Activity Based Costing: Is It Still Relevant?

A Qualitative Study of Seven companies from the benefit perspective...

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Abstract

The usage of ABC has decreased during the last years because many firms did not experience great benefits of the model. Regardless of this, there are still some companies that are practicing the model. Our research question is interpreted as the following: What makes ABC relevant for users/former-users in manufacturing and service companies?

We conduct this study with the qualitative method to understand why companies abandon ABC and other are still using the model. We interview companies from the service and manufacturing sector as they are more likely to use ABC. Our methodological approach is portrayed by the inductive approach because it seeks understandings of “inside” knowledge of the respondent. We have used the semi-structured interviews to collect our empirical data to give the respondent the chance to express themselves freely.

The literature framework starts with costs and how its importance for the company. Then it continues with cost accounting, different methods of cost accounting and introduction to ABC being one of these methods. The chapter includes brief history of ABC, failure of the traditional cost system, concepts of ABC and the implementation process. We have also included relevant studies of ABC to back up our analysis of the empirical evidence. Last and not least, benefits and limitations of ABC are presented at the end of this chapter.

From the conclusion we understand that companies who use ABC pose great benefits of the model and they learn eventually to cope with the limitations. The former-users of ABC experience also great benefits of the model and what limits the usage of it is lack of knowledge, resources and organizational support. This consequently limits the usage of the model even more. ABC is still relevant and what decrease the relevance of ABC are factors that are not necessarily related to the model itself. We have to differ between using the model as a project and implementing the model for itself. A project has a beginning and an end, when a company applies the model as a project it is decided that when the purpose is fulfilled then the company will enclose such project.
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1. Introduction

In this chapter, the aim is to provide a background to the studied subject, as well as a problem discussion to the problem area of this thesis. The problem discussion will lead the reader to the research questions and purpose of the study. The benefits of this research will also be presented in this chapter. Additionally, concepts of the research will also be introduced which will make it easier for the reader to understand the subject concerned in the thesis.

1.1 Choice of subject

The choice of subject comes naturally with the focus of our major fields as one of us is an accountant student and the other studied management. Therefore we decided upon the subject management accounting because it concerns analysis that affects decision making within the organization and it interests us from two different perspectives (management & accounting).

We had to narrow the subject by selecting a tool that is able to provide a company with such information and what can be better than ABC (Activity Based Costing). Besides we are theoretically familiar with this tool from business administration (A). One of us has worked with ABC case in one course at D level about the relevance of ABC and found it interesting to study. In a quantitative study of the relevance of ABC the author addresses the decline in ABC usage despite the many benefits the model offer. Since few studies have been conducted in investigating the reasons for using or not using the tool, we decided to conduct this study in our degree project.

1.2 Background

The Global environment has become more competitive due to the reduction of barriers of entry (communication, geographical and protected markets). This has resulted in increased incentives for companies to become more efficient. The global network improved as a consequence of reducing tariffs and import quotas which made the trade-market more accessible for companies worldwide. A company today might be successful in its local market, but the future is still uncertain because the open market enables other companies to enter the country and compete against local firms. This puts pressure on local firms to improve their performance and become world-class competitors so as to offer the market larger variety of products, at higher quality and lower prices.

For a company to operate successfully in such competitive environment, an efficient cost system is required. This will provide the company with useful cost information of the company’s operations or activities. Management accounting information helps the company to identify the necessity for change/development in the company’s business environment and shows how the company should respond in business settings. The institute of management accountants of Montvale defines Management accounting comprehensively as the following:

“...the process of identification, measurement, accumulation, analysis, preparation, interpretation, and communication of financial information used by management to plan, evaluate, and control an organization and to assure appropriate use of and accountability for its resources. Management accounting also comprises the preparation of financial reports for non-management groups such as shareholders, creditors, regulatory-agencies, and tax authorities.”

(Institute of management accountants, 2008)

In other words management accounting provides the company with theories and tools that help the company to become more competitive in the market place; this can be done by measuring, planning and controlling a company’s performance.
Cost accounting is a form of management accounting that functions by serving management with relevant cost information which can be used at the strategic and operational level. Some cost systems fail to identify redundant costs which produce major loses in the long run. This is one of the main crucial reasons for adopting complex cost accounting systems (Kulmala, Paranko & Uusi-Rauva, 2002). Furthermore, a good accounting system brings accounting and manufacturing together because accounting works closely with the operational department to gather useful data which helps the company to improve its performance (O’Guin 1991, p. 75).

Many companies’ cost accounting systems provide managers with inaccurate, irrelevant or immeasurable cost information of the products (i.e., companies cost systems fail to do its work) (Cooper, 1989). In his article Cooper (1989) states that “it’s time for a new cost system when engineering develops one of its own”, because companies are increasing their automation which results in higher demand of overhead cost allocation (or indirect costs).

The traditional cost system is an example of cost accounting system that usually allocates costs based on single-volume measures such as direct-labor hours, direct labor costs and machine hours. The problem with the traditional cost systems is that it does not exactly give the right cost of a product which consequently misleads a company’s pricing and market strategies. Moreover, it will be very challenging for the firm to work with distorted information which discourages them from reducing inventory levels, improving customer service and building better products. As a result, using distorted information from costing systems can have negative impact on decision making. (O’Guin,1991, p.27).

Competition is increasing, and with unreliable cost systems a company might incur losses. A Company needs to be able to answer some questions that are crucial for its own survival. Such questions include, if they are focusing on the right markets, products or customers. The traditional costing system is not able to address these questions like Activity Based Costing (ABC, a management accounting tool). ABC discovers inefficient products, unreasonable high costs and unprofitable segments (Turney, 1991, p.49). This discussion was raised in the beginning of 1987, when a new era toward improved cost accounting systems emerged by Johnson and Kaplan in their book “Relevance Lost”. They pointed out the importance of management accounting information in decision making as it deals with today’s costs of production and resources.

The ABC emerged as an accounting management tool to improve competitiveness and addresses the failure of the traditional cost system. To make the model more practical, Kaplan and Cooper studied the model in four large companies: The cases from the companies showed a positive effect because it increased profitability and improved pricing strategies (Nehler, 2005, p.1). Research on ABC has been done by many authors such as Stratton, Desroches, Lawson & Hatch (2009) who studied the relevance of ABC. Nehler (2001, 2005) also studied the implementation, integration and benefits of ABC. These will be introduced further in the next section and why the we are including these studies will also be explained.

1.3 Problem discussion
As mentioned above ABC is a management accounting tool that is used to provide a company with accurate cost information. Previous studies showed the popularity of ABC during the 1990s as 50 % of the participated companies used the system (Stratton, Desroches, Lawson & Hatch, 2009). In the problem background we mentioned a need for a new cost system due to the increased automation of equipment that demand more allocation of indirect costs (cost allocation became more complex due the mass production and variety in production volumes) resulting in indirect cost becoming the largest part of the total cost. In addition, with fast
technological improvements, the product life cycles became shorter and when companies
discover cost- errors, they do not have enough time to adjust their costs. Consequently, over-
costed products make the company lose bids, while under-costed products generate hidden
loses; (this can occur in firms that uses inaccurate cost systems that fail to identify cost-
effective activities) (Nehler 2001, p.3).

Despite the abovementioned motivations of why companies started to use ABC, many did not
experience significant benefits of the model. According to Karolefski, “ABC works better if
it’s kept simple” (2004, p.18). Those who benefit most from ABC are companies that have
high manufacturing overhead costs with great distribution, marketing and sales costs. Large
number of companies has implemented the model, but it still failed to produce substantial
and Arendt (1994) rearticulate this statement and mean that many companies have
investigated the model and implemented it, but only a few have taken advantage of it. It was
presumed that the implementation process was the reason why companies failed to adopt
ABC.

Stratton et al. (2009) refers to the statement of Kaplan and Anderson that emphasize “Many
companies abandoned activity-based costing because it did not capture the complexity of
their operations, took too long to implement, and was too expensive to build and maintain.”
The study by Stratton corroborates that ABC fell from the 11th position of the most used
management accounting tool in 1995 to number 22 in 2002. The study by Stratton covered
13.9 % of Europe’s countries and Sweden is included in this research. The usage of ABC has
decreased during the last years in Sweden as well as in other demographic areas of the world.
The reasons for this decrease are unclear as there are many factors for companies to choose
not to implement or use the model. According to studies these factors might be attributed to
the implementation process, too expensive to build and maintain, or requires resource
commitment etc.

Other studies on ABC have been conducted by Henrik Nehler (a researcher in the field of
business administration in Sweden-Linköping University). We are including two of Nehler’s
research studies to gather information on the practical perspective of ABC. The first one is a
quantitative study from 2001 about the spread, usage, formation and implementation of ABC
in Swedish engineering industry. The second from 2005 is a qualitative research on depiction,
integration and benefits of ABC. Despite the decreased number in the patronage of ABC as a
management accounting tool, there are still some companies that are using the model and
consider it as beneficial. According to Stratton et al. (2009) the users companies are still
benefiting from the model. Stratton et al, (2009) studied the relevance of ABC from cost and
profit measurement perspective. In contrast to the study of Stratton et al, (2009) we will study
the relevance of ABC from broader perspective which is the benefit perspective of the users
and former-users of ABC. There is no precise definition of relevance of ABC in previous
studies, therefore we need to define it and with relevance of ABC we mean the information
derived of the model being used, integrated in a company’s accounting system and reliable in
decision making. We are studying the reasons why some companies are using ABC whilst
others are not. Further we would like to know why the former-users do not continue to
implement the model. For this reason we include the limitations of ABC because we believe
that the limitations can decrease the degree of relevance of ABC. With former- users of ABC
we mean companies that have applied the model for a short period of time or to attain a
certain objective. Much research has focused on the implementation, integration and usage of
ABC, but not many has studied the relevance of ABC from the benefit perspective before. A
study of the ABC relevance will provide us with better understanding of the dilemma of continues usage from the abandonment of ABC.

1.3.1 Research question
In order for the purpose of this study to be fulfilled, in the thesis we will be addressing the following research question;

What makes ABC relevant for users/former-users in manufacturing and service companies?

1.3.2 Purpose
The purpose of the study is to find out why some companies are still using the model while others have abandoned it! What benefits the companies (user/former user of ABC) are experiencing from the model and what are the limitations in applying/using the model. A second purpose to study is in the case of the model being less relevant for the users/former-users, for what reasons the relevance have been minimized!

1.4 Delimitations
We have chosen companies in the manufacturing and service sector because they are more ideal to use ABC in their accounting system. We focus our study on respondents occupying managerial positions in the organization because they are expected to have great experience with the studied model. The results will concern the users/former-users of ABC in the first hand; but that does not mean that others cannot benefit from these results as there are potential users of ABC and non users of ABC. We will be carrying out interviews from Stockholm and Umeå. Since we chosen manufacturing and service firms, we believe that the results will serve these types of companies. We prefer not to generalize our results because in the case of ABC being relevant/less relevant for a manufacturing company does not have to be the same for commercial enterprises.

1.5 Research benefits

1.5.1 Theoretical
Few studies on the relevance of ABC have been conducted and many studies of ABC take the approach of quantitative which we think limits the actual view of the respondent. This study will provide academics with theories of unexplored subject and gives suggestions for further research. We hope to get more information of the real beliefs and attitudes of the selected number of companies toward ABC through qualitative approach. We also aim to put our paper so that it helps to serve other studies of ABC

1.5.2 Practical
The practical benefits can be looked at from two different aspects as we are including users and former-users of ABC. For the users of ABC, they identify new benefits that can contribute with positive results to the company’s business operations and decisions. This consequently will show the users of ABC whether they are taking an advantage of the model in its full sense or just part of it. The former-users in the case of applying the model again, they will identify what to focus on in order for them to guaranty a regular and successful usage of ABC. Additionally, this research will provide potential users with efficient information of the relevance of ABC.
1.6 Main concepts of the research

**Activity**: Is a specific task or action of work done. An activity can be a single action or an aggregation of several actions (Blocher, Stout, cokins & Chen, 2008, p.122).

**Activity cost hierarchy**: ABC usually uses a four-part cost hierarchy to identify cost allocation bases: unit level, Batch level, and product and facility level. These activities vary from company to another (Kaplan, R. S. & Cooper, R. 1991).

**Activity dictionary**: Contains a number of activities the company performs, it can include output measures, activity description, input, supplier, and customer (Cooper & Kaplan 1988, p.85).

**Cost driver**: Refers to any factor that causes a change in activity. An activity have more than one cost driver attached to it. Example of cost drivers are machine hours, maintenance hours and production runs (Blocher et al, 2008, p.55).

**Cost object**: Is any product, service, costumer, activity or organizational unit to which costs are assigned for some management purposes (Blocher et al, 2008, p.55)

**Direct cost**: Can be conveniently and economically traced directly to a cost of pool or a cost object. For example, the cost of materials required for particular products is a direct cost because it can be traced directly to the product (Blocher et al, 2008, p 55).

**Variable costs and fixed costs**: Variable costs changes in accordance to the change in the volume while fixed costs are those that do not vary depending on production or sales levels (Blocher et al, 2008, p.60-61)

**Indirect cost (overhead costs)**: Indirect costs are business expenses that are not directly related to a certain product/service but are necessary for the general operation of the company, examples of these costs are advertisement, utilities and administration costs (Blocher et al 2008, p 56).

**Relevance of ABC**: The information derived of the model being used, integrated in a company’s accounting system and reliable in decision making.

**Resource**: Is an economic element needed or consumed in performing activities. Salaries and supplies, for example, are resources needed or used in performing manufacturing activities (Blocher et al, 2008, p.122).
2. Literature framework

In this chapter, we will present the procedure of searching for relevant theories and previous studies of ABC. It starts with costs and cost accounting, and then it continues with brief history of ABC and concepts. This chapter aim to construct a strong knowledge to approach the research questions, therefore previous studies of ABC, benefits and limitations are included.

2.1 Theoretical source collection

In searching for relevant theories, we have used Umeå University data bases such as Emerald, Business Source Premier, other alternative was Goggle Scholar. We started by using keywords that are related to management accounting such as: Activity Based Costing, accounting systems/tools, application of ABC, measuring costs with ABC, management accounting. The languages used were Swedish and English and there were no limit for the literature time-line because many of the relevant literature were old. However, we tried to use newer literature. The data collected was books, journals, internet sources and quarterly. Former studies were very helpful because it enabled us to decide upon which subject we should study and provided us with ideas of journals and books in the studied area. Through the collection process we have used books and journals from Umeå University, and used similar keywords to search for journals. We have also lent some books from the library of Stockholm University that was not available in Umeå. To search for practical information of the respondents, we booked interviews and visited their websites and so was the presentation of the companies written.

2.1.1 Criticism of source collection

During the searching process for the data, we kept good standard of the resources used in this study. When it comes to books, there are not so many about the relevance of ABC. Hence, we used books with trustworthy authors such as Cooper and Kaplan in the subject Management accounting (ABC). Many of the journals of ABC are peer reviewed and taken from the university’s data bases. When using student literature, commercial book and internet sources we had to ensure the quality through other criteria’s like if the author pose great knowledge in the subject and if other reliable authors used the source as a reference. We did not have knowledge in writing a method before, for this reason we had to use method literature and we chose the ones the professors of our university recommended. We had also to use books that focus on qualitative methods to ensure correct collection and interpretation of data. These books like Saunders and Bryman & Bell discuss research methods for business students which is relevant for our subject. In order for us to gather more information of our respondents we had to visit their website.

2.2 Costs

Accountants define costs as “a resource sacrificed or foregone to achieve a specific objective” (Kulmala et al. 2000).

Competition in an open market place obliges companies to improve their products and services. Moreover, competition increases the demand for relevant cost information of a company’s performance activities, processes, products, services and customers. Therefore companies need to be aware of their operation costs and share this type of information at the corporate level (Kulmala et al. 2000). Some companies fail to improve their performance due the lack of cost awareness of each output produced. In order for the company to act competitively and develop its products/services, it will have to gain competitive advantage through assigning costs efficiently. This type of competitive strategy is called “cost leadership” and mean that a company generates products/services lower than competitors
which will result in generating profits at lower costs (Blocher et al. 2008, p.15). Relevant cost derives from management accounting and usually uses to describe costs that are important for management decision making. In order for a company to create “cost leadership” in the market place, it will have to include relevant costs. Relevant costs are useful when it comes to management making a decision whether to sell or keep a business component, manufacture and buy an item or even accept a special order (Blocher et al. 2009, p.123). It is relevant to present theories of costs in this paper because it plays significant role for a company’s own survival, and increase the awareness of questions a company should be able to answer such as where costs come from, how they are incurred and how to minimize them. We believe that each cost system should answer these questions in order for the system to provide a company with efficient cost information.

Costs can be used for different purposes such as financial accounting, cost accounting, budgeting, and valuation. Furthermore costs are contradictory in its relationship to output and to the context in which they are used. The most common types of costs are fixed, variable, direct and indirect costs (look at main concepts). Fixed costs refer to investment goods such as (facilities, furniture and machines) while variable costs varies to the number of units produced (Blocher et al, 2008, p. 60). Direct costs are those that are directly attributed to the production of a product, (costs of material is one example of direct costs). Indirect costs are those that are not directly allocated to products. Examples of indirect costs are advertising, computing, security and supervision (Blocher et al. 2008, p.55-56). The attention to indirect costs have increased during the 1990s due to improved technologies and increased automation (Lindblad, 1992). Direct costs used to dominate large part of the total cost but now indirect costs have taken over and are dominating large part of the total cost (see figure 1). This increased the requirements of more accurate cost system of indirect costs which is a main point Johnson & Kaplan discussed in their book Relevance Lost

![Figure 1: Percentage of direct and indirect costs the years 1937-1992 (Lindblad, 1992, p.15)](image)

**2.3 Cost accounting**

ABC falls within the field of cost accounting and this makes it relevant for us to present cost accounting more precisely in this section. Cost accounting was first introduced by Louisville & Nashville railroad in 1860s. It enabled the company to decide the actual unit costs and relate indirect costs to production volume. Later in the 1880s complex companies such as the Carnegie Company (a steel producer in USA) started to use cost accounting to identify quantity and the cost of materials and labor for each product (www.referenceforbusiness.com). Cost accounting in the 21st century took a new step in the
car industry when Alfred Sloan and General Motors with the collaboration of Ford started to use more advanced techniques in cost accounting to measure a cars’ success in the market by measuring return of investment and equity. It allowed General Motors to measure the profitability of high-end products (http://www.ehow.com).

