, C. Johansson, C. & Kullvén, H. (2005) Den nya ekonomistyrningen, Malmö: Studentlitteratur

Backman, J. (1998) Rapporter och uppsatser, Lund: Studentlitteratur

Burns, J. & Scapens, R. W. (2000) Conceptualising Management Accounting Change: An Institutional Framework: Management Accounting Research, Vol. 11,

Buzacott, A. J (2000) Service system structure: International Journal of Production Economics, Vol. 68, pp. 15-27

Drury, C. (2000) Management & cost accounting London: Business Press, Thomson Learning

Edvardsson, B. Gustafsson, A. Johnson, M D. & Sanden, B. (2000) New service development and innovation in the new economy, Lund: Studentlitteratur

Fransson, M. (2004) Verkstadsindustrins tjänstefiering: en explorativ resa i det nya affärslandskapet, Karlstad: Institutionen för ekonomi.

Fuller, A. F & Morris H. M (1989) Pricing an Industrial Service: Industrial Marketing Management, Vol. 18, pp. 139-146

Goffin, K. & New, C. (2001) Customer support and new product development: An exploratory study International Journal of Operations and Productions Management, 21(3), 275-301

Grönroos, C. (1996) Marknadsföring i tjänsteföretag, Malmö: Liber-Hermond

Grönroos, C. (2000) Service management and marketing: a customer relationship management approach, Chichester: Wiley cop.

Halvorsen, K. (1992) Samhällsvetenskaplig metod, Lund: Studentlitteratur

- Holme, I. M. & Solvang, B. K. (1997) *Forskningsmetodik: om kvalitativa metoder*, Lund: Studentlitteratur
- Hans, D. & Mowen, M. (2006) *Cost accounting and control*, Southbank: South-Western
- Hörberg, P. (1994) *Vinnande tjänster: en guide till ökad lönsamhet genom effektivare tjänster*, Stockholm: Tjänsteförbundet
- Johansson, P. (2006) *Adapting manufacturing strategy to industrial after-sales service operations*, Linköping: Tekniska högskolan
- Johansson, S-E. & Samuelson, L.A. (1997) *Industriell kalkylering och redovisning: industriella ekonomisystem* Falköping: Norstedts Juridik
- Kotler, P. Armstrong, G. Saunders, J. & Wong, V. (1999): *Principles of marketing*, European edition. 2, London: Prentice Hall
- Lovelock, C. Vandermerwe, S. & Lewis, B. (1999) *Service marketing a European perspective*, London: Prentice Hall Europe
- Lundahl, U. & Skärvad P-H. (1992) *Utredningsmetodik för samhällsvetare och ekonomer*, Lund: Studentlitteratur
- Merriam, S. (1994) *Fallstudien som forskningsmetod*, Lund: Studentlitteratur
- Nordin, F. (2005) *Externalising services: walking a tightrope between industrial and service logics*, Stockholm: Economic Research Institute, Stockholm School of Economics
- Normann, R. (2000) *Service management: strategy and leadership in the service business*, Chichester: Wiley.
- Oliva, R. & Kallenberg, R. (2003) *Managing the transition from products to services*, *International Journal of Service Industry Management*, Vol. 14. pp. 160-172
- Patel, R. & Davidsson, B. (1994) *Forskningsmetodikens grunder: att planera, genomföra och rapportera en undersökning*, Lund: Studentlitteratur.
- Paulsson, U. (1999) *Uppsatser och rapporter*, Lund: Studentlitteratur
- Ryan, B. Scapens, R. W & Theobald, M. (2002) *Research Method & Methodology in Finance & Accounting*, London: Thomson
- Schmenner, W. R (1986) *How Can Service Business Survive and Prosper?* *Sloan Management Review*, Vol. 27 pp.21-32
- Silvistro, R. Fitzgerald, L. Johnston, R. & Voss, C. (1992) *Towards a Classification of Service Processes*: *International Journal of Service Industry Management*, Vol. 3. pp. 62-75
- Yin, K. (1985) *Case study research: Design and methods*, Beverly Hills: Sage corp.

## 7.2 Other

SKF: About SKF, <http://www.skf.com/portal/skf/home/about?lang=en>, 2007-03-16

SKF Årsredovisning 2005

## Calculation of Industrial Services – Semi-structured questioner (Second version)

### Defining/classification of services

- How do you categorise your services (in general)?
- Do you apply a categorisation of your services related to the calculation process?
  - Which of these categories do you offer?
  - If not, is there a problematic related to the calculation due to a lack of service classification?
- Matrix – Which service type do you offer?

		<i>Degree of labour intensity</i>	
		<i>Low</i> <i>Material intensive</i>	<i>High</i> <i>Hours intensive</i>
<b>Utilization of Technical skills</b>	<b>Few/Low</b>		
	<b>Many/High</b>		

### Practical guidelines when offering/calculating services

- Do you use a standardised template/checklist?
  - If yeas, is it useful/shortages?
  - If not, why not/do you see a need for it?
- Do you apply an absorption costing method (full costing) or variable costing (not full costing)?
- Is it stated from management which costing method/rule/directive you should apply (ex. absorption vs. variable)?