According to Garrison and Noreen (1994, p.34), costs are related with different types of organizations, profit and non-profit oriented service retailers and manufacturing firms. How costs are incurred varies with the type of the organization and the activities involved. In this thesis more focus will be on profit oriented service and manufacturing businesses. The way General Motors used cost accounting is highlighted by Ulrich (2009) who states that “Cost accounting is an important information system for profit oriented companies”. Cost accounting and management accounting are considered to be compatible and generally provide a company with essential cost information for performance improvements (www.accountant-search.com). Cost accounting has several objectives. First in determining the selling price, second is to find profitability at going prices, third is to select the most profitable products/services and efficient methods of production. Additionally cost accounting identifies the value of inventories and compute profits for certain times. It also allows the company to set the right prices from a customer and market perspective, as a result the company will avoid long-term loses. Furthermore, cost accounting provide the company with cost information for managerial decisions when it comes to determining cost-volume-profit relationship, buy a component or shut down operation at a loss (Bergstrand 2009, p.53).

2.3.1 Different methods of cost accounting
We identified the most used types of cost accounting systems:

- Directs costing (traditional)
- Standard costing (traditional)
- Activity-based costing

Direct costing is always associated with direct material and direct labor. Cost normally varies proportionally with the production volume. The term direct material is used in manufacturing companies and refers to cost of material to manufacture a certain product while direct labor is linked to service companies and refers to cost of working hours for producing an output (Bergstrand 2009, p.56-57). This type of cost system is regarded as appropriate for decision making because cost of resource used for producing an output that changes in accordance with the demand. The limitation of direct costing lays in the ground that it does not assign indirect costs to cost objects and the identification of indirect costs is based on assumptions. Therefore direct costing is usually used in organizations with low fractions of indirect costs.

Standard costing, is recognized as a traditional costing system, it generally assumes the cost of each product and service under certain circumstances such as period of time the production process consumes and economic conditions. It is a system of cost accounting designed to identify costs of a product under the existing conditions, where the actual cost can be determined when the production starts and can be compared to the standard cost and then analyze the variance which in future will enable management to take the necessary measurements for improvements (Blocher, Stout, Cokins & Chen, 2008, p.497). Standard costing serves several purposes like discovering future costs that can be used for decision making, setting objectives to be achieved, setting budgets and activity control. Criticism of standard costing has been raised because it did not capture the development of new management approaches that were not able to only relay on variance analysis, the feedback reporting came also late.
The last one is *Activity based costing*, with the purpose to identify and include all activity costs through the production process. It assigns overhead costs to activities that are the real cause of the overhead and then to products that are actually demanding these activities. Further theories of ABC’s history, concept, logic, implementation, benefits and limitations will be presented in this chapter.

### 2.4 Failure of Traditional costing system

As figure (2) illustrates, the traditional cost system uses a two step allocation process for cost allocation. In the first stage the system allocates costs to production divisions, sometimes called cost centers where the overheads are being pooled by departments. The traditional cost system allocates overheads using allocation bases from cost centers to products dependent on the volume produced; examples of allocation bases are direct labor and machine hours (Drury 2009, p.188-189).

The traditional costing system has been criticized since the 1980s. It is presented as being too limited and provides a company with distorted cost information that can have negative impact on decision making (Mishra & Vaysman 2001). The traditional cost systems fail to provide management with relevant information on how and where costs are being incurred. This in result makes it harder for the company to cut back spending on inefficient activities or products. The traditional cost systems fail to look at expenses “below the surface” such as sales, distribution, R&D and administration costs; it rather looks at the company’s total cost. Many companies consider these types of costs as fixed, which is why they are being distributed across all customers; although some customers are more costly than others (O’Guin 1991, p.25).

The traditional cost systems use an arbitrary method of assigning costs, which mean overhead are connected with products. It is less costly to implement but can be misleading at the same time. With distorted information managers can support decisions on the wrong basis and consequently it will generate long-term losses for the company (Mishra& Vaysman 2001).

![Figure 2: Two-stage allocation for traditional costing systems (Drury, 2009, p189)](image-url)
2.5 Brief history of ABC

The Activity-based costing (ABC), since 1980’s appeared as a complement to traditional costing systems. Nehler (2005, p.3) commented upon the statement of Cooper and mean that ABC’s main objective is to provide management with strategic cost information. When the model was first introduced, it was supposed to show how companies’ costing systems could take back its relevance in management accounting and improve their performance (Gerdin 1995, p.22). ABC was developed to identify and control overhead (or indirect costs). It is a cost system that helps managers to see how to reduce costs, maximize shareholder value and improve corporate performance. ABC basically identifies cost of activities such as (setting up machine, receiving raw materials), then it assigns the cost to products or services based on the resources they consume (O’Guin 1991, p.31)

ABC provides a company with accurate cost information that helps the company to improve its performance by identifying the products which are being unprofitable, inappropriately priced, and segmented in the wrong markets (Turney 1991, p.50). Traditional costing systems presume that products can be reasons for generating costs while ABC has a more pragmatic view as it assumes that the actual cause of costs are activities and that cost objects creates the demand for these activities (Turney 1991, p.51). Popesko (2010) presents ABC as the following: “The ABC method was originally designed as a solution to the limitations of traditional costing methods”. Another view of ABC were also introduced by Johnson and Kaplan (1987) as a technical system particularly used in the competing manufacturing industry for rational decision-making related to strategic issues such as pricing, product line decisions and quality improvements.

Due to the advanced manufacturing business the usage of traditional cost accounting systems rapidly decreased during the 1990s which consequently resulted in reduction of direct labor costs of production and increased indirect costs (Liggett, H. R., J. Trevino, 1992). Since then, the need for a system that identifies indirect costs increased and ABC was the best option as it identifies and assigns costs to products/services in an accurate way ( Bergstrand 2009, p.86). Compared to ABC model, the traditional costing system is ineffective due to high “cost of errors” it makes i.e. costs associated with bad strategic decisions is a consequence of underestimated product calculation. Nehler declares that with ABC model, decisions are being more effective and companies that use the model increase their profitability (Nehler, 2001, p.65). Criticism of the traditional cost systems can be found within the years of 1980’s publication of Johnsson & Kaplan’s (1987). It claims that traditional costing systems haven’t been improved within the company in accordance to the changes in the business environment, which has been unchanged since the beginning of 1900-century. The ABC, on the other hand, improves the relevance of Management accounting by introducing sophisticated model that identifies activities and costs of activities in appropriate way (Mishra& Vaysman, 2001).

2.5.1 The ABC concept

Activity Based Costing was introduced at the end of the 1980s by an English man called Robin Cooper and American named Robert Kaplan. The definition was not created by them; it initially was used in a new calculation system in John Deere Company (Nehler 2005 p.1). Nehler introduce the definition of Robert and Kaplan that fill the deficits of the traditional cost systems.

“The theory behind our model is simple. Virtually all of a company’s activities exist to support the production and delivery of today’s goods and services. They should therefore all be considered product costs. And since nearly all factory and corporate support costs are divisible or separable, they can be split apart and traced to individual products or product families.”
Turney, 1996 presents a more contemporary definition of ABC and introduce the model as a two step allocating system of cost activities and cost objects. More precisely, the definition means that ABC use two step allocation system of resource costs through activities, and then allocates activity costs to products in proportion to its usage of activities (Nehler 2005, p.49).

“ABC is a method of measuring cost and performance of activities and cost objects. It assigns cost to activities based on their use of resources and then assigns cost to cost objects based on their use of activities”.

Cooper’s definition was highlighted by Nehler who introduces a similar reasoning of ABC as a two steps allocating system, but mean that the focus is being on the second allocating step which is cost of activities are allocated through cost drivers to cost objects (see above figure 3). The citation shows that activities are being primary in the allocation steps, and that the most important component in the method is the cost drivers which is a measure of the activities performed. What is more interesting is Cooper’s choice of wording which represent the model as evolutionary and that it has a relationship with the traditional cost systems but in a more developed way (Nehler 2005, p.48). Below is the definition of Cooper:

“The new method is known as activity-based costing, and it represents an evolutionary extension of the two-stage procedure that underlies most modern cost systems... activities are the focus of the costing process in activity-based cost systems. Costs are traced from activities to products based on the products demands for these activities during the production process. The allocation-bases used in activity-based costing are thus measures of the activities performed.”

These concepts introduce the model differently even though it refers to the same technique. Therefore we will exclude from choosing one because the concept is the same although explaining the model is different because the model has been studied from different perspectives and in different periods of time. For instance Cooper describe it like evolutionary and compare it with the traditional because at that time ABC came like a solution of assigning cost efficiently. We believe we need all concepts in analyzing our empirical findings because one company might recognize their perceptions of the ABC concept in Cooper’s or Turney’s.
2.5.2 The logic of ABC

The logic of ABC lies in producing or designing a product that generates activities and these activities requires resources to be supplied and used. Supplying and using resource of activities generates costs. Martin (http://www.maaw.info) describes it as follows: “the ABC logic is that resources generate costs, activities consume resources and products consume activities” and this can be seen in figure (4). ABC is an accounting method that allows firms to gather data about their operating costs to then allocate these costs to the required activities to finish the product. Activity based costing (ABC) assigns overhead costs (or indirect costs) to cost objects which includes products, services, or customers dependent on the activities a firm perform, i.e., whether it’s a manufacturing or a service company.

Costs of resources are assigned to the activities that are the real cause of the overhead, and then the cost of these activities will be used to produce the demanded product (Blocher et al., 2010, p.129). The figure below describes how costs are assigned according to ABC thinking; Costs occur from purchasing resources that can be traced to cost objects in two stages. The first stage includes costs of resources that are assigned to activities which consume these resources. The second stage includes costs linked to activities in which are assigned to cost objects that consume these activities (www.maaw.info).

![Figure 4: Cost assignment based on ABC logic (www.maaw.info)](image)

2.5.3 Implementation process of ABC

Companies with efficient cost systems are able to design products or services that can meet customers’ expectations and in return generate profits (Kaplan &Cooper, 1998). ABC design can look complex; however the model might seem less complex if the company is being aware of the real cause of costs. To make it easier to design the model, four steps of ABC implementations process will be presented in the following order: (1) identify activities, (2) Assign resource costs to activities, (3) Select activity cost drivers to cost objects and (4) Assign costs of activities to products/services (O’Guin 1991, p.79).

2.5.3.1 Step -1- Identify Activities

Generally all the work performed within a company can be related to activities. For a definition of activities see the list of concepts. Activities vary from one firm to another. For instance, a consulting firm might work with securing quality of a product or service,
performing a service and following up a project. Whereas, activities in manufacturing companies can be purchase of material, production planning, quality control and supply of goods (Ax et al., 2006, p.229, 231). The first step in designing ABC model is to identify the activities needed to build or design a product by its overhead and support resources. Later these activities performed in a factory or production facility will be composed in a dictionary, where each activity is defined in a descriptive way.

The identification of activities can be challenging, time-consuming and involve great deal of judgments. For these reasons, rules of thumb exist and disregard activities that require less than 5% of resource capacity or worker’s time. Activity dictionaries recommend between 10-30 activities which tend to be the standard. Also, in order for the costs to be distributed more correctly, activities need to be independent of each other (Kaplan & Cooper 1998, p.85-86). In order for the company to identify activities, an activity analysis should be carried out. It can be done by gathering relevant data from existing documents and records, by using questionnaires or interviews of key personal (Drury 2009, p.196). Questions that ABC project team members typically ask staff and managers involved are: (Blocher et al., 2010, p.131)

- What activities does the company perform?
- How much time required for each activity?
- What resources are required to carry out these activities?
- What are the values each activity produce?

Activities that are important from a customer’s perspective are crucial for a company’s profitability because activities that customers do not pay for are not value added, which is why a company should eliminate or improve such activities (Schlesinger & Heskett, 1991).

2.5.3.2 Step -2- Assign resource costs to activities
After identifying activities, the ABC model uses the cost of resource consumed to assign resources to activities on the basis of the cause-and-effect. Here a company can estimate how much each activity and process cost to perform, based on historical expenses from the recent period (Kaplan & Cooper 1998, p.86). A company is encouraged to decide how much cost drivers they should consume in an activity because activities control how much resource to spend in operations. Examples of resource consumption cost drivers are labor-hours for labor activities, activities linked to employee-payroll, installation for batch-related activities and materials transferring activities (Blocher et al., 2010, p.132). Many costs can directly be attributed to specific activity centers such as power used to operate a machine which can be traced by reading the meter attached to the machine. In other cases direct tracing of costs are not available which make the company estimate a reasonable amount or percentage of time employees spend in a specific operation (Blocher et al., 2010 p.132).

2.5.3.3 Step -3- Select activity cost drivers to cost objects
Based on the consumption of cost drivers an activity use, cost of activities performed will be allocated to cost objects which will be the output of the activity. The outputs of activities can be products, services or projects (Blocher et al., 2008, p.126). Cost drivers include factors that can determine the cause of any change in the cost of an activity. An activity can also have more than one cost driver attached to it. The cost driver reports to the company why an activity is performed, they also tell how much effort has to be made in order for the work to be complete (Turney 1991, p.87). In order for the cost driver to report useful information, several factors have to be taking into account, especially when it comes to selecting an appropriate cost driver. The cost drivers should give superior explanation of costs in each activity cost centre and it should be subject intended for measurement (Drury 2009, p.197).
Cost drivers are useful as they expose opportunities for improvement because they eliminate defects that can occur during activities (Turney 1991, p.87).

2.5.3.4 Step -4- Assign costs of activities to products/services
The final step in the implementation process relates cost driver rates to products. Cost drivers trace and link the cost of performing certain activities to cost objects and it indicates the rate where activity cost increases with the volume of activity. The cost driver has to be easy to measure in order for the company to identify to which product it is linked (Drury 2009, p.197-198). Table (1) below will show an example of activities and activity cost drivers in service and manufacturing firms.

<table>
<thead>
<tr>
<th>Manufacturing firms</th>
<th>Activity</th>
<th>Activity cost driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Run machines</td>
<td>Machine hours</td>
<td></td>
</tr>
<tr>
<td>Set up machine</td>
<td>Setups or setups hours</td>
<td></td>
</tr>
<tr>
<td>Introduce new products</td>
<td>Number of new products introduced</td>
<td></td>
</tr>
<tr>
<td>Maintain machines</td>
<td>Maintenance hours</td>
<td></td>
</tr>
<tr>
<td>Schedule production jobs</td>
<td>Production runs</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Service firms</th>
<th>Activity</th>
<th>Activity cost driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Planning service</td>
<td>Number of planning hours</td>
<td></td>
</tr>
<tr>
<td>Creation of documentation</td>
<td>Number of documentation</td>
<td></td>
</tr>
<tr>
<td>Service execution</td>
<td>Number of working hours</td>
<td></td>
</tr>
<tr>
<td>Quality assurance</td>
<td>Number of quality assurance hours</td>
<td></td>
</tr>
<tr>
<td>Service presentation</td>
<td>Number of services</td>
<td></td>
</tr>
</tbody>
</table>

Table 1: Manufacturing and Service firm’s activities and cost drivers (Ax et al, 2001, p. 269)

Brierley, Cowton & Drury (2006) distinguish between two sectors, manufacturing and non-manufacturing, in this study we consider a non-manufacturing is in the service sector because we are looking at manufacturing and service companies. Unlike manufacturing service firms have more indirect costs that are likely to be the largest part of the total cost. Manufacturing companies are able to trace costs of direct labor and direct material to individual products. This makes service companies more ideal to use ABC in their accounting settings. We will exclude from the difference described above because it can be difficult to treat ABC as a various sample to different types of companies. Therefore the ABC will be considered to be the same in manufacturing and service firms because it serves the same purpose. However that does not mean that we will precisely assume that the design of ABC is the same in two different companies because activities and cost drivers varies with the type of the company.

The success of ABC implementation depends on several factors, two of them says be technical and organizational which Agbejule mentions in his article (motivation for activity based costing implementation, 2006). The technical issues refer to the identification of activities, cost drivers and problems of accumulating the necessary data. The organizational factors refer to management support during the implementation process, available resources, non-accounting experience, and relationship to competitive strategies, training and clarity of objectives (Agbejule, 2006). Many studies indicate that the most critical factors of ABC-implementation is in the resistance in implementing new knowledge (ABC), the resistance can come from top management because ABC requires time-money and resource commitment. Training is another critical factor a company can disregard from when implementing ABC.
In order for a company to avoid resistance, it should clarify for employees why and how new methods are necessary for the company.

As mentioned in the problem discussion many companies fail to implement the model because of its complexity and time consumption. We believe that the failure of implementation can be a satisfactory reason for companies to disregard from using the model which is why we are including the implementation process and the issues in this degree project. We also think that the failure of implementing the model have a negative impact on the relevance of ABC. It is important to notice that the design of the implementation process is just a small part of the research because we are not going to go in detail of the respondent’s implementation process.

2.6 ABC applications
The philosophy of ABC lays in customer’s demand of products/services generates a company’s activities while a company consumes activities for the demanded products/services. Through using a cost system from an activity perspective a company can deliver high quality products/services because it looks at how successfully a product/service is delivered and serviced. A company can choose which activities to focus on, improve and so build a competitive advantage. A company can improve its activity performance through following various techniques to create high quality products and benefit from the many applications that ABC offer, such applications are:

- **Resource value assessment:** The costs of resources ordered are usually equivalent to the cost of resources used. For instance employment agencies hire employees according to the need of producing an output. The same thing in production, materials are ordered in accordance to the output required and that saves unnecessary costs of materials (Cooper & Kaplan, 1992).

- **Product pricing:** since ABC assigns costs to activities, it gives more accurate cost information of the actual cause of the cost for producing a product or service. ABC can be used to identify future costs and redundancies. For instance Volkswagen Canada has applied the model to its accounting system, ABC provided the company with comprehensive activity costing sheet of which areas the cost increased and where the company can cut costs (Partridge & Perren, 1998).

- **Product design:** ABC identifies activities that create value for the product/service and those that are unnecessary in the production process (Partridge & Perren, 1998). When a company knows how much it spend on each product, it might find out that it has more capital to spend on product design.

- **Product profitability analysis:** According to Drury ABC provides a company with attention-directing information of products/services that can be profitable or less profitable for the company (Drury, 2000, p.346). See the example of Volkswagen in product pricing of how ABC can provide the company with product profitability analysis.

- **Customer profitability analysis:** ABC has been used in higher degree with customer as a cost object more than products (Innes & Mitchell, 1995). The kind of information ABC provides enable the company to identify the most profitable customers from those that are generating losses. For instance a regional bank in the US discovered that
30% of the bank’s clients were generating 88% of the bank’s profits while 20% were generating losses (Partridge & Perren, 1998). This result will enabled the company to speculate of which are the most profitable customers, where to find them and for what reasons the 20% are generating losses.

- **Decision making:** companies that use ABC feel more secure when they apply their results to management because ABC methods are better incorporated with budgeting and planning processes. The model also provides cost information that can be used in decision making at financial, operational and strategic level (Stratton et al., 2009).

2.7 Previous studies of ABC

In order for us to back up our literature framework, we use two studies by Nehler (2001 and 2005) and the study by Stratton, Desroches, Lawson and Hatch (2009). The studies use different methods and generate different results that will be presented below. Given that we are studying the ABC Relevance from the benefit perspective, it is significant for us to focus on benefits derived from ABC in these studies. The limitations experienced by the participated companies will also be presented.

2.7.1 The study by Nehler 2001

A quantitative study of the spread, usage, design and implementation of ABC in Swedish engineering industry, the purpose of the study is to describe the spread of ABC in Swedish engineering industry and explain why companies use ABC. Further, the study tends to describe how companies have designed and implemented ABC to their accounting systems.

The population consists of Swedish companies in the engineering sector with more than 50 employees. Totally, the population consists of 1002 companies. The sample was chosen with margin error of +/-4 % and 95 % confidence coefficient. Under these conditions an acceptable statistic sample was to be at least 381 companies. The sample consisted of 400 companies (Nehler, 2005, p. 22).

The results of the study show that the spread of ABC has been modest in the Swedish engineering sector. According to the described results 16% of the companies have implemented the model while 3% have implemented a complete ABC system. 5% of the companies have decided to apply the model and 19% have discussed adopting it. The users and the potential users were 40% of the participated companies (Nehler, 2001, p. 197). Partial usage of ABC was most common among the participated companies. Factors that explain the reasons behind using ABC, is the system’s size-strategic importance and usefulness (benefit) in budget control. Larger companies use ABC in greater extent and this can be explained by the availability of resources in the company and owning larger network and knowledge.

Since our study is focusing on relevance of ABC for users and former-users, the results from the usage and former-usage perspective of ABC is more interesting for us to include in the research. The results of the study from the user’s perspective show three significant factors which explain the stimulus for companies that use ABC. These factors indicate the firm’s size, the models strategic importance and the model practice in budget control. Large firms have the capacity and the resource required to apply and maintain the model. The models strategic importance plays a significant role in decision making because ABC provides the company with accurate cost information more than the traditional. For the companies that rely on budget control in performance evaluation, ABC is an interesting tool for them because it supplies them with regular costing assessments (Nehler, 2001, p.116-117).
The results from the former-users perspective of why they do not use the model seems to be similar to the critique of ABC in literature and studies of ABC, i.e. companies think that the model is time consuming when it comes to data collection; it is also considered to be expensive and too complicated to implement (Nehler, 2001, p.121).

2.7.2 The study by Nehler 2005

This study takes the qualitative approach and works as a complementary of the licentiate thesis of Nehler 2001. The study is based on three case studies of Swedish manufacturing companies that use ABC. The data were collected through interviews. The purpose of the study is to “analyze the prerequisites for the design, integration and use of Activity Based Costing system” (Nehler, 2005, p.330).

Nehler studies ABC from three different perspectives: correspondence, integration and benefit perspective. With the correspondence perspective Nehler mean the real description of the model i.e. how resources consume activities and costs are assigned to activities and then to cost objects. How the model is designed depend on the company’s activities and production environment. The integrating perspective refers to the prospects where ABC can be integrated with other cost systems. The benefit perspective treats questions regarding the value of the adopting ABC, experienced benefits of the model from the user’s view. We are disregarding from the first perspective because the logic of the model does not play a significant role in this degree project.

The rate of usage between the three participated companies differs, therefore their perceptions of the experienced benefits varies. Studying ABC from the benefit perspective from the user’s point of view is essential in our research because we are studying the relevance of ABC from the benefit perspective. Table (2) shows the practiced benefit of using ABC in the three respondent companies (VCEC, Cewe and HVPA). Nehler summarizes the results in a three dimensional model of effective ABC (see figure 5) and declares that despite the low degree of ABC complexity the companies use, the model still generate high information value that can be used at operational and strategic level. It also shows the company how low volume production affects the cost negatively which stresses the user’s to improve their performance (Nehler, 2005, p.332). In our thesis we observe complexity from two approaches; one is connected to the model’s technique of identifying activities and assigning costs. The second refers to the companies’ degree of complexity when it comes to the structure of their operation and the amount of usage of machinery.

Limitations of the model have an impact on the decision whether a company should continue or discontinue from using the model. For VCEC the model is experienced to be complex because when they implemented the model the number of cost drivers increased and resulted in higher transactions. During the implementation process the company lacked knowledge of the model which resulted in large errors of markup- differences (Nehler, 2005, p.159). The limitations Cewe perceived are how to adapt to a new way of thinking with a new cost system and how to solve the problem with low volume production because ABC shows that low volume production is unprofitable, at the same time the company cannot put prices that is much higher than the market (Nehler, 2005, p.203). HVPA did not meet many challenges in using the model, but what they missed is a person that is responsible for the well-being and developing the model (Nehler, 2005, p.233).
Figure 5: A three dimensional model of the effective ABC-system (Nehler, 2005, p.332)

<table>
<thead>
<tr>
<th>VCEC</th>
<th>Cewe</th>
<th>HVPA</th>
</tr>
</thead>
<tbody>
<tr>
<td>• At component level it gives an appropriate cost that is closer to reality, “accurate costing”</td>
<td>• Reflects a more fair picture of the “real” cost structure in the company, “accurate costing”</td>
<td>• ABC shows that low volume order is more expensive and low rate of articles increases the store value</td>
</tr>
<tr>
<td>• With ABC the constructionists were able to realize that unique articles that come in small volumes are expensive to manufacture.</td>
<td>• Shows that low volume production costs more than high volume production.</td>
<td>• The volume effect of ABC shows that small piece selling is unprofitable</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• With ABC the company get a reasonable picture of how resources are consumed</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Enabled standardization to minimize the number of unique articles and thereafter production costs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• ABC reduces uncertainty in strategic decision making through identifying the type of orders that are more profitable.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Used in negotiation with customers and results in changed customer behavior in the positive direction regarding price/cost of products.</td>
</tr>
</tbody>
</table>

Table 2: Practiced benefits of ABC in three user’s firms by Nehler (2005, p.156, 203,233)

2.7.3 The study by Stratton, Desroches, Lawson and Hatch, (2009)
The study took the quantitative approach and was conducted to investigate the relevance of ABC. The data were collected through surveys in 348 manufacturing companies and service companies in different geographical regions worldwide. The study investigated the relevance of ABC from cost and profit measurement perspective.
The results of the study show large support for ABC as many companies has distributed the model across the internal value chain which made it more integrated into the companies cost accounting system. The study also showed that the model stresses supporting decisions in regard to products and customers. Moreover, the study confirmed that non-ABC methods are not able to accurately assign indirect costs to activities and since ABC is an ideal model for this type of job managers become more positive toward the model. If we look closer we will see that some companies still believe that ABC method is worth the effort and the resource commitment as it generates the company with financial, operational and strategic decision support.

2.8 Benefits of ABC
After studying the benefits from the three studies presented above, it is time to introduce the general benefits of ABC in literature. This part of the study as well as the benefits derived from the studies by Nehler (2001, 2005) and Stratton et al. (2009) are crucial in our research because we are investigating the relevance of ABC from the benefit perspective. Some of the benefits presented here can seem similar to the benefits of the three studies presented above. It is interesting to see if our study will generate the same or different results.

The concept of ABC signifies that products or services should pay the costs of the activities performed to generate an output (Bergstrand 2009, p.80). Additionally, ABC assigns indirect costs to products in a proper way because it identifies costs of activities linked to cost drivers for each activity. This is a well known fact of applying or using ABC in companies and almost most of them experience benefits from the concept of ABC. Furthermore, it clearly shows that short run-production requires set-up costs which make the production process more expensive. Many firms desire to create value and so own strong position in the market through creating financial statements surplus. To achieve this purpose it is important to identify in detail the prices of a company sets for a certain work or product. ABC makes such “value creation” possible. (Carlo, Filippo, Emanuela, 2010).

The incentives of using ABC are illustrated in the next example of two pen factories. Two companies produce the same volume of pens every year. The first one makes one million pens in the same color while the second factory produces one million pens at different mixtures, sizes and colors. The number of activities in the second factory is higher than the first one because of the various product mix the second factory produce. Manufacturing various mixes of products requires more resources and overhead costs. However, both factories have the same cost of direct labor and machine hours in production. This put the second factory in a complex situation because it can avoid identifying the activities that are being added through the production process which results in higher expense per product. The advantage of using ABC in this situation is to make the process less complex than it is by identifying the activities and setting accurate price of the products. (Kaplan & Cooper 1998, p.81).

For most companies it is significant to gain a competitive advantage. It can include offering the customer a wide range of mixed products, which is also a way of meeting the different demands of costumers. Offering varied range of products adds costs and activities on the company’s production process. ABC points the most profitable from non-profitable products and expose which activities are needed to deliver a product or service (Thyssen, Israelsen, Jorgensen, 2005, p.252).

ABC enables companies to identify the links between it is activities and activities performed by the customer (order, payments for products), consequently it helps the company to reduce unnecessary costs and improve quality of products/services. This will help the company to build valuable relationship with the customers. Generally entering new markets requires costs
of entry and these costs are not easy to ignore because it can show up in the customer profitability analysis. Such costs are identified with ABC. Furthermore, cost drivers reflect companies added costs from various types of customers such as advertising, salespeople and promotions (O’Guin 1991, p.246- 247). When these are included, a company can make sure not to miss any indirect cost that can turn up at the end of the year with no explanation of how these costs were incurred. According to Nehler ABC provides a company with the following criteria (2005, p. 124):

- Better understanding of cost in the organization
- Improved communication among units
- Constructors becomes more aware of costs which leads to a cost effective construction and cost reduction initiative from operative staff

Through identifying the many benefits of ABC, we will be able to answer on our research questions and from this point investigate the relevance of ABC. What remains to do is to ask the relevant questions regarding the benefits of ABC from the respondent’s point of view and compare those to the previous studies and literature.

2.9 Limitations of ABC

We are including the limitations of ABC because we believe that there is clear link between the limitations and the relevance of ABC. The limitations of the model might minimize the relevance of applying/using it. For instance some companies consider ABC to be expensive to build and maintain which are main reasons for choosing not to implement or use the model (Stratton et al, 2009). The study of Stratton et al (2009) highlights concerns of managers using ABC method; these include the necessity to find a better solution to allocate costs because allocation do not reveal how resources are used, cost information are not reported on time and updating the system is considered to be expensive and complex. Furthermore, ABC requires complex data system like ABS in order for it to record all cost information and report to management. Many companies do not own this kind of data system because it is expensive to implement and integrate. It also requires high effort from the staff to accept a new data system (O’Guin, 1991, 138-139).

Further studies criticized the model by Johnson and Kaplan (1987), they said that information from management accounting are being too late, too aggregated and too distorted and fails to provide managers with relevant cost information that is in regard to cost reduction, productivity improvements and improvements in production process (Johnson & Kaplan 1987, p.1-2). It is referred to ABC as being a cost accounting model that is much closer to reality, but not the same as reality which is why there might be situations there the model is presented as less realistic. Bergstrand (2009, p. 87) presents the following critiques of ABC in the following points:

- Some corporate costs are true common costs which cannot be assigned to individual products in a right way. For instance in the petroleum industry, raw petroleum will be separated in different sections, like petrol, heating oil and lubricants.

- It may be hard to find really homogeneous activities. Activities shall be homogenous so that they can be applied to one cost driver. If that’s not the case then results can be less consistent and the company will have to divide them into several smaller ones. This will increase the total amount of work and take more effort than actually needed in ABC.
• *It can be very difficult to reduce costs of fixed capacity* in reality but if the company ignores to allocate these costs because of the overcapacity and it do not get rid of them then the company will generate major loses even though the products seem profitable.

• If products according to ABC model is making long-run losses cutting off the production does not necessary mean that the company is getting rid of the problem. When the company produces such products the customers will be aware of other highly profitable products and will buy them.
3. Methodology

This chapter provides the reader with information on the research process. The methodology of our research is influenced by the research ‘onion’ of Saunders, Lewis, & Thornhill (2009), (see figure 6). First, we explain the chosen philosophy and approach suitable for our research. The chapter continues to explain the research strategy and the choice of methods used for data collection. Furthermore, how the data were collected is presented comprehensively.

Figure 6: The research process ‘onion’, (Saunders, Lewis, & Thornhill, 2009, p.108)

3.1 Research philosophy

In this section we will present the different philosophies when writing a thesis. And then make a choice of philosophy that fits best with our thesis. The choice of research approach and strategy will be easier when we decide upon a research philosophy because they connect and interrelate to each other. Saunders et al. (2009, p.108) highlights the statement of Johnson and Clark which emphasizes the importance of understanding the chosen research philosophy as it is committed on research strategy and the way the study is explored. There are two different approaches of research philosophies: ontological and epistemological orientations. These approaches observe the perceptions, beliefs and assumptions of what is nature and real and influence the way a research can be conducted or designed (Flowers, 2009). Therefore it is important to understand these features that should come naturally with the chosen method and consequently minimize the research biases.

Ontology relates to the “nature of existence and being” and describes human’s view and assumptions on the nature of reality, more precisely whether it is an objective that really exists or subjective reality that is created in human minds. Saunders et al. (2009, p.109-110) present these as objectivism and subjectivism (or constructionism): in a world of objectivism people believe in the existence of social entities in reality that are independent of social actors, while subjectivism is the belief that reality is not a firm absolute but rather interchangeable by the perceiver’s experience, feelings and understandings. We aim to study
the different views of the respondents in the subject mattered. Ontology will enable us to achieve this objective through interacting with the respondents and understand the reality of why companies experience the model to be beneficial and others not. Our prior knowledge in accounting methods is limited to two courses although our values might affect this thesis. Therefore, the presentation of empirical findings might be more objective than the analysis. What we further should keep in mind is to identify our own subjectivity throughout the whole research process to be able to be as neutral as possible.

Epistemology concern questions regarding accepted knowledge like what are necessary and efficient conditions of knowledge and what are the resources needed. (Saunders et al., 2009, p.112). In other words epistemology is about how to attain a specific knowledge about the world from the participants various observations (Travers, 2001, p.9), (Bryman & Bell, 2007, p.402). All researchers have some epistemological thinking in the research studied that can influence the perceptions of the data collected. Therefore it is important to be aware of these issues and not let past experience affect the results. The most used epistemological positions are positivism and interpretivism, realism and pragmatism. Pragmatism encourages the researcher to study in the way that he/she sees as appropriate and bring his/her positive values to the results (Saunders et al., 2009, p.109). The philosophy of realism addresses the fact that “objects have an independent existence of the human mind” (Saunders et al., 2009, p.114). In our research our value of the subject is not taken into consideration, it is rather the perception of the respondents of the subject which is dependent on their own experience. Therefore, these types of philosophies are not related to our research.

In a world with positivist view, science is seen as the way to get to the truth. In order for people to predict and control the world they have to understand it sufficiently well. Further positivism is linked with universal laws which make it closer to the natural science of carrying out a research. Researchers with positivist thinking rather test hypothesis to check if theory is correct, they also tend to collect large amount of data in order for them to enhance their findings (Travers, 2002, p.10). Therefore this type of philosophy favor’s the use of the deductive approach in researching large-scale observations. We are not going to pay any more attention to positivism, because it encourages analyzing large data sets and explores casual theory by measuring different variables rather than interpreting how these variables appeared and why these variables emerged.

In contrast to positivism, interpretivism explores the depth and complexity of phenomena by sociological interaction with others. Philosophers in social science like Wes Sharrock and Rod Watson state that through interaction a researcher can study a respondents face impression toward a certain subject which consequently will make them speak about the subject mattered (Travers, 2002, p.10). This type of research philosophy might come with unexpected and interesting findings that positivism wouldn’t be able to discover. Sometimes natural sciences methods can be unsuccessful in answering a research question, which press the researcher to adapt new methods and consider an interpretive position to help him/her answer on the research questions. Interpretivists usually apply qualitative methods in order for them to build an interpretation of how people in society understand the world from their point of view (Bryman & Bell, 2007, p.20-21). Therefore interpretivism will be our main philosophy through this research because our research question will be answered when we consider the respondent’s experience and understandings of the subject studied.

This study requires us to be more interpretivist in order for us to collect the data needed, we do not either feel comfortable with the positivistic philosophy. The purpose of this study is to investigate the relevance of ABC from the benefit perspective and since we know from the
study by Stratton et al. (2009) that many companies have abandoned the model and others not, it gives us a further research that enable us to dig deeper in this matter by studying the relevance of ABC from the user’s and former-user’s perspective. By interacting with the people that works closely with ABC at management level will help us collect the data required for answering on the research question. See table (3) for summarized philosophies.

<table>
<thead>
<tr>
<th></th>
<th>Positivism</th>
<th>Interpretivism</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ontology: the researcher's view of the nature of reality or being</strong></td>
<td>External, objective and independent of social actors</td>
<td>Socially constructed, subjective, may change, multiple</td>
</tr>
<tr>
<td><strong>Epistemology: the researcher's view regarding what constitutes acceptable knowledge</strong></td>
<td>Only observable phenomena can provide credible data, facts. Focus on causality and law like generalization, reducing phenomena to simplest elements</td>
<td>Subjective meanings and social phenomena. Focus upon the details of situation, a reality behind these details, subjective meanings motivating actions</td>
</tr>
<tr>
<td><strong>Data collection techniques most often used</strong></td>
<td>Highly structured, large samples, measurement, quantitative, but can use qualitative</td>
<td>Small samples, in depth investigations, qualitative</td>
</tr>
</tbody>
</table>

Table 3: comparison of positivism and interpretivism (adapted from Saunders et al., 2009, p.119)

**3.2 Research approach**

The research approach comes naturally along with the research philosophy. There are two major approaches in business research; those are deductive and inductive approaches. These will be presented and explained in the next section and which approach and what makes it suitable for our research will also be clarified.