## **Direct costs "production cost"**

- How do you go about mapping/identifying the direct costs related to the specific service/offer (is there a checklist)?
- How do you go about quantifying the direct costs (material amount and labour time)?
  - What do you use as your quantification base (experience, historical costs or average costs)?
- Is the standard cost related to the specific workforce (engineering consultancy/mechanical service) or to the specific service activity (measuring rolling bearings /lubrication)?
- Are you aware of which costs are included/not included in the standard costs?
- Do development costs sometimes occur for a service?
  - Are they of significant amount?
  - Do they tend to vary between different customers?
  - How are those type of costs accounted for (directly applied on the customer or are they included in the standard cost? If they are included in the standard cost is it a predefined development costs budget or are the costs regarded as investments which are depreciated over a certain amount of years?
- Do you have fixed purchasing prices on service and material when using a subcontractor, if not:
  - Is it significant cost variations between calculated and actual cost?
- Other problems/difficulties when calculating direct costs?

## **Relationship costs**

- Are you familiar with the term?
- Does it matter if you have prior relations with a customer? (positive/negative or if the process was smooth or difficult)
- What are your relationship costs?
  - Is it significant differences in administrative costs (costs for handling customers) between different customers?
  - Are those types of costs accounted for as a direct cost or treated as an indirect cost included in the overhead rate or are they included in the standard costs?
- How do you calculate relationship costs?
  - Do you apply a risk/relation rate, depending on which customer you are involved with?

- Are the relationship costs managed via contract arrangement or are they managed as pre-calculated costs in the costing process?
- Do you use a transactional perspective or do you apply a relationship perspective when you are calculating your service (explain/motivate in what way)?
  - Is it common that costs occur after the invoicing date?
  - If that was the case, are they of significant amount and do they differ between customers?
  - Are those costs pre-calculated or are they accounted for on an hourly rate in the latter stage (other methods)?

### **Omkostnad**

- What are your overhead costs (ex. sales overhead and administration overhead)?
- Is it stated from management how large the overhead costs are for the service division (admin & sales)?
- Are there any guidelines in regards to the amount of overhead costs a specific service should/need to cover (overhead rate in %)?
- What keys are used for distributing the overhead (labour hours, material costs or the total value of the specific service offer)?
- Is the base for distributing the overhead fair (or are there significant costs variations between actual and the calculated overhead costs)?
- Are there any problems/difficulties when calculating the overhead costs?

### **Profit margin**

- Does it exist any standards/rules/routines in terms of how the profit margin is to be calculated/applied?
- Do you apply the same profit margin on all the different services?
  - If it differs; why is that?
- How do you go about calculating the profit margin/end-price?
  - Cost based
  - Value based (DSP)
  - Negotiation based
  - Competition based
- Why/motivate, depending on the answer above?



- What difficulties/problems are there in the process of choosing pricing strategy?
  - Tradition (customer)
  - Knowledge (customer)
  - General price level (competition)
  
- Do you carry out a risk analysis before offering a service?
  - If so, does the risk analysis affect the size of the profit margin (an appraisal factor)?

**Concluding question**

- **What is the major difference calculating this service compared to the other services you offer?**

### Calculation of Industrial Services - Time and Activity Plan

<b>Week</b>	<b>Activity</b>	<b>Activity description</b>
W.4	Planning report	A first outline of the thesis' structure and a brief overview of each topic included.
W.5	Problem and Method	A background description of the subject service costing and a discussion of the specific problem. A description of the methodology, which will be used when conducting the thesis.
W.6	Theory	A literature study related to the specific problem.
W.7	Theory	
W.8	Empirical	Empirical study through interviews at SKF. (Sweden, Denmark, Norway and Finland)
W.9	Empirical	
W.10	Empirical, Analysis and Discussion	Follow up the interviews and conducting a comparison between theory and practice.
W.11	Analysis and Discussion	
W.12	Analysis and Discussion	
<b>W.13</b>	<b>Examination and presentation</b>	Presentation at Handels and SKF.

## Time plan - interviews

<b>Datum</b>	<b>Person</b>	<b>Plats</b>	<b>Activity</b>
29-jan	Pilot Respondent 1	Gothenburg	Pilot interview
31-jan	Pilot Respondent 2	Gothenburg	Pilot interview
31-jan	Pilot Respondent 3	Gothenburg	Pilot interview
20-feb	Respondent 1	Gothenburg	Interview
26-feb	Respondent 2	Gothenburg	Interview
28-feb	Respondent 3	Oslo	Interview
28-feb	Respondent 4	Oslo	Interview
01-mar	Respondent 5	Gothenburg	Interview
02-mar	Respondent 6	Gothenburg	Interview
02-mar	Respondent 7	Gothenburg	Interview
05-mar	Respondent 8	Gothenburg	Interview
05-mar	Respondent 9	Gothenburg	Interview
05-mar	Respondent 10	Gothenburg	Interview
06-mar	Respondent 11	Gothenburg	Interview
15-mar	Control persons 1,2,3	Gothenburg	Control interview
19-mar	Respondent 12, 13,14	Copenhagen	Group interview
19-mar	Respondent 12, 15,16	Copenhagen	Group interview

## A Structural Frame for this Study

This structural frame is based on the pre-study, which we conducted at SKF. The different sections have relevance in regards to our forthcoming empirical study. Each section in the model will be handled, starting with the production cost and ending with the profit margin.

Cost object	Problems/Viewpoints
Profit margin	"Gut feeling" DSP Which criteria is the profit margin based on for a specific project?
Overhead cost	How big are the overhead costs (what should be included in the standard cost and what should be included in the overhead cost?)  Keys for distributing cost
Relation cost	The customers level of organisational maturity (time appraisal) Variation in time consumption and cost, due to the specific customer. Transaction vs relationship perspective
Direct cost	Standard cost; the same valuation of all working hours. <ul style="list-style-type: none"> <li>• experience, education</li> <li>• overhead cost</li> </ul> Problems related to distributing and allocating costs (Investments in special program/equipment) The direct cost related to make an offer