The deductive approach signifies “the view of the nature of the relationship between theory and research” (Bryman & Bell, 2007, p.11). It enables the researcher to use existing theories and based on these theories the researcher develop specific hypothesis which can be tested to support the general ideas. Therefore the data collected are often quantitative and is usually composed through surveys, observations, questionnaires or interviews. The inductive approach rather views occasions through the eyes of people. The purpose of inductive approach requires understanding the nature of a specific problem. It deals with qualitative data and theories are formed through results obtained from interviews. The deductive approach is more likely to be close to positivism and induction to interpretivism (Saunders et al. p.124-126). The outcome of the inductive study is the theory drawn from a number of observations/findings while the deductive works the other way around illustrated by figure (7). In our case we are not going to develop new theories because our limited knowledge in the subject encourage us to make explorative studies. The inductive approach will be employed only to collect the observations from other studies and analyze it with the empirical findings to then come with reliable results. Therefore, our study will not be fully inductive because we are choosing some aspects of the inductive approach. And if the result comes out as a new or more developed theory then we will be happy to present them for further research. Furthermore, studying the relevance of ABC from the benefit perspective is new and in order for us to back it up with relevant theories we have to use the inductive approach.
3.3 Research strategy

Designing a research strategy will help us answer our research questions more efficiently. Therefore the three most used research strategies will be outlined and the most suitable for our research will be presented.

According to Saunders et al. (2009, p.136), research strategy is a plan of how the researcher will continue with answering the research question. The research strategy will take into consideration the research purpose, the data source collected, and obstacles such as (time, data, and location) that might show up through the study and affect it. Saunders et al. (2009, p.141) present a number of research strategies that are useful for answering research questions. Such strategies include experiment, survey, case study, action research, grounded theory, ethnography and archival research. Which one to apply depends on the research questions and objectives we wish to investigate. It also comes naturally with the choice of research philosophy and approach as some strategies fits better with the deductive and others with the inductive. A combination of two or more is not impossible.

Survey is one example of research strategy and is very popular in business and management studies because it enables the researcher to collect large amount of data from a random sample of population in a highly economical way. The most used research tool in surveys is questionnaires. This allow the researcher to collect quantitative data using descriptive and inferential statistics, and then compare two variables and generate a model of the relationship between these two variables. (Saunders et al. 2009, p.144).

Second is case study which is more comprehensive than the others and seeks for explanations and answers concerning a certain contemporary phenomenon in a context that has been previously studied, but not clearly evident. A case study enables the author to generate response of “why”, “what” and “how”, which provides the researcher with better understanding of the context of the research (Saunders et al. 2009, p.146). According to Yin (2009, p.18) “A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and the context are not clearly evident”. The data collection varies with the chosen method to answer the research questions; it may be in the form of interviews, observations, documentary analysis or questionnaires (Saunders et al., 2009, p.146).

We aim to study a particular context to better understand the phenomena from the perspective of the user/former users of ABC. This involves a number of participant’s observations of the subject through interaction. Therefore ethnography is a way to achieve this objective. We still have to keep in mind to find the concerned group to be able to get the answers we need and then build a trustworthy relationship so that the interviews will be as natural as possible. One
could argue that ethnography is for long period research because the researcher needs to immerse himself in the subject in order for him to build an understanding of the social world (Saunders et al, 2009, p.149). With the time limit we have we will not be able to fully employ the strategy; hence we will have to convince ourselves with this strategy which is totally consistent with the chosen research approach.

3.4 Research choice
Saunders et al. (2009) distinguish between two research choices (quantitative and qualitative). A researcher can choose either one of them or combine both methods. Quantitative and qualitative research choices differ in data collection techniques and data analysis procedures. The quantitative data collection is usually associated with “numbers and graphs” whereas the qualitative method rather describes meanings. In order for it to gain rich descriptions, “case studies and interviews” are the best options for a qualitative research studies. There are three different kinds of choices in combining techniques and procedures in a research. These are the mono method, multi-method and mixed-methods. The mono method refers to the use of single data collection technique which can be either quantitative or qualitative. With multi-method it is possible to combine two data collection techniques (qualitative and quantitative) but it has to be analyzed accordingly to the way the data is collected. The mixed method enables the researcher to use both qualitative and quantitative data collection techniques and analysis procedures. (Saunders et al., 2009, p.151-152).

After reviewing the research choice, it became clear to us to adapt the mono-qualitative method. Although the multiple methods provide the researcher with greater options to collect data and answer the research questions in a reliable way, it still can be confusing for the researcher and the reader (Saunders et al. 2009, p.153). Qualitative research methods allow us to study certain problems from the perspective of the individuals concerned which therefore requires close involvement with the participants. In order for a researcher to improve the quality of the research, he/she has to work with small-scale feature of social certainty, like interaction (Bryman & Bell, 2007, p. 424-425). Therefore the standpoint of the subject from the respondent is more essential than our own. The interpretive perspective and qualitative approach have had large impact in expanding the knowledge in management accounting. A “general theory” isn’t enough when it comes to understand certain phenomena in management accounting and the qualitative approach makes it possible to study such phenomena. For instance it allows firms to analyze organizational control issues regarding performance measurements (Vaivio, 2008). Qualitative research “involves an interpretive, naturalistic approach to the world”, which means a study of a subjects natural context to understand its logic and to interpret the phenomena in the eyes of the people involved (Nylen, 2005, p.11). Clearly many researchers in management accounting are using the qualitative method for deeper understanding of research problem and we are going to follow the same path in our research.

The context of our study is how ABC is relevant for manufacturing and service firms and what limitations they are facing from using the model. The second objective of the study is in the case of the model being irrelevant, what are the reasons of minimizing the relevance of the model. Furthermore, these questions will hopefully provide us with answers of why the usage of ABC is minimized. Our knowledge in SPSS (software for statistical analysis) is very basic; therefore we are not going to use the quantitative method. In addition our research question seeks deeper understanding in the field studied which is not very attainable through a quantitative study. Furthermore, we are naturalistic and want to explore the real view of the world, and since the qualitative method can fill this intention, it seems to be an appropriate method to use in this research. We apply the qualitative method by interviewing minimum of
four companies; the target is to book eight interviews from manufacturing and service firms. The interviews will enable us to ask questions and to collect the relevant data for our research.

3.4.1 Interviews
We have outlined before that we will adapt an epistemological research approach with an interpretivism orientation for the design of our research which naturally goes with the qualitative method of collecting data. Collecting data through interviews will enable us to obtain the relevant information for this study and also gives the respondent the freedom to provide personal view and opinions on the subject. Additionally the researchers will gain comprehensive answers from the questions asked as it is open-ended questions. This approach will enable us to guide the respondent through the questions and ask more questions that are relevant for the research. (Bryman & Bell 2007, p. 474).

An interview technique varies from one research to another. There are two major types of research interviews- First is the structured interview which is widely used in quantitative data collection i.e. in survey research. The interviewer usually uses standardized questionnaires that extend to large number of respondents. This way the interviewer will easily collect the data, compare and evaluate the responses. Next is the semi-structured interviews (non-standardized), mostly used to collect qualitative data through list of topics and questions that is linked to objectives of the study. We aim to use open-ended questions to gain answers that reveal the respondent view of the topic. Therefore we should stick to the topics of the questions, although the order of question’s can vary. The data can be recorded by audio-recording or notes. (Saunders et al., 2009, p. 320-321).

We wish to study the relevance of ABC from manager’s or controller’s perspective and by interviewing them we will be able to know how ABC is significant for the company or otherwise (Quinn, M, 2002, p.342). Furthermore, it will enable us to ask what is their experience of the model? What are their thoughts of the model regarding its benefits and limitations? Through interviews the interviewer gain the real view of the respondent, get to ask more questions and explain complex one’s to avoid misunderstandings (Bryman & Bell, 2007, p.474). The interviewer has to have the skills to obtain superior information throughout interviews and this can be improved by choosing the right approach and questions for the study.

We are going to use the semi-structured open-ended approach because it contains topics that make the interview highly focused and allow the interviewee to use time efficiently and enable us to make general comparisons (Quinn, 2002, p.346). Additionally, it gives the respondent the freedom to answer and provide the interviewee with detailed opinions of the subject. We believe that the persons who hold the information we are seeking are working closely with controlling and managing the company’s accounting system at. The plan is to conduct a face-to-face interview with the person that works directly with the model from each company (see figure 8). It will be geographically challenging to visit cities that are far from our residence, therefore telephone-interviews might occur as plan B. But mostly we will try to book interviews in Stockholm and Umeå.

With this kept in mind we created the interview guides for the users and former users of ABC. The topics are derived from the literature framework to easily analyze the data and compare it with previous studies. Nehler’s study of 2005 was a helpful source to look at when creating the interview guides because his study is similar to ours; besides he poses great experience in ABC model and in academic writing. We created two interview guides, one for the users and second for the former-users. We chose to have the same topics in both guides to enable easier
comparison among the companies although some of the questions differ. To ward up the interview we start with individual questions there we get an impression of the respondent position and background, then we continue with the company’s/respondent’s perception of cost, further in which areas ABC has been employed and last and not least the benefits and limitations of the model to answer upon the research question.

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**Figure 8: Types of interviews (Saunders et al., 2009, p.321)**

### 3.5 Research time horizons

Saunders et al. (2009, p.155) highlight two types of time horizons when doing a research and distinguish between the “snapshot” which is linked to cross-sectional studies and “diary” with longitudinal studies. Cross-sectional studies can be thought to investigate a phenomenon at a particular point in time. Usually the academic research is time constrained which makes this type of time horizon suit our study better. The longitudinal studies give long period of time for the researcher to study change and growth. It enables the researcher to measure, control and track changes in individual behavior, societal development and relationships over a long period of time.

This degree project is conducted as an academic research, and since time is limited in academic research studies, the cross-sectional type of time horizon is the most appropriate for this study. We are studying the relevance of ABC today which makes it relevant for us to collect short- time data. Furthermore we did not mention in the purpose the intention to compare today’s ABC with tomorrows. Although the longitudinal has many advantages, it would not be very feasible to use it in this kind of research because collecting data can take long time.

### 3.6 Data collection

#### 3.6.1 Empirical data collection and sampling method

The purpose of the study is to investigate the relevance of ABC in large manufacturing and service firms because they are most likely to use this model due the complexity of the companies’ operations and the large amount of indirect costs. Keeping this in mind, we like to present our research sample and make few comments about the sample. Moreover, we explain in detail the design of the interview questions and how these were performed. This will give better understanding for the reader how we proceeded to answer our research questions.
We use the model illustrated in figure 9 to present the different types of companies that are nominated for using ABC in their business settings (Pike, Tayles, Abu Mansor, 2011). We are not going to cover all of them because it is time consuming and challenging to make different interview guides to different types of companies. Therefore we select two types of firms: large manufacturing and service firms. Service companies are most likely to use ABC in their accounting system because usually activities are hard to define and indirect costs cover the largest part of the total cost (Rotch, 1990) (Clarke, Hill & Stevens, 1999). Manufacturing firms use ABC for performance measurements, quality and other variables related to cost (Ittner and Larcker, 2001). We are going to focus on managers and controllers in accounting departments because they work closely with ABC. They function as reporters between operations at plant level and top management, as they report the company’s performance regularly (Bloisi, Cook & Hunsaker, 2003, p.630). This make them more qualified for our study as they have the information and knowledge for answering our questions.

We divided the sample into users and former-users of ABC; with former-users we mean those companies who worked with ABC for short period of time. The meetings will take place in Stockholm and Umeå because it is easier for us to access. We contacted an accounting consultancy firm that provides software solutions for Strategic Corporate Performance Management to help us by naming firms that use the model or firms that has applied the model for short period of time. But that was not possible for them due to the high information secrecy of their clients. When this method failed, we visited the company’s home page and discovered a list with companies categorized in accordance to the type of company. We contacted manufacturing and service firms that used ABC in their accounting system and discovered that all of them have stopped using the model and they were not able to participate in the interview. Then we started to look at old thesis and doctoral thesis of ABC to find companies that have applied the model for shorter period of time and others that actually used it. We did not gain much from the thesis, because many of them have already participated in such studies and were not ready to be involved again. Later we asked teachers in management accounting and got few names and contacted some of them. Obbola and Volvo truck were two of them. We booked Obbola for an Interview but not Volvo trucks. One company was not enough for our study therefore we started to think for ourselves which companies might use ABC and we started to look at large manufacturing and service firms which perform many activities to produce an output, such companies like DHL, Schenker, etc. It was difficult to
find the people with the right qualifications as the operator did not know whom to contact. Many controllers were not familiar with the model or the concept of the model. For this reason, we had to explain the concept of the model for them. For instance the plant manager of Electrolux said that they used the model, and when he sent the e-post forward to an employee in the accounting department he found out that they did not use the model. The employee from the accounting department explained their calculation system for us and said that they call it for fake ABC. Therefore, we disregarded from Electrolux. After a long searching for qualified people with the company requirements we set, we managed to find the requested participants and booked interviews with them. Four firms agreed to participate, DB Schenker AB and Astra Zeneca in Stockholm, SCA Packaging Obbola AB and Timber AB (Munksund Sawmill) in Umeå. Our empirical evidence was small; therefore we kept searching for companies to increase the number of participants and we booked three more interviews at the end of table 4.

<table>
<thead>
<tr>
<th>Company</th>
<th>Respondent</th>
<th>Type of interview</th>
<th>Date</th>
<th>Time</th>
<th>Plats</th>
</tr>
</thead>
<tbody>
<tr>
<td>DB Schenker AB (former-user)</td>
<td>Jan Saarsoo</td>
<td>Face to face</td>
<td>18 April 2018</td>
<td>40 min</td>
<td>Stockholm</td>
</tr>
<tr>
<td>AstraZeneca (user of ABC)</td>
<td>Can Bektas &amp; Eva Markström</td>
<td>Face to Face</td>
<td>19 April 2018</td>
<td>70 min</td>
<td>Stockholm</td>
</tr>
<tr>
<td>SCA Packaging, Obbola (former-user)</td>
<td>Gösta Sundström</td>
<td>Face to face</td>
<td>20 April 2018</td>
<td>58 min</td>
<td>Umeå</td>
</tr>
<tr>
<td>SCA Timber AB (user of ABC)</td>
<td>Ekström Stig &amp; Grape Peter</td>
<td>Telephone interview</td>
<td>22 April 2018</td>
<td>65 min</td>
<td>Luleå</td>
</tr>
<tr>
<td>NCC konstruktion (user of ABC)</td>
<td>Niss Mats</td>
<td>Telephone interview</td>
<td>15 September 2018</td>
<td>53 min</td>
<td>Stockholm</td>
</tr>
<tr>
<td>ABB AB (former-user)</td>
<td>Patrik Brannström</td>
<td>Telephone interview</td>
<td>21 October 2018</td>
<td>55 min</td>
<td>Västerås</td>
</tr>
<tr>
<td>Company X (user of ABC)</td>
<td>anonymous</td>
<td>Face to face</td>
<td>21 November 2018</td>
<td>80 min</td>
<td>Stockholm</td>
</tr>
</tbody>
</table>

Table 4: Interview table

Our research sample is considered to be satisfactory as our objective was to book eight interviews and 7 out of 8 is quite good. We had to be flexible in selecting the sample because we said that we are going to carry out the interviews mainly in Umeå and Stockholm. This was not possible due to various reasons such as finding companies that use the model and companies that have been using it for short time. Second, is finding the right people. Third, is in identifying the model as it has several terms. Forth, some companies had already participated in a study and did not have time to do it again. Having larger sample would have better impact on our results, but despite the difficulties we believe that we have a satisfactory sample because the participants have great knowledge and experience within the field.

In order for us to collect relevant information for our study, we followed the semi-structured interview method with open-ended questions. We prepared two different interview guides since we are going to interview ABC-users and former-users to guarantee comparison of the participated companies. The interview questions were developed from our literature framework and other thesis that had almost the same subject in the studied field. We have assembled topics of the questions which we aim to discuss through the interview to ensure that we gain the answers we are looking for. These topics works like a guide for us to use in analyzing the data and answering the research question. The respondents received a small
presentation about the authors and the research topics to reflect over them in good time before the interview. We used the interview guides during the interview to stick to the subject and ensure we get the information we need. To see the topics and questions for both guides, look at appendix 1 and 2.

3.6.2 The interview procedure
Before starting the interview, we asked if the respondent favored to be anonymous and for permission to audio-record the interview. There were no issues for the respondents to reveal their names except for one and recording the interview was approved by all because they knew it will be used for academic research purpose. Recording the interview was very helpful because instead of taking notes, we were able to focus on the answers. Recording the interview was resourceful because we came back to it, listened and discovered important comments that are efficient for our study. The interviews occurred behind closed doors at the economics department of the selected companies. Three of the interviews were made by telephone because the offices were far in distance or suited the respondent best. The interviews were scheduled on different days and we got the chance to improve our questions and interviewing skills. The atmosphere was relaxed in most of the interviews, except for one because the manager has double scheduled two meetings at the same time and we had to rush with the questions. Like every interview, we begun by presenting ourselves and then carried on with the topics of the research and questions. Some follow-up questions observed as necessary for the research showed up through the interview process.

3.6.3 Interpreting the data and method of analysis
Ulrica Nylen presents guidelines of presenting the empirical data to specific methods. One of these methods is the naturalistic method which aims to understand the particular case. The empirical evidence contains interviews and observations. The research contribution should be coherent and detailed where both the respondents and researchers voices are spoken (Nylen, 2005, p. 60). This type of method follows the pattern of our research method; therefore it will be applied in the empirical and analysis parts. Our objective of presenting the empirical data is to present the knowledge from the respondents or the studied subject in the form of storytelling and through diligent usage of quotation. (Nylen, 2005, p.70, 93). Our voice and perceptions will be saved to be utilized in the analysis. The method applied in analyzing the data is the so called cross-case synthesis because it enables us to compare between the seven case studies and theory. It also encourages drawing a table of results with interpretive argumentations (Nylen, 2005, p. 133).

We developed the topics of the empirical chapter from the interview guides and literature framework and chose to use the same for the users and former users of ABC to enable an apparent comparison of the cases.

<table>
<thead>
<tr>
<th>Elements of methodology</th>
<th>Chosen methods of the research</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research Ontology</td>
<td>Subjectivism</td>
</tr>
<tr>
<td>Research Epistemology</td>
<td>Interpretivism</td>
</tr>
<tr>
<td>Research Approach</td>
<td>Aspects of Inductive approach</td>
</tr>
<tr>
<td>Research Strategy</td>
<td>Ethnography</td>
</tr>
<tr>
<td>Research Choice</td>
<td>Mono-qualitative method</td>
</tr>
<tr>
<td>Research Time horizons</td>
<td>Cross- sectional</td>
</tr>
<tr>
<td>Data Collection methods</td>
<td>Face to face &amp; telephone interviews</td>
</tr>
</tbody>
</table>

Table 5: Characteristics of our research methodology
4. Empirical evidence

In this chapter we will present our empirical data from the interviews. A short presentation of the companies will be presented so the reader will get an overview of our research sample. The data collected from interviews follows this outline: company’s characteristics, purpose and application of ABC and relevance of ABC. This will enable the reader to compare the respondent’s answers. Further we would like to ensure that the empirical evidence is only the answers of the respondents and not our own thoughts of the subject.

4.1 DB Schenker AB

Schenker & Company was found in 1872 by Gottfried Schenker in Vienna, Austria. In 2007 Schenker became part of the DB (Deutsche Bahn AG) that was one of the world’s leading passengers and Logistics Company. The joint venture name became DB Schenker AB (Schenker Company History, 2011). Around 34 145 employee in 130 different countries is working in Schenker today. The Group reported total revenues of approximately € 18, 9 billion in 2010. Schenker AB in Sweden provides customers with logistic service solutions in the kind of rail, road, air transport as well as consulting services and storage. Sweden is one of the largest markets of Schenker with 4 000 employees and a turnover of SEK 13 billion. Schenker in Spånga-Stockholm is a land transportation firm that offers parcel services, land transports of full and part loads, less-than-truckload freights, direct freights, cold sped and fridge freights. (DB Schenker’s webpage)

Interview with Jan Saarsoo, DB Schenker AB . April 18th 2011

Jan Saarsoo is the chief accountant in DB Schenker AB of Stockholm district land transportation. He has worked in DB Schenker AB since 2003 and today is working with securing quality, IT and real estate purchase. The interview took place at his office in DB Schenker AB head office in Spånga, Stockholm.

4.1.1 The company’s characteristics regarding type of cost, complexity and products

According to Jan Saarsoo the company’s working method is described as the following: “Flytta en produkt från avsändare till mottagare”, which basically means to deliver goods from one point to another. For this reason Schenker do not consider its operations to be complex. Schenker approximately performs 20-25 activities in performing a service. There are three types of road segments the company carry out, these are cool, fridge and regular that are applied both at domestic and foreign markets. The competition today in regard to prices is very tough and the biggest rivals Schenker have are Posten and DSV.

The type of cost used in Schenker is direct cost and it comprise the largest part of the total cost because the company rent the equipment used to perform the activities from lumpers (a third party Logistics Company provides other companies with truck and trailing). Schenker uses the standard cost to estimate how much expenses it carry out in performing a service. According to Mr. Saarsoo expenditures arise as a result of resource consumption, more precisely Schenker allocate costs according to different estimated measures like how much resource consumed to transport certain types of goods and how much time it takes to deliver the goods. More precisely Jan Saarsoo explain cost allocation in the following sentence: ”Man tittar på hur mycket tid man lägger in på en viss service och hur många aktiviteter som är involverade för att utföra tjänsten”1. Jan Saarsoo think that the current cost system is providing them with satisfactory results but still they cannot rely on it in decision making because decisions might be based on the wrong grounds.

1 If you for instance look at the economic division, they look at how much time certain service requires and how many activities are involved.
4.1.2 The purpose of ABC project

Schenker applied ABC as a project to analyze how much expenses went in performing certain order. The project was carried on in Stockholm district; first the company included one product for eight months, the company discovered that the model provided them with positive results. Therefore, they added five more products in autumn and spring 2006 and then continued with the rest. To ensure correct usage of ABC and to be able to exercise the model properly, Schenker hired two consultants to start the project of ABC. Jan Saarsoo stated that they did not really implement the model; it was rather a project for them to achieve certain objective. Saarsoo mean that even though the model has been used as a project for a short time, it showed that “fördelningen av kostnade blir helt korrekt. Resursen blir förbrukad och man vet väl vad det kostade att utföra en viss tjänst”\(^2\). Through the project of ABC the company achieved clear picture of the real cost of performing services.

4.1.3 Relevance of ABC (experienced benefits and limitations of ABC)

The company observes the model to be significant in providing them with information of how resources are consumed and how much expense goes to produce an output. “ABC är jätte bra”, “det är den” says Jan Saarsoo, this positive view comes along with the many benefits Schenker experienced in using ABC. Such benefits like using the model as a communication tool with customers and staff of Schenker. The model has been used to communicate with employee to clarify how much one kind of service activity cost to perform. ABC was an efficient communication tool in negotiations with customers because it clearly shows the customer the amount of time, material and money each activity consumes. Furthermore, through communicating with the staff Schenker discovered that they were performing activities for free while they were in fact paying for these activities.

ABC was useful in other decisions like extra sorting (customer related) and budget analysis. According to Jan Saarsoo “Man har en känsla vilka segment eller produkter som inte är lönsamma, ABC ger en bekräftelse för denna känsla vilket blir lättare att argumentera till ledning”\(^3\).

Despite the positive effects Schenker was experiencing from ABC, the model was not updated due the complexity, time and resource commitment. The numerical data was considered to be challenging to bring in the right way. Jan Saarsoo mean that “Implementeringen av ABC tar längre tid i början för att företaget ska komma in i tänkandet, men sen tror jag att det kommer att vara mindre tidskrävande att jobba med modellen”\(^4\).

Schenker Stockholm thinks that the model is very efficient, but changing a complete accounting system is demanding as it affects the organization as a whole. Change has to start from Germany where the head office is located. According to Mr. Jan, sometimes it is almost good to be right regarding the price but if the project will cost more than it produce, then the company should reconsider the investment. Then he says: "Det skulle vara bra om man lyckas få in det i sin normala verksamhet och fånga det i systemet på ett bra sätt”\(^5\).

\(^2\) Costs are accurately allocated, resources are consumed and one knows well how much it cost to perform a service.

\(^3\) You have a feel on what segments or products that are less profitable, ABC gives a confirmation of such feeling, and this makes it easier to argument toward management.

\(^4\) Implementation of ABC takes long time because the company has to apply new way of thinking, I assume later the model would be less time consuming (when it comes to maintenance).

\(^5\) It is brilliant if a company manage to integrate the model in their daily routine.
4.2 SCA Packaging Obbola AB
A Swedish financier called Ivar Kreuger created a Group from several forestry companies on 29 November 1929. The Group today is known as SCA and own over 40 production units with more than 6 500 employees in Sweden. SCA is the third largest producer of hygiene products in the world and the second largest private forest packaging producer in Europe. SCA produce, develop and market different varieties of products such as personal care products, packaging, publication paper and solid-wood products.

Obbola AB is one of the 170 packaging facilities and sawmill of the SCA group. Obbola is located in the Northern part of Sweden- Umeå. In 1889 the company was a sawmill workshop, by 1913 it was rebuilt to manufacture pulp. In 1975 the company started to produce two main products Kraftliner and Euro power. The Kraftliner consists of fresh wood while the Euro power contains recycled fibers (the liner is a strong unbleached first layer that forms the surface of a box). Today the company has one of the biggest and most modern machines in the world with production capacity of 435 000 tones/year. The turnover in Obbola AB is estimated to 2 billion Swedish corns. Approximately 80% of Obbola’s export departs to customers in Europe and Scandinavia. About 50% of SCA Scandinavia customers are internal customers from SCA group. (SCA Packaging’s webpage)

![The SCA Group](image)

Figure 10: Developed from (SCA annual report 2010 p.10)

**Interview with Gösta Sundström, SCA Packaging Obbola AB. April 20th 2011**

Gösta Sundström is the accounting manager in SCA Packaging Obbola AB in Sweden-Umeå. Mr. Gösta has worked in the company for more than 30 years. His job is to support the local organization (Obbola AB) with cost control. Gösta is part of a team that consists of three other employees that works with reporting expenses, income statements and statements of financial positions.

4.2.1 The company’s characteristics regarding type of cost, complexity and products

Obbola AB produces two products (Kraftliner and Euro power), each product is separated into five different sub-products. All products are produced dependent on the volume of order and in accordance to the customer’s request on the diameter and width of the chosen product. The process of manufacturing is not considered to be complex because the company uses a regular production process of papers. The company is considered to have high automation. The types of cost the company incur are fixed and variable cost, the fixed comprises 1/3 of the total cost while the rest 2/3 are variable. Obbola uses standard costing in their calculation and these are
divided to fixed and variable standard costs. The company estimates how much raw materials, energy and chemicals consumed during a given period of time and then calculate operating expenses in accordance to the standard cost.

According to Gösta “Kostnader spelar en viktig roll i företaget”6. Meaning it is important to obtain “accurate cost” of each product. Then he adds that it is hard objective to achieve. The difficulty in calculating and allocating costs in Obbola lays in assigning costs to head products (Kraftliner and Euro power) and then to sub-products which consists of five different products. Accurate cost requires precise measurement of raw materials and energy cost which Obbola consider it to be difficult. Obbola’s competitor products are produced all over the world and their biggest rivals are in Sweden, Finland and USA. According to Gösta products such as ‘testliner’ have better quality than competitors. Obbola’s current cost system is considered to give “rättvis fördelning” which means “fair allocation” of costs. Gösta says:

"Vi har jobbat med detta kostnadssystem väldigt länge därför har vi lång erfarenhet utan det. Vi borde ha upptäckt fel och brister om det nu visade sig att det inte fungerar eller ger felaktig information. Alla som är berörda har en bra kännedom till hur man mäter och vad man mäter, dessutom vad det kostar att mäta"7.

Obbola uses standard costing to calculate its manufacturing process and it has been functioning in Obbola for long time. Therefore, they have great experience in using the information derived from it at operational and strategic level. Gösta declares that Obbola has good knowledge in what to measure, how to measure it, and how much it cost to measure it. The more a company measures its business operations the better result it gets. But it is still costly and the system has to be maintained regularly. He continues to say that “if a company want to reach the goal of “accurate costing”, it has to have the knowledge of what to measure”, for instance big part of their costs are “fiber costs” which is considered to be very complex and difficult to compute.

4.2.2 The purpose of ABC project

"Huvudsyftet med ABC är att se hur värdeskapande processen ser ut, från ax till limpa som det heter. I vårt fall att man ser hur råvaror förvandlas och vad de kostar i varje steg i processen. Därutöver hur värdet ökar och vilka processer som är kostsamma och vilka processer som är inte kostsamma respektive vilka som är flashalsar i processen".8

Gösta Sundström

Obbola AB applied ABC-project to identify how much each step in manufacturing a product cost. The purpose of applying the model was to identify the most expensive steps in order for the company to make necessary changes. Gösta was aware of the popularity of ABC but his knowledge was limited to one course he studied long time ago. Obbola hired a consultant from a firm called McKinsey & Company because SCA did not have any experience of using the model before. McKinsey & Company is a global management consulting firm. Their job was to improve the production process in SCA packaging Obbola AB by applying ABC and

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6 Cost plays important role in a company
7 We have worked with our current cost system for long time, therefore we expose great experience of using it. For this reason, we should discover errors if the model shows to be inefficient and provides us with incorrect information. All involved working with the model know what to measure, how to measure it and how much it cost to measure.
8 The purpose of applying ABC is to see how value adding the model is from A to Z. In our case to see how raw material transforms and the cost of the transformation process in each step, moreover how it grows in value and which processes are highly costly.
to identify how and where expenses were incurred. The consultant firm worked independently and Gösta’s role was to provide them with the data needed in analyzing the process and controlling cost. Based on the data McKinsey got, they reported information of the company’s activities and cost of activities under certain period of time like for one month or one year. This consequently gave better picture of Obbola’s cash flow.

ABC has rather been used in customer segmentation (internal customers of the SCA Group) than product pricing decisions. Further it has not been used in product/customer profitability analysis; the product and customer profitability analysis were estimated according to the contribution margin (the marginal profit per unit) in Obbola. Gösta speaks about the usage areas of ABC and says that: “Den används på företagslednings nivå för att kunna göra analyser och använda till att nå effektivitet och rationalisering av både kapital och personal. Och hur man skulle använda personal resurser på mest effektivt sätt”. This basically means that the information derived from ABC was used by management to analyze and improve efficiency of cost distribution channels to make sure that the staff uses resources more efficiently. The model provided the company with efficient investment information of what products or facilities the company should invest in and what kind of knowledge the company needs.

Gösta respondend upon the question whether ABC has served its purpose in Obbola and said that ABC was not completely implemented in the company. Therefore, it was difficult to answer whether it did or not. Still, Obbola chose not to implement the model. Gösta thinks they obtained good results by identifying which steps were most profitable from those that were less profitable with the consideration that the model was applied for one reason and for short period of time.

4.2.3 Relevance of ABC (experienced benefits and limitations of ABC)

Obbola thinks their experience of ABC to be limited because the usage of ABC lasted for short period of time. It still enabled the company to see where they ‘bind capital’ and how much it cost. What is regarded as challenging if Obbola would have continued to use the model is that they would have to change a complete accounting system and working process so that it fits to work with ABC. Gösta describes it as the following:

"I vårt fall, då vi hade ett för enkelt redovisnings system som inte skulle klara av att mata all information som i ABC. D.v.s. det gör inte att implementera ABC i traditionella system, utan man måste ha sidoordnande redovisningssystem. Med sidoordnade system får man oftast problem med att hålla dem valida mot varandra, och det är mycket jobb som tar både tid och pengar."10

For Obbola this was solid because such investment required big amount of resources such as education and new software that is more advanced than the one Obbola uses. Furthermore, ABC focuses on top level of the organization (management sales-department) more than local level (factory) because the cost information derived from ABC is used more in management decisions. According to Gösta “SCA koncernen har aldrig drivit Activity based costing förut, därför har den inte blivit aktuell för oss att jobba lokalt med den”11. The non existence of a suitable data system to register all the information from ABC and updating it constantly limits

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9 The model is used at management level to make necessary analysis to increase efficiency of staff and capital..i.e. how staff should use resources in an efficient way.
10 In our case, we had simple accounting system, the system we had would not be able to handle all the information derived from ABC, you cannot apply ABC to traditional cost systems, you should have coordinated accounting system to make them valid to each other. This procedure requires huge time and money.
11 SCA have not operated ABC before, therefore it has not been available to work with locally.
an appropriate usage of ABC in Obbola. Still, the model enabled the company to identify the most profitable from unprofitable customers.

Generally Gösta thinks that ABC is a good and interesting accounting tool because in comparison to the traditional cost system, it breaks cost at a whole new level and makes the company think from different perspective. Gösta wishes there was simpler version of ABC that gives the same results. Whether Obbola will apply the model again is up to the SCA Group because it includes changing a whole system and educating the staff in the economic, accounting and finance departments. Last and not the least Gösta declares:

“Om vi hade fortsatt med modellen då hade vi behövt resurser lokalt för att klara av det. Dessutom engagemang och vilja från den lokala och centrala ledningen krävs för att vilja ha rapporter och statistik som baserar sig på ABC annars är det meningslöst att ta fram någonting som man inte efterfrågar”12.

4.3 ABB AB

ABB is a leading supplier of products and systems in power transmission and process- and industry automation. ABB operates in more than 100 countries with 120,000 employees around the world. Approximately 8,700 employees’ works in 30 districts in Sweden, the largest are Ludvika and Västerås. Through local presence ABB 10 business centers create increased value for the customer. The company develops, manufactures, markets and sells industrial robots with attached control system and PC-based software. More than 90% of the manufactured products are exported (ABB AB webpage).

Interview with Patrik Brannström, ABB, October 21st 2011

The financial manager Patrik Brannström of ABB Sweden works with management accounting of the company and provides management with budget reporting. He has worked in the company for almost 20 years and was the project director in the implementation process of ABC.

4.3.1 The company’s characteristics regarding type of cost, complexity and products

Being a manufacturing/service company is a fact that makes the production process highly automatized and complex. Therefore when we asked how many activities approximately ABB performs in manufacturing the product, the respondent said that it is not possible to know because the company has annual sales of many billions of push buttons to larger projects. They also have large transaction facilities and amount of activities, for this reason it was not possible to answer the question. ABB uses all types of cost (direct, indirect, fixed and variable costs), but how many in percentage each type of cost is varies from one year to another. Some periods they have fixed costs more than variable while other periods more direct or indirect cost, but the largest part of the total cost is the direct because of the material cost.

ABB in their accounting system applies what so called “självkostnadskalkyl” or absorption costing in English. We asked what their current system contributes in comparison with ABC? Patrik answered that: “Fördelen med en enkel kostnadskalkyl jämfört med relativt avancerat ABC- kalkyl är just översikten, det är lätt att kommunicera och det är väldigt många som förstår hur kostnaderna fördelas. Dessutom är den väldigt inlärd i vårorganisation”13. The

12 If we have continued with the model we have had needed resources locally, engagement and demand for statistics and reports based on ABC analysis.
13 The advantage of a simple cost calculation system in comparison with advanced one like ABC is the easiness to communicate and understand how costs are allocated. In addition the model is very integrated in our organization.
competition is high in regard to prices therefore ABB has the advantage to cope with it through clear, simple and trustworthy accounting system like “självkostnadskalkylering”

4.3.2 The purpose of ABC project
To start with, ABB has not applied the model in the whole company but rather in certain divisions. Patrik experience of the model was only theoretical from university course and the practical improved when he started working in ABB. He was the project leader and had the main liability in the implementation process.

According to Patrik Brannström “Huvudsyftet med ABC var att få bort den trubbiga självkostnadskalkylen och få in mer precis och avancerat ABC kalkyl”\(^{14}\). The information derived from the model was considerably used in calculation and to follow-up the business. The company was able to lay out their activities and set prices of these activities and this gave the sales department reliable information for decision making. ABC enabled the company to follow-up the divisions from the point of how and where cost was incurred. ABB has applied the model in product/customer and company related decisions. First, in determining the cost of the product. Second, in analyzing customer profitability, even though it was not possible to categorize the customers that was most profitable because different customers generated additional activities. Third, in business related decisions such as budgeting, planning and performance measurement.

We aksed if ABC has fulfilled the purpose of applying it and the response came as the following: “ABC finns inte där längre, vi har tagit bort den. Men den uppfyllde sitt syfte under den tid som den var inne för ett par år sen. Den återspeglade verkliga kostnader och var bättre än den truppiga självkostnadskalkylen”\(^{15}\). The challenges in the implementation process were to replace complete accounting system with ABC to fit to management accounting of the company. The staff of ABB was obliged to work with new accounting system that is perceived hard to manage. Additionally the model required lots of time and effort to implement and maintain.

4.3.3 Relevance of ABC (experienced benefits and limitations of ABC)
Profitability assessments of products and customers and an efficient follow-up of divisions such like purchase division is two things ABB experienced from applying ABC. For instance, in the case of how many resources they spent in particular product. The company sensed indirect performance effects of the model in taking wise decisions when it comes to leasing and taking orders. When we asked if ABB was satisfied with the implementation and the results of ABC, Patrik responded and said “Ja och Nej, vi var nöjda med resultatet kalkylen gav oss men var missnäjda med underhållningen och komplexiteten som modellen krävde. Det var just pga. komplexiteten vi valde att inte fortsätta med modellen.”\(^{16}\).

Other than complexity, ABC was an advanced solution for the company that required large amount of technical resources and skills. The staff did not understand activities and the model in general. Furthermore, maintenance of the model was demanding because of the abovementioned reasons. We asked for Patriks general view of the model and received the following answer:

\(^{14}\) The main purpose of applying ABC was to remove the traditional cost system and implement an advanced one such as ABC.
\(^{15}\) We don’t have it any more, we have removed it. But under the time it was functioning, it has served its purpose. It reflected upon the real cost and was better than “självkostnadskalkylering”.
\(^{16}\) Yes and No, we was happy with the results the model provided us and dissatisfied with maintenance of the model. We dismissed the model because of its complexity.

ABB do not intend to apply the model again because it is a complex and tough to maintain. This decision will not be changed even if the model will be less complex in the future because it will nevertheless demand big changes and understandings in our company.

4.4 SCA Timber AB, Munksund Sawmill

SCA Timber-Munksund sawmill is one of the first sawmills in the northern part of Sweden-Piteå and is part of the SCA Group. The sawmill today produces 365 000 tons of Kraftliner (see about Obbola) every year. It receives materials from SCA Skog AB to produce finished goods. Munksund Sawmill is very modern and highly effective, its main focus is on cutting pine. The company produces other products such as timber (the wood that is used in manufacturing furniture, floors and window frames). Munksund sawmill produces 440 000 cubic meter of Nordic pine sawn mill yearly. The company’s turnover comprises SEK 3, 5 billion. Munksund sawmill can be divided into a number of small plants (see figure 11) in which raw materials goes through to become finished products and ready for delivery to customers. The activities included in the plants are timber sorting, saw, drying and grading. (SCA Timber’s webpage).

Figure 11: Configuration of the sawmill (Grape Peter)

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17 I think ABC is an efficient accounting tool but unfortunately it is very complex and requires large maintenance. We had to get stronger buy in from several divisions and management because we could not implement it in only one division. Then we have to make it less complex but get accurate result any way, i.e. one gets correct calculation. One can think of 80-90 % right calculation, it does not have to be 100% right. It was the factory that decided to apply ABC but today if ABB want to implement the model then the head office has to take such decision.
Interview with Ekström Stig & Grape Peter, SCA Timber AB, April 22nd 2011

Stig works at IT-department as a project manager in different projects for CSA Timber. Stig has been working in Timber for 14 years. Peter is the financial manager in one of the sawmills of CSA Timber, he has been working for the company for 4 years. He has the responsibility for cost accounting in the company. Peter and Stig are currently working together with the project of ABC.

4.4.1 The company’s characteristics regarding type of cost, complexity and products

Timber AB in Sweden produces 25 000 finished products. The indirect cost forms 2/3 of the production cost while the rest 1/3 are direct. Truck costs contain the largest part of the indirect cost while the timber (raw material) comprises the largest part of the direct cost. Stig said “Indirekta kostnader som truckkostnader fördelas med hjälp av procentsatser eller fördelningsnycklar och de är absolut de största indirekta kostnader som vi har”\(^18\). The perception of “accurate cost”, for Timber is described as the following:

“Det är ju viktig, men i sågverksindustrin är det problematiskt att veta exakta kostnader/priset innan man har fått en färdig stock som delas ner till flera produkter. Man vet inte exakt vilka produkter som man kommer att få ut av stocken i slutändan. Just denna fråga diskuteras ganska mycket inom sågverksindustrin om hur man ska ha kalkylen.”\(^19\)

Timber AB performs two activities (resource sorting and saw sorting), and these are linked to machine hours and working hours. The automatization in Timber is rather high because different machines are used to manufacture the product. The process begins at timber factory where the timber goes through quality assessment to assess the volume of raw materials and to facilitate the sawing-process. Then the sawmill cuts the boards and planks of timber and sort the waste. The timber leaves sawmill to dry and then grading so the timber after sorting can be cut to exact length. After that the timber is ready for sale to customers.

Upon the question of competition Peter commented and said that competition today is very tough because many competitors manufactures the same kind of products with different prices and many of them follow the world market price.

4.4.2 The purpose of ABC project

Timber AB has recently applied the model (May 2010) and 25 % of the company’s products are included and calculated according to ABC. Peter and Stig have worked with the model before and think it is a complicated accounting system. The firm’s management accounting is built in accordance to their traditional sawmill (the green part in figure 11). The pillars are in a significant importance for Timber because it shows the path the material goes through in manufacturing dependent on the order. The company calculates how much machine hours and working hours in manufacturing certain amount of volume. Then the company calculates how much raw materials are needed to manufacture the products respective other indirect costs such as truck-costs and allocate these to cost objects. More precisely, two activities in which costs are assigned to (resource sorting and saw sorting), these activities are linked to machine time and working hours. Then they identify other cost centers such as maintenance and energy costs which are estimated in percentage and allocated as direct cost. The process perceived to be complex because it is based on ABC philosophy.

\(^{18}\) Indirect costs such as truck-costs assigns according to certain percentage or distribution keys, and these are the largest indirect cost that we have.

\(^{19}\) It is important, but in the sawmill industry it is difficult to know the exact cost before the stock is finished and been divided into several products. We don’t know which products we are going to get from this stock. How should we calculate is a question that is subject for discussion in the sawmill industry.
Timber AB uses the model in both product and customer related decisions, Peter said that when the company gets to know how much expense the product causes, they automatically get the value of customers. Further, the tool is used in communicating when making business with customers as it provides them with clear cost information of each step the raw material goes through to become finished product. Timber AB has just included 25% of its products to work accordingly to ABC thinking and 75% are left out. Therefore it is not reasonable for the company to rely on the budget that ABC provides for the moment. It is an objective to include all the products so the company can use from all the efficient application of ABC.

4.4.3 Relevance of ABC (experienced benefits and limitations of ABC)

Stig found it hard to articulate the company’s perceived benefits of the model because it is considered to be in its first stage of the implementation process as they have not included all the products. Still, they think the model is providing them with accurate cost information of the manufactured product. Peter in regard to the above mentioned statement says "Med de kostnadsystem man har jobbat med förut fick man ingen kostnad för de enskilda produkterna, utan man fick en jämn kostnad för hela stocket då. Idag får vi mer detaljerade information". Furthermore, ABC supplies Timber with correct valuation of inventory. Raw materials in Timber contain the largest part of Timber’s total cost. For this reason it is crucial for them to know how much portion of raw materials is needed to produce certain amount of volume. With ABC the company managed to get information of ordering the right quantity of raw materials and this led to better operational planning like (purchase of materials).

Timber’s practical experience regarding the cost of implementing the model is not expensive in comparison with other cost systems. Then Peter says that each cost system has its advantages and disadvantages. One of the biggest disadvantages Timber facing is maintenance of the model, especially when the company does not have the resource needed such as new data system that help the company to think in a new way. Peter says: "Varför man inte fick fotfästet för att modellen var väldigt underhållskrävande. Det är jätte stort jobb om man tänker sig ett stort företag med ett specifikt datasystem som inte fungerar som den nya. Det är en stor utmaning att få företaget att tänka på ett nytt sätt". Furthermore, administrative costs are experienced to be hard to allocate as many of them are not decided in advance and they automatically show up in performing activities.

In the short-term Timber AB is satisfied with the model and think it is worth the investment, therefore they will continue use ABC. Stig said that they are planning to increase the usage of the model in valuation of inventory because inventories are very common in the company’s operations. To ensure the success of ABC Sting means that the system should be implemented for itself from the beginning in proper way rather than changing an old to a completely different one.

4.5 AstraZeneca AB

AstraZeneca was formed by the merger of two large pharmaceutical companies (the Swedish Astra AB and the British Zeneca Group plc) in 1999. Both companies have had long history of innovations and developments in the pharmaceutical industry. Additionally, the two companies have common science-based vision and cultures and this contributed to the success of the joint venture. Astra was established by Adolf Rising, Hans Euler and Knut Sjöberg in July 1913 in Södertälje. The organization as a whole operates in more than 100 countries with

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20 We did not get the cost of particular products in the old cost system, but we got an even cost of the whole stock. Today we get information that is much more detailed.

21 We did not implement the model because it requires regular maintenance. It requires huge effort to implement new data system, especially in big company like SCA.
62,000 co-workers worldwide, the main headquarter is located in London and the research & development headquarters is in Stockholm-Södertälje. In 2009 the Group reported annual sales of $32.8 billion. Today AstraZeneca is the seventh largest pharmaceutical and biological company in the world with 23 factories operating in 16 countries around the world. The company’s turnover today comprises SEK 1.3 billions. AstraZeneca offers paramedical health solutions for patients by focusing on research, development and manufacturing prescriptions in the field’s of gastrointestinal, cardiovascular, neuroscience, oncology and infectious diseases. Astra Zeneca research and development headquarters is located in Södertälje and offers drugs within the therapeutic area of neuroscience. Its main focus is on neurological diseases such as Alzheimer’s disease and multiple sclerosis. (AstraZeneca’s webpage)

**Interview with Can Bektas and Eva Markström, AstraZeneca AB, April 19th 2011**

The interview took place in AstraZeneca’s headquarter of research & development in Södertälje. Two respondents participated in the interview, Can Bektas is the financial director and Eva Markström is the process manager. Eva works directly with ABC through setting plant prices while Can is responsible for reporting costs, plant prices and governance.

4.5.1 The company’s characteristics regarding type of cost, complexity and products

AstraZeneca produces a variety of products that extend from pastille to syringe. Manufacturing these products requires different types of machines. The products vary from country to another, for instance one kind of pastille is manufactured in Sweden and another in England. For this reason Can Bektas thinks the process is regarded as complex.

Astra Approximately produces 2,000 finished products in Sweden. Eva states: “det är mest direkta kostnader vi använder” and Can adds that ”material, löner, avskrivningar och övriga kostnader är allokerade till direkta kostnader.” Can continues to say: ”Vi räknar bara vad det kostar att tillverka tabletten, så egentligen är det en direkt kostnad.” This makes the direct cost is the largest part of the company’s total cost and it is only included in the manufacturing process. Other expenses like marketing are considered to be direct because it is left to a marketing agency to decide how much it cost to market and sell the product. Energy costs are included in the manufacturing process as direct cost, Astra basically calculates how much electricity each building and machine consumes and then add to products. For instance if the machine consumes 10% energy to produce certain amount of volume, then 10% of the cost will be assigned directly to the product.

Eva commented upon the question of competition and said that they do not look at what prices competitors pose because they do not produce the same products. The financial director Can added that:

”Det är olika produkter med olika substanser, därför är det svårt att jämföra för att våra konkurrenter inte gör vår pastille och vi gör inte heller deras pastille. Om man tittar på andra konkurrenser, alla har magasins medicin men det går inte att jämföra eftersom dem tillverkas olika. Lite tittar vi på vad konkurrenterna har, t.ex. om man har samma produkt på marknaden då tittar vi på priset och lägger den precis på den nivån med konkurrenterna, men inte om vi har bättre kvalitet på våra produkter.”

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22 We only use direct cost
23 Material, salaries, depreciations and other costs are assigned as direct cost.
24 We only calculate how much to manufacture the pastille and actually it is direct cost.
25 The financial director Can said that Astra do not produce the same products like the competitors which makes it harder to compare. Further Astra base their product prices on what products cost to manufacture and
Therefore, Astra base their prices on how much the product cost to manufacture which makes it independent from the market price. Very little they look at prices of competitors, just to ensure they do not have lower prices on quality goods.

The target of “Accurate costing” is important for Astra, but what is more important is that they keep costs according to the budget they get in manufacturing products. Eva says that what we put in shall come out of the budget we have. Can adds that it is not easy to get 100% correct price and therefore they try to be as close as possible to zero deviation.

4.5.2 The purpose of ABC project

The main cost system Astra Zeneca uses is ABC and they have built their own model long time ago. Products are the only cost objects in Astra. The activities that are included in manufacturing one product consist approximately of 9-10 activities. The process of cost allocation was described by Eva as the following:

"Det första vi får är en budget (en volym på Nexium), hur många vi ska producera, sen får vi en budget som är satt per kostnad ställe på just Nexium flödet. Då har man lagt vad som är löner, vad som är avskrivningar och vad som är overhæd. Man stoppar in det i kalkylsystemet vildigt enkelt, du har olika Nexium produkterna, du fördelar volymerna, hur mycket man tänkt göra på varje Nexium produkt. Sen stoppar man in det i budgeten i kalkylsystemet, kör en mätt och kostnad, fördelar kostnader på volymen och på olika platser i produktionen som även har i vårt kalkylsystem (det som produktionens maskiner). Sen får vi olika data utifrån vad man tror hur fort maskinen kör, kapacitet, material kostnader på all produkter i Nexium... allt måste prissättas först och främst och sen allokeras allting på slutprodukten, först material, halvfabrikat och sen slut produkt... det som vi lägger inf(budget) ska komma ut i form av fabriks pris".

ABC has been functioning in Astra since 1980s. The purpose of using the model is described as the following: "att varje product ska bära sin egen kostnad" which means that each product will carry its own expenses. The model is largely used in product related decisions such as setting product prices and outsourcing. Can gave an example of outsourcing and said: "Vi tittar på vad det kostar att tillverka hos oss och vad skulle det kostat att tillverka hos en annan part, exakt samma produkt, då får den externa parten räkna om det är billigare för dem att tillverka den, då kanske vi tänker lägga våra produkter hos den personen". This basically means that Astra might manufacture products in plants other than their own if manufacturing these products is less costly outside Astra’s territory. Sometimes it’s cheaper to buy components of a product more than manufacturing it; such decisions are left to top management and ABC is used to support these decisions.

26 “If we take Nexium (for stomach ulcer) as an example. First, we get a budget on how much volume of Nexium to produce and then we have a rate on each Nexium cost center where salaries, depreciations and other costs come in the process. We allocate the required volumes to the different Nexium products, followed by measurements and setting costs to assign it to the volume and different areas in the production which is related to machines like electricity. All costs at the end are assigned to number of articles which include material, half product (halv fabrikat) and finished product. The idea is that each product will pay its own manufacturing cost".

27 Each product should cover its own expenses.
Other than product related decisions, Astra actively uses the information of ABC in strategic decision making (like outsourcing) as the model provides management with comprehensive reports of how much it cost to manufacture a certain type of medicine. However, the model is not utilized in customer related decisions like customer segmentation because this type of job is left to a marketing agency. Further, Astra uses the model to compare prices between the years and valuation of inventory.

4.5.3 Relevance of ABC (experienced benefits and limitations of ABC)
The benefits derived from ABC according to Can is that “du får rätt pris” that means “you get the right price”. Eva describes it in detailed way and say “Du ser exakt vad du har stoppat in, eftersom det ska bli samma det du får ut, du ser direkt om du har fått rätta priset”.

Maintenance of the model is perceived to be challenging as it takes long time and has to be controlled, sometimes the data has to be done manually if they do not get the right data. This stresses the fact that they have to get the right information from the beginning. Otherwise, the model is not experienced to be expensive to maintain. What is considered to be tough is the complexity of the calculation process of products from grounds to finished products. Therefore, each step has to be correctly calculated. It takes also long time to get the data and control it, usually four months.

ABC is significantly integrated in Astra and the whole concern is working with it, therefore despite all limitations they think it is worth the time and effort put into it. Today the model has become a normal routine in the company which is why Astra Zeneca is going to continue working with ABC.

4.6 NCC Construction AB
At the end of 1987 Nordstjernan AB started to buy stocks from a building company named Armerad Betong Vägförbättringar (ABV). Nordstjernan at that time had its own building company called Johnson Construction Company (JCC). This created the judicial term of the company NCC in Jan 1989. NCC is one of the leading companies in construction and property developments in the Nordic region. The Group had sales of SEK 49 billion in 2010, with approximately 17,000 employees. NCC develops and builds residential and commercial properties, industrial facilities and public buildings, roads, civil engineering structures and other types of infrastructure. Additionally, they offer input materials used in construction such as aggregates and asphalt and conducts paving and road services (NCC Construction AB webpage).

Interview with Niss Mats, NCC , September 15th 2011
Niss Mats works with computing and coordinating the calculation process and IT-system in NCC in Sweden. He started to work with ABC since he entered the company. Furthermore, he prepares the information required for calculation of particular projects in the company.

4.6.1 The company’s characteristics regarding type of cost, complexity and products
NCC offers different types of services, from building residences to infrastructure construction. According to Niss Mats “Different projects require different materials and machines”; therefore NCC in regard to technical equipment, number of articles and volume is perceived to be complex. As a result this means that NCC does not purchase the same material for these projects. The company rent the machines, which ones will be rented depends on the type of project (for instance, sometimes they need a drilling machine, dredger or even cars). The cost

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We look at how much it cost to manufacture the product in our company and compare it with the production cost of other manufacturing firm and we let them manufacture the product if it is less expensive.
of renting these machines is indirect, while the material cost is direct. 70-80% of the total cost is direct and this is determined by how the company works in certain project (whether they need to buy or rent equipment). This leaves 20-30% of the total cost indirect which is according to Niss these costs are tricky to allocate to cost objects.

Upon the question of how important “accurate costing” is for the company, Niss responded and said that it is what everything is basically based on. By that he means the company in detail has to estimate how much the project will cost from the equipment they buy and rent which is in the form of direct cost. The rest (indirect cost) the company tries to compute as much as it goes in the working process. Further we asked if it is possible to precisely estimate how much the project cost, Niss said the following:

“Jo, det går ju, men problemet är när vi gör våra kalkyler så vet vi inte riktigt exakt hur det ska se ut, beställaren kanske inte har bestämt hur tjock väggen eller vad det ska vara för utkik eller material. Vi antar hur mycket vi tror det kommer att kosta utifrån vår egen erfarenhet.”

The market today in terms of prices is very tough because all projects are set for bidding which means the highest price wins. In the Swedish market the largest construction companies are Skanska and Peab, and these companies are some of NCCs competitors that always press the prices for NCC.

4.6.2 The purpose of ABC project

The only accounting system NCC uses is ABC; it has been functioning since 20 years ago. The company requires accurateness in the calculation process and the model fulfills the purpose in assigning costs through activities to cost objects.

The main cost objects according to Niss are material and the work they perform. The number of activities consumed varies with the type of project. It can be from 10 up to 4 000 dependent on the size of the project. Niss said if the project is big and contains approximately 4 000 activities then NCC use to have more than one person to work with the calculation (sometimes 10). Then we asked if it would take less time using another accounting system and Niss disagreed and said: “if we want accurateness then we have to put more time and effort to achieve this objective”.

All their calculation is based on ABC, they use the model in product related decisions such as price setting. ABC is an accounting system that provides NCC with information that helps in budgeting and planning. Customer segmentation is something that they apply and whether the customer is profitable or not is uncertain and cannot be known until the project is completed. Besides it is different projects with different prerequisites. For this reason they do not apply ABC in customer segmentation or customer profitability analysis. It is common that the company can get major changes on the project because some customers may ask to add or remove some components from the project. Therefore, it is not easy to calculate customer profitability in advance and one has to wait until the project ends. This can take several years dependent on how big the project is. Some projects can take up to 10 years and it is not definite that NCC gets the project or the same customer again. The offer can either be accepted or rejected by customers.

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29 Yes, it is possible, but the problem is that we don’t exactly know how the calculation will come out, because the customer might not decide how thick the wall will be or what material will be used. Based on our experience we assume the cost of a project.
4.6.3 Relevance of ABC (experienced benefits and limitations of ABC)

We asked if ABC is providing NCC with accurate cost allocation and the response was as the following “Ja, det tycker vi. Man ser ju hur kostnaderna fördelas vid projektets olika skede och hur mycket det kommer att kosta oss totalt om kunden väljer att lägga på vissa föremål”\textsuperscript{30}. This makes ABC useful in setting prices toward customers as well as planning and budgeting. But in budgeting NCC does not rely on ABC because of the changes that might occur through the working process.

NCC rents the machines they need; therefore they already know the competences required to run these machines and how much it cost to employee these competences. But if there is an opportunity to rent the staff at lower price from other sources, then the company would do so. For this reason NCC does not use ABC in determining which resources they need to run particular project.

When we asked if the model is engaged in strategic decision making, Mats said that they estimate how much they charge for each project with ABC calculation. This calculation will be like a foundation of the project, even if the project will be larger and require more resources the calculation from the beginning will help them take the project one step further in the project’s life cycle. Being aware of how much the cost is and how much to spend in certain project enable the company to gain a huge competitive advantage in the market. Niss commented upon the question if they have experienced benefits of the model and said:

“Förutom det här med noggrannhet om hur mycket varje projekt kostar oss så är det att materiellt så pass noggrant att man får ganska bra kalkyler som ger oss bra uppfattning och underlag när vi ska bygga. Dessutom vilka material vi ska beställa, hur mycket material vi ska beställa samt vilka ska vi beställa dessa material ifrån. Detta har resulterat i att vi förbättrar vår lönsamhet.”\textsuperscript{31}.

We asked Niss if they find updating and maintaining the model is time-consuming and costly. He said that they have used the model for long time hence it is very integrated in the company’s data-system. Therefore they do not face problems in maintenance of the model, but he does not deny that maintenance of the model requires regular maintenance and resources and time-consuming. Niss said that they don’t really think of the cost because they do not have other option than using ABC.

Do you think the purpose of ABC has been fulfilled in NCC? “Yes, it works very well for us. We had an objective from applying the model and this objective has been fulfilled. Then I don’t know if we are going to have further objectives, but today we are satisfied with what we have” Niss. NCC thinks ABC is worth the investment because they do not have another option and they are unfamiliar with other cost systems that is as accurate as ABC, therefore they will continue to use ABC in their accounting system.

4.7 Company X

The company X is Sweden’s leading Wholesaler Company in el-technical equipments with experience of over hundred years. They market and sell el-materials and equipments in power/automation, tele/data/security, lighting, and other household machines. The business

\textsuperscript{30} Yes, we think so. One can see how costs are allocated in the project’s different stages and how much the project will cost totally even though the customer chose to add some components.

\textsuperscript{31} Accuratness of how much each project will cost. The model provides us with efficient calculation sheets that show us when to build, which and how much material we need to order and whom we will order the material from. This consequently improves profitability of the company’s operation process.
today has a turnover of 5 486 MSEK with 320 employees and 65 offices around the country. The company is part of large concern that is located in 23 different countries. According to the respondent they do not manufacture products but rather buy and sell them. They also market these products and run outsourcing-missions through logistics and stock-management of industry, state and municipalities. (The figures are assumed to keep anonymity).

Interview with Company X, November 21st 2011.
The respondent is the business controller at the company since 2000, he reports directly to the finance manager. He works with budgeting, analysis, forecasts and supports contract-managers of the company.

4.7.1 The company’s characteristics regarding type of cost, complexity and products
The company today has possession of 40 thousand articles in store and further 200 thousand in the company’s system that they normally purchase and trade in. Large part of expediters comes from facility rental and salaries and considered to be fixed, whereas distribution-expenses are variable because they incur when the company deliver the articles (products) to customers. Indirect cost is also common in the company but is perceived to be hard to identify or determine the cost driver and link it to a customer or a product.

Upon the question of competition the respondent said that it is very strong because wholesaler business has been operating for almost 100 years. Consolidation in the market is quite high today which limits the number of options for customers. This competition concerns prices as well. Rexel is one of the wholesales that are competing in the market with Company X. the respondent commented on the question of “accurate costing” and said that:

“I vårt fall är det inte så viktigt att det blir rätt utan mer tillräckligt rätt. Vi är inte beroende av våra kalkyler, så att säga produkt kalkyler, förkalkyler eller något sånt. Vi ser hur mycket aktiviteten kommer att kosta oss respektive hur mycket tid det kommer att ta och detta behöver inte vara exakt, för oss det är mer rätt att det blir ungefärligt rätt än precis fel. Men kostnaderna brukar vi få väldigt exakt och det stämmer överens med vår resultaträkning på helheten. Det finns så klart olika avvikelser som man brukar upptäcka på olika kunder, leverantörer eller produkter, och då får man gå in och justera det som har orsakat avvikelserna, ja ibland blir det lite fel.”

Furthermore, the Company X does not use any other cost accounting system than ABC because they believe ABC is an accounting system that fits best with their business operations. The respondent addressed that they observe the calculation process from two different aspects, one product and supplier perspective and second from customer perspective. Therefore, the company has two cost calculations, one which assigns costs to products and another to customers. According to the respondent the company performs approximately 100 activities with 100 different cost drivers in producing an output.

Company X describes the process of assigning cost as the following: they get the costs from the income statement identifies number of resources and then these resources will be included to perform certain number of activities. These come in a three stage process; first, the income statement determines the resources, second the resources will be used in number of identified activities and third is to bring it to cost objects.

32 In our case, it is not important to be 100 % right about the cost but rather sufficiently right. We do not fully depend on our calculation; we rather estimate how much it’s going to cost us. The costs we get at the end are correct and usually correspond to income statement. There are some deviation the one discover with different customers, suppliers and products; what we can do about it is to go back and adjust what has caused the deviation.
4.7.2 The purpose of ABC project
The respondent has worked with ABC since 2005. It was actually there he learned to work with the model and today he has 11 years of experience in ABC. Specifically, he works with ABC-calculation and preparation of analysis. The purpose of using the model is to bring out the actual cost of an activity or a product. Originally, the implementation of ABC came as result from a project of a company that had purchased Company X at that time. ABC was introduced as a tool that should be used by all associated companies of the parent company to get answers at strategic level. Example of these questions that were included in the project was which customers and products are most profitable. After that the company X started to implement the model (1994-1995), since then the model has been actively functioning in the company’s accounting system.

ABC is an active tool in product related decision because it is able to evaluate which products or suppliers are cost-effective. The respondent said that: “Vi använder oss av informationen från ABC-kalkyleringen när vi förhandlar med våra leverantörer och kunder.” 33 Additionally, the model is used in customer segmentation and profitability analysis. The company determines the activities performed with different customers and different segments. According to the respondent customers with high maturity degrees understand and appreciate the tool more than small ones. Furthermore, the tool is applied in company related decisions such as performance measurements and other strategic decision making. According to the respondent: “ABC är ett av många olika verktyg som man kan ta sig vid gäller t.ex. planering. Den har en påverkan på strategin och taktiken framför allt, vi har ändrat en del komponenter ibland baserad på beslut från ABC resultatet, så den har en påverkan där.” 34 In other meaning if the results of ABC indicate that the company should focus on certain customer group, then the company would take this into consideration in planning next business activity. The risky thing here is for the company to consume resources on incorrect customer group or in the wrong objects; therefore it is crucial to include such information in planning for future business operations the respondent mean. The Company X does not directly use ABC in budgeting, but the budget might get affected of a changed or improved strategy. The tool is also used in performance measurements because the company carries out activities based on the income statement they receive from ABC.

4.7.3 Relevance of ABC (experienced benefits and limitations of ABC)
The main benefit of using ABC is in determining those customers and products that are most profitable. The respondent commented upon the question of the benefits of ABC and said: “Vi ser även vad som kan påverka vår verksamhet, och vi tycker att med ABC vi kommer lite närmare samningen eller verkligheten än vad ett traditionellt kostnadssystem skulle kunna göra. Vi tycker även att vi får ganska god kunskap om våra kunder och produkter, framför allt våra interna processor, (vi har ju kartlagt de). Det innebär också en bättre förståelse mellan oss och våra kunder och leverantörer.” 35 Since the company analyzes the work they do internally, it raises awareness of their costs and questions of what makes expenses incur or fall will be answered. Furthermore, the respondent addressed that they will even know if these costs are increasing from customers or suppliers side. This gives the company an understanding of the reality of their customers and suppliers that they operate within. The

33 We us the information from ABC when we negotiate with suppliers and customers.
34 ABC is one of accounting tools that takes planning into consideration. It has certain effects on strategy and tactical planning. We have sometimes changed some components based on results from ABC.
35 We have the knowledge of what affect our business and we think with ABC we come closer to accurateness and reality than what the traditional cost system will be able to provide. We are able to collect data of our customers, suppliers and our internal processes (as we created them). This consequently means better understanding between us our customers and suppliers.
respondent said that the tool gives them good foundation for negotiation with customers and provide them with information of what they do both internally and externally.

We asked if the respondent think that ABC provides the company with “accurate costing”. He answered with both the positive and negative, he said that it is crucial for the success of the model to find the right allocation formula to assign costs to cost objects in accurate way. The model can be challenging if a company has complex business operation with various activities for different type of customer groups. He said that the model do provide them with accurate costing when they look at the picture as a whole. The feedback they get from customers and product division give them the chance to revalue their cost drivers because errors can occur by assigning too little here or there; therefore they work to find a cost driver that allocates costs in an efficient way.

Additionally, the company use ABC like a selling-tool helps them get new customers. This comes as a result of the useful information the model brings to the company. The company shares this information with their customers which gives the customers the opportunity to evaluate profitability of their affairs and how much these activities cost the company. The respondent said that in some cases when they perceive the cost to be high and the customer think of the same, they would surely be interested to minimize the cost for our own advantage and the customer’s.

We asked the respondent about the challenges they are experiencing of the model, he answered the following: “Ja uppdateringen och underhållet av systemet är tidskrävande. Det är ganska mycket information som vi mattar in i affärssystemet. Så det kan vara lite tidskrävande, ibland kan den dessutom vara skeptiskt vad gäller förståelse för ABC, för vi får ett resultat som ABC sagt och den stora utmaningen egenligen att förklara för medarbetare vad resultatet egentligen visar”36. ABC provides the company with detailed results and sometimes it is hard to explain these details and what is more challenging is to explain the steps in the calculation process and how these affect the result. We asked the respondent why he thinks some companies chose not to implement the model, he said:


The company X is pleased with the usage areas of ABC that is functioning in the company today. Therefore, they are not thinking of exercising new ones because it would take large amount of time and effort. That however does not mean that they do not have thought of new usage areas that have not been exercised in the company before. For instance they might consider having driver-based budget. We asked if ABC is fulfilling the purpose of using it in

36 Yes maintenance of the model is time consuming because we have to enter large amount of information in the system. Sometimes it’s hard to explain the result of ABC to staff.
37 The major grounds for why some companies are not familiar with ABC and it also can be complex for many companies to implement. There is skepticism among management as it requires an insight from business management. One of the factors that enabled the model to succeed is through the support of management because they had a vision of it and say the benefits of the model. It is hard to say why companies do not use ABC because somehow all companies apply one kind of ABC.
the company’s accounting system and he said that yes it does. He continued to say that the main purpose was to determine which products and customers are most profitable and we believe that ABC has been huge asset for that. We are very satisfied with the model and improvements can be obtained through the individuals that work closely with the model. He addresses the same thing in the following statement: “Ja, det har varit värt det. Det tycker man. Den informationen vi har fått fram har varit värdefulla. Vi har lyckats med att bibehålla och öka lönsamheten och det beror just på att vi använder ABC. Jag kan säga så här att vi har tagit rätt beslut och fokuserat på rätta områden bland annat med hjälp av ABC, så ja man har sett någon form av resultat effekt”38. Therefore, in the term the Company X is planning to continue use the model.

38 Yes, it was worth the investment, we do think so. The information we receive is worthy. We have increased our profitability and this comes as a result of ABC-usage. I can say that we have made an efficient decision in focusing on certain areas with the help of ABC, therefore we have seen some positive results.
5. Analysis

In this chapter, we present a more detailed analysis of the empirical data found through the interviews. A table in the beginning will present the similarities and differences among the companies according to each category. The structure of the analysis will follow the same pattern of the empirical part to enable the reader to easier link between the chapters.

The table in appendix three has been developed to provide the reader with an overview of the empirical evidence of the interviews we made: It starts with company characteristics to present information of the participated companies that is relevant to use in analyzing the data.

5.1 The company’s characteristics regarding type of cost, complexity and products

Costs vary with the type of organization and activities performed within the organization (Garrison & Noreen, 1994, p.34). In this research we are including profit oriented firms, three of them is in the service sector and four of them in the manufacturing sector. The type of costs differs in the seven participated companies, the differences come along not only with the type of the company but also in the process they use to produce an output. According to Brierley et al. (2006), service firms are more ideal to use ABC in their accounting system because indirect costs are likely to be the largest part of the total cost. To some extent this shows to be significant in two of our cases (NCC and company X) but the reason for using ABC is not because service firms have much of indirect costs. If indirect cost plays crucial role in the usage or success of ABC in a company then Schenker AB would have continued to use the model, but they did not for other reasons that will be discussed further in the analysis.

<table>
<thead>
<tr>
<th>Company characteristics</th>
<th>DB Schenker AB (former-user)</th>
<th>SCA Packaging Obbola AB (former-user)</th>
<th>ABB AB (former-user)</th>
<th>SCA Timber AB (user of ABC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of company</td>
<td>Service company</td>
<td>Manufacturing company</td>
<td>Manufacturing &amp; Service</td>
<td>Manufacturing company</td>
</tr>
<tr>
<td>Complexity in regard to working process</td>
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<td>Not complex</td>
<td>Complex</td>
<td>Complex</td>
</tr>
<tr>
<td>Number of activities</td>
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<td>X</td>
<td>2</td>
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<tr>
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<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td>Type of cost</td>
<td>direct costs</td>
<td>fixed costs &amp; variable costs</td>
<td>direct, indirect, fixed and variable</td>
<td>indirect cost &amp; direct costs</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Company characteristics</th>
<th>Astra Zeneca (user of ABC)</th>
<th>NCC Construction AB (user of ABC)</th>
<th>Company X (user of ABC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of company</td>
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<td>Service company</td>
<td>Wholesaler &amp; Service</td>
</tr>
<tr>
<td>Complexity in regard to working process</td>
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<td>Complex</td>
<td>Complex</td>
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<tr>
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</tr>
<tr>
<td>Automatisation</td>
<td>High</td>
<td>Non</td>
<td>Non</td>
</tr>
<tr>
<td>Type of cost</td>
<td>direct costs</td>
<td>Direct costs &amp; indirect costs</td>
<td>Fixed and variable</td>
</tr>
</tbody>
</table>

Table 6: Company characteristics
One of the companies applied ABC as a project is SCA packaging Obbola AB. The most common costs in Obbola are fixed and variable cost, the variable costs comprises 2/3 of the production costs. While in Timber AB, the types of cost in their production process are both direct and indirect (see figure 6). The indirect contains 2/3 of the production costs which dominates the biggest part of the total cost. Unlike Timber AB, Astra and NCC use mostly direct costs. It is not necessary for companies to have indirect costs in order for them to use/apply ABC, although ABC is superior in identifying and assigning indirect costs to cost objects. One of the reasons of the decline of the traditional costing system was due to the advanced manufacturing business which increased the indirect cost. Traditional costing system was not able to allocate these types of costs accurately like ABC (Bergstrand 2009, p.86). In the case of Timber AB, this is valid because their largest part of the total cost is indirect while in Astra Zeneca direct cost comprises the largest part of the total cost.

We discussed automation in manufacturing firms because ABC emerged due to increased machinery, indirect costs and reduced direct labor (Lindblad, 1992). Four of our sample group is in the manufacturing sector but they do not necessarily assign cost as indirect. They rather want to make sure that all expenses are on the balance sheet and included in the calculation process. For instance energy costs are considered to be indirect in theory, but in practice it varies from direct to indirect between the users companies of ABC. Timber and Astra Zeneca are two companies that assign energy costs as direct through calculating how much energy the machine consumes. This show us that a company with high machinery do not have to enclose indirect costs in its operations, even if theory signifies reducing direct labor which came as a result of increased automation (Lindblad, 1992).

Large and complex companies are ultimate users of ABC because larger companies have larger network, knowledge and capacity to obtain the resource needed (Nehler, 2001, P.197). One of the reasons of the abandonment of ABC is because the model did not capture the complexity of a company’s operations (Stratton et al. 2009). This is not substantial in our research sample because the user-companies (Astra Zeneca and Timber AB) categorize their working process among complex ones and they still use the model successfully. In the cases of the former-users, they stopped using it for other reasons than capturing the complexity in their operations. Besides, they do not think their operation process to be complex.

The number of activities a company performs does not play a significant role in applying or using ABC because the number of activities from the users firms varies. For instance Timber AB performs two activities (sorting of resources and saw sorting) while Astra carries out 9-10 activities in manufacturing their products.

Generally, all kind of businesses tries to reach their accurate cost despite the type of company or the type of cost system used in the company's accounting system. The participated firms have different perceptions of “accurate costing”, but at the end it lead to the same objectives which is to minimize the cost in the working process and to gain a huge competitive advantage in setting prices. According to Jan Saarssso it’s not worth measuring cost up to 100% if the objective of “accurate cost” will generate operating costs more than it gives. Schenker has satisfactory results from its current cost system, but Jan thinks there is a risk to support decisions on the wrong basis. In Obbola cost are important but since their products are difficult to measure, it makes their perception of accurate cost dissimilar from the other participants. Gösta thinks a company should have the knowledge of what to measure and how to measure it in order for the firm to reach true cost of the manufactured product. The same insight in Timber AB because the block of the tree is divided into several products and the company does not know how much waste each product generates. NCC shares the same
experience as Timber because they cannot put final cost on the project because it might change a lot during the working process. Therefore, it is hard to know the price and the cost before the stock goes through the process. For most companies it is not significantly important to precisely have right but rather to be almost right about the cost. Company X is one of these companies that do not have to be precise on how much each article will cost but rather to estimate around the cost. The respondent from Company X says that it is better to almost have right than completely wrong about the cost.

5.2 The purpose of ABC
From the different application of ABC a company can benefit and so build a competitive advantage. ABC assigns costs to cost objects through activities in an efficient way (http://www.maaw.info). Additionally, it serves other purposes that are related to product, customer and business decisions. For the former-users applying the model to serve certain purpose made them discover other valuable aspects of the model. Schenker and Obbola applied the model as a project to analyze the process of performing a service or manufacturing a product. More precisely, Schenker objective of applying the model was to analyze how much each service cost to perform whereas Obbola’s was to identify the cost of each step included in the production process. The purpose of applying the model in ABB was to reduce the traditional cost system with an advanced one like ABC and to set prices in accordance to the activities consumed in producing an output. In other words it seems that ABB wanted to get rid of the traditional cost system because it did not provide them with information of how costs are incurred. This makes it harder for management to decide where to cut back on spending. Unlike the former-users the model is not considered to be a project that will function for short period of time. Most of the user-companies have integrated the model in their accounting settings but that does not mean that the model does not serve the same purpose. From the user companies Timber is the last one to implement the model because they applied the model in 2010. The objective of using the model in Timber is not very different from the rest of the users of ABC and this is to assign costs through activities to cost objects. The objective is only interpreted differently among the user companies, for instance Astra interpret it as the following: “each product should carry its own expenses during the production process” and Company X is to identify the cost of an activity and a product (see figure 7).

<table>
<thead>
<tr>
<th></th>
<th>DB Schenker AB (former-user)</th>
<th>SCA Packaging Obbola AB (former-user)</th>
<th>ABB AB (former-user)</th>
<th>SCA Timber AB (user of ABC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Activity based costing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perspective</strong></td>
<td>Project</td>
<td>Project</td>
<td>Project</td>
<td>Regular usage (implementation)</td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Analyzing the process of performing service</td>
<td>Analyzing the steps of production process</td>
<td>Implement an advanced cost system such as ABC</td>
<td>Identify the cost of each step in production process</td>
</tr>
<tr>
<td><strong>Usage area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Product/service related decisions</strong></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><strong>Customer related decisions</strong></td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><strong>Company related decisions</strong></td>
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</tbody>
</table>
As said before the former-users applied the model as a project and did not really implement it in its full sense. Understanding the logic of ABC is demanding and implementing it is even more challenging because the design of ABC is considered to be complex (O’Guin, 1991, p.79). Many firms fail to implement the model and this can be linked to two different aspects, one is technical and second is organizational (Agbejule, 2006). Organizational aspects relate to support of top management, resource availability and training through the implementation process. In our case of Schenker it was difficult to implement a model that was not exercised and approved by the head office. The same in Obbola as it is part of the SCA Group, and because change has to occur in the head office first. The respondent addressed similar difficulties in when applying the model as it was only applied in certain divisions. The respondent from ABB said that the model has to be implemented in the company as a whole and be supported by management. The technical issues arise as a result of lack of knowledge therefore the staff has to be educated to be able to work with the model. Many companies are in the same position as Obbola, Schenker and ABB. To reduce the technical issues hiring a consultant is a natural solution to implement ABC and to ensure correct usage of the model. This type of solution was taken by Obbola and Schenker but despite that they did not continue with the implementation. This raise questions whether the problem is organizational or the model being too complicated to understand. Regarding the expenses of ABC-implementation the project manager in Timber thinks the implementation of ABC is not expensive in comparison with other cost systems. Peter the financial manager thinks that it would be more ideal to implement a new cost system (ABC) rather than transforming an old one to new. We agree with this statement because ABC is a complex cost system, therefore it would be difficult to change a traditional cost system to an advanced one like ABC. Perhaps this explains the various designs of ABC in the many cases.

Even though ABC has been applied for short period of time in Schenker, Obbola and ABB, it seems that in the three cases the model has been used in larger extent than what has been decided on from the beginning. It is known from the concept of ABC that it determines the cost of producing an output based on the cause and effect relationship between activities and cost objects (Turney, 1996). Therefore, it is naturally for the participant companies to use the model in product related decisions such as determining the cost/price of products/services. However, the way of using the model differs between the companies as it depends on the activities used, cost objects and on working process. In theory ABC has been largely used in customer related assessments such as negotiation with customers and customer profitability.

<table>
<thead>
<tr>
<th>Activity based costing</th>
<th>Perspective</th>
<th>Purpose</th>
<th>Usage area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Regular usage</td>
<td>Regular usage</td>
<td>Regular usage</td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Each product will carry out its own expenses</td>
<td>Accurateness in the calculation process</td>
<td>Bring out the actual cost of an activity or a product</td>
</tr>
<tr>
<td><strong>Usage area</strong></td>
<td>Product/service related decisions</td>
<td>Customer related decisions</td>
<td>Company related decisions</td>
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<tr>
<td></td>
<td>x</td>
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</table>

*Table 7: the usage area and the purpose of the ABC*
analysis (Innes & Mitchell, 1995). This show to be significant in our research as the majority of the participant firms use the model in customer related decisions (see table 5). One example of these companies that use ABC significantly in customer related decisions is Company X. According to the respondent from Company X they use the information in negotiation with suppliers and customers. We might think that service firms are more likely to use the model in customer related decisions because customers are the main cost objects in the company. However, our research shows an even result between the samples because six of our respondents apply the model in customer related decisions and three of them are operating in the manufacturing sector. Additionally, ABC gives a company confidence in applying results to management because the model is better connected with the firm’s operation and planning processes (Stratton et al., 2009). Schenker, Obbola and Company X are examples of companies that utilize ABC in strategic decision making such as investing in new facilities, outsourcing and planning. The benefits from the different usage areas of ABC will be addressed further in the next topic.

A company can choose to benefit from the different application of the model; sometimes the objective starts with setting the right price and continues with using the model in negotiations with customers and planning future business operations. Benefiting from the different application depends also on the type of cost objects the company produce/perform, for instance in a service firms the cost object are customers while in manufacturing companies are the products. Still, there is no solid rule in this matter. It seems that the former-users have exploit many aspects of ABC applications more than the ABC-users because Astra uses the model only in product related decisions and sometimes management decision making that is also related to products. This raises the question of why the former-users did not continue use the model when they are aware of the different application of it. Furthermore, it is not essential if the model has been used as a project for short period of time or if it is integrated in the companies’ business settings in order for them to gain from the different application of ABC. It is up to how many activities the company want to include when applying ABC, for instance Astra do not use the model in customer related decisions because they choose to leave such activities to a marketing agency.

5.3 Relevance of ABC (experienced benefits)
We have addressed before the relevance of ABC which is considered to derive from the experienced benefits of the model. There are some similarities and differences among the respondents’ answers in what is regarded as relevant in applying or using the model. It also depends on the objective of applying/using the model in the company and in which areas it has been operated. In order for us to highlight the similarities and differences of ABC benefits between the companies we will include three topics (product/service related application, customer related application and company related application). The table below presents a summary of benefits the seven companies’ experienced during their usage of ABC.
Table 8: Benefits of ABC

5.3.1 Product/service related benefits
ABC is used in large extent in product related decisions such as order of materials to produce certain amount of volume and determining the cost in producing it. Furthermore, ABC assigns resources to activities based on the cause-and-effect relationship (Kaplan & Cooper 1998, p.86). The purpose of applying the model in Schenker was to identify how much each step in performing a service cost. And what they got is much more than that because the model provided them with information of how much resources are consumed in each step, how many activities consumed and how much these activities cost. Almost all the respondents have practiced the calculation of the model that is based on the cause-and-effect relationship. Another living example of this is the comment of Niss Mats upon the question of “accurate costing”, he said that they can see how costs are assigned in the project’s different stages and how much the project will cost them totally with changes taken into consideration. According
to Drury ABC provides a company with information of products/services that can be profitable or less profitable for the company (2000, p.346). The respondent in Company X addressed that ABC helped them determine the products and customers that are valuable for the company. This statement is also similar to what Obbola experienced in this matter as they determined the profitable from non-profitable steps in their production process; it also showed Obbola where they have bonded capital.

Generally all work performed within a company can be related to activities, ABC trace and assign costs to these activities. Assigning costs to activities appears to be significant in all cases but Schenker benefited the most in this type of calculation because they performed activities that generated costs they were not aware of before. Such activities are important for the company’s profitability since activities that customer do not pay for are not value added. A company might choose to eliminate or improve such activities (Schelesinger & Heskett, 1991). In the case of Schenker they chose to start charging for these activities. We leave the benefit from an activity perspective and discuss the benefit of ABC from a resource perspective because according to theory ABC provides a company with logical picture of how resources are consumed (Nehler, 2005, p. 203). ABB is an example that corresponds to the statement of Nehler because they were able to know how much resources they spent in particular product/service.

The former-users product related applications of ABC do not considerably differ from the ABC-users. Even though the model is not completely implemented in Timber, it seems they have benefit in determining the actual cost of the manufactured product and correct valuation of inventory. A company might make poor business decisions if the inventory of the company is not properly evaluated. Raw materials in Timber contain the largest part of Timber’s total cost. Therefore, it is crucial for them to know how much portion of raw materials they need to produce certain amount of volume. With ABC the company manages to get information of ordering the right quantity of raw materials and this lead to improved operational planning like (purchase of materials).

ABC has been significantly used from volume related perspective by allowing companies to recognize that unique articles that come in small volume are expensive to manufacture and that low volume production adds extra expenses (Nehler, 2005, p.156, 233). From production perspective the way of ABC thinking seems reasonable because it clearly shows how resources are consumed and that the cost of resources should correspond to the cost of resources. As a result this provides the user with information of how much resource certain amount of volume requires (Nehler, 2005, p.233) (Cooper & Kaplan, 1992). The process manager of Astra (Eva) says that” what you put in the budget should come out; therefore, you directly see if you got the right price”. From our sample we see that ABC is mostly used in product related decisions and this finding is contradicted the statement of Innes and Mitchell (1995) because they mean that ABC has been used in larger extent on customers as a cost object.

5.3.2 Customer related benefits
As mentioned in the literature framework the information of ABC can be used to identify profitable customers (Patridge & Perren, 1998). Measuring customer profitability is attainable with ABC even though this was not the main objective of applying/using the model in the seven cases. For instance Obbola applied the model to identify how much each step in the production process cost. In addition, they used the model toward internal customers of the Group and managed to identify which customers were most profitable. ABB wanted to take an advantage of the model in customer profitability analysis but it was difficult because
different customers require different activities. For Schenker the case was a bit different because they used the model as communication tool with customers in decisions like adding extra service to the order. Through ABC calculation Schenker discovered that they performed activities for free. It was difficult to start charging for these activities because customers dislike paying for things they get for free. The information of ABC enabled Schenker to explain for customers why they should pay for these activities. This was also experienced by HVPA from the study of Nehler; they used the model to negotiate with customers and it resulted in customer changing behavior in the right direction toward the right price of the product (Nehler, 2005, p.233).

Timber shares the same experience with Schenker and benefit from the model in negotiations with customers because the model breaks down the production process from ordering material to producing a finished product. Consequently, it supplies customers with clear cost information of the manufactured product. Customers appreciate such information and their behavior toward the price becomes positive and so the company builds valuable relationship with the customer. Company X is also a real example of a company that shares the information of ABC with their.

Unlike Timber, NCC finds difficulties in practicing the model in customer related decisions because many customers add or remove some components of a project. Besides some projects might take longer time than others, some projects might take up to 10 years. Therefore it is not possible to use customer segmentation or profitability analysis until the project ends. Company X is an example of a company that relies on the information of the model in customer segmentation and customer profitability analysis. According to the respondent mature customers understand and value the information from ABC more than small ones. This finding confirm with the abovementioned finding from Nehler’s study that Customers appreciate the tool because it provide them with comprehensive information of the activities performed and the cost of the product/service. This way the company create a huge advantage because the customer will put his/her trust in the company and will accept the price the company offer.

5.3.3 Company related benefits
One of the main principles of accounting is to provide a company with information for business decision making (William, Bruns, Jr, 1965). ABC is an accounting tool that is able to provide a company with information that can be useful in strategic decision making; it also supports decisions in regard to products and customers (Stratton et al., 2009). This show to be true, it does not matter whether the model has been applied for short or longer period of time, or even if the model has been applied/used for certain objective. A company can gain much more than what the company expected from the beginning. Jan Saarsoo describes it as the following “you have a feeling on which segments or products that are unprofitable and ABC gives you a confirmation of that feeling, which makes it easier to argument”. He means that ABC provides the company with comprehensive reports that support decisions regarding change or improvements of deficits. It is also easier to argument toward management as the reporter (accountant manager) has something to rely on. In Obbola the case is a bit different when it comes to exercising the model in company related decisions. Obbola use ABC to analyze their working process to attain efficiency of both staff and capital, i.e. how to use resources efficiently. Obbola gains from this by identifying investment opportunities in larger extent. Questions like what the company should invest in and what resources are required for the investment were answered. This has not been applicable in the previous studies presented in the literature framework. Since ABC can be part of budgeting and planning (Stratton et al.,
2009), it will not be surprising that the model is able to provide the company with information of investments opportunities.

It is crucial to have a correct valuation of inventory and if the company fails to do so it could lead to financial disasters (http://www.scribd.com). Timber AB is one of the companies that stress the fact of proper valuation of inventory because raw materials comprise the largest part of Timbers cost. For this reason, Timber has to order the right portion of material for a certain amount of volume. For instance if it is low it might be too expensive to store like in the case of HVPA and Cewe in Nehler’s study (2005) as ABC enabled them to realize that low order of volume is more expensive than high order of volume. Other than valuation of inventory Astra uses the information to compare prices for one year with another. Furthermore, decisions like outsourcing the company’s production process or buying components instead of manufacturing them can be supported by the information of ABC if such argumentations are correct. According to Stratton et al (2009), ABC provides managers with cost information that either supports or rejects decisions at strategic level. The respondent from NCC said that even though the project can take several shapes in the working process the calculation of ABC will be the foundation for this project. According to the respondent in Company X: the results from ABC is used in changing components and focus on customer groups so this way the model influence strategic decisions and tactical planning.

5.4 Limitations (the reasons of making the model less relevant)

We believe the limitations of applying/using ABC plays significant role in minimizing the incentives of using the model. This consequently minimizes the relevance of the model for the former/users. Therefore, we asked the respondents from the former-users respectively users of ABC of the difficulties they met in applying/using the model. The following table presents limitations of ABC for the seven participants.

<table>
<thead>
<tr>
<th>Limitations of ABC</th>
<th>Astra Zeneca (user of ABC)</th>
<th>Company X (user of ABC)</th>
<th>SCA Packaging Obbola AB (former-user)</th>
<th>DB Schenker AB (former-user)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Time and resource commitment</td>
<td>-Maintenance of the model</td>
<td>-Requires large amount of technical resources and skills</td>
<td>-Requirements large amount of technical resources and skills</td>
<td>-Maintenance of the model</td>
</tr>
<tr>
<td>-Complex</td>
<td>-Complex calculation system</td>
<td>-Complex and requires large maintenance</td>
<td>-Complex and requires large maintenance</td>
<td>-Lack of resources (software)</td>
</tr>
<tr>
<td>-Management opposition</td>
<td>-Time consuming</td>
<td>-The staff did not understand the model</td>
<td>-The staff did not understand the model</td>
<td>-Implementing new way of thinking</td>
</tr>
<tr>
<td>-Lack of knowledge and resources (software)</td>
<td></td>
<td></td>
<td></td>
<td>-Administrative costs are hard to allocate</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>SCA Packaging Obbola AB (former-user)</th>
<th>ABB AB (former-user)</th>
<th>SCA Timber AB (user of ABC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>-Requires large amount of technical resources and skills</td>
<td>-The model requires regular maintenance</td>
<td>-Resource and time-consuming</td>
</tr>
<tr>
<td>-Complex and requires large maintenance</td>
<td>-Resources and time-consuming</td>
<td>-Complex calculation system</td>
</tr>
<tr>
<td>-The staff did not understand the model</td>
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</table>

Table 9: Limitations of ABC
There are several critics of ABC presented in theory and previous studies. Whether the model will be employed or rejected depends on the knowledge or resource availability the company own. For example some companies perceive the model to be complex or too expensive to build and maintain (Stratton et al, 2009) (O’Guin, 1991, p.138). Schenker did not update the model due the complexity, time and resource commitment the model requires. This decision was based on several factors: first the company did not own the knowledge in how to use the model. Second, the decision of implementing the model was up to the head office in Germany as the decision affects the organization as a whole. In Wisapaper case in Finland, top management refused to apply ABC in their accounting system regardless of the losses they were making in some of their factories. But after testing ABC in one of the Groups factory, the factory started to show positive results. Later, the board of directors changed their opinion of ABC and started to implement it in the Group (Partanen, Järvenpää & Tuomela 2000, p. 126-146). From this case, we clearly see that lack of knowledge can result in resistance and non-trusting the model from top management side. The support of management is important for a company that tries to test or use ABC because like any other changes management has to make resources available for employees in order for them to start working with the model. The success of ABC depends on organizational factors that refer to management support during the implementation process, resource availability, non-accounting experience, and relationship to competitive strategies, training and clarity of objectives (Agbejule, 2006).

Many studies address the resistance of applying new knowledge (ABC) and connect the resistance to management in the organizations. Schenker is part of the DB Schenker AB Group; the change in their accounting system has to occur in Germany first where such decisions should be made. If Schenker invest in ABC and then the board of directors refuses to implement the model, then all the money and effort Schenker takes will go to waste. Therefore, the acceptance of employing the model is crucial for the success of ABC. Obbola expose the same understanding from applying the model because Obbola is part of the SCA Group and decisions have to be approved and made by the SCA group (head-office). Gösta said that if they have continued with the model, they would have changed a complete accounting system to work accordingly with ABC thinking. Obbola has a simple accounting model (traditional cost system), and for this reason Gösta thinks it cannot handle the tasks ABC requires. Hence, Gösta thinks the solution would be to adopt a coordinated accounting system that functions with the traditional costing system. According to Gösta such systems is both time and money consuming, requires education and new software that is more advanced than the one they use. We mentioned above that some companies find ABC to be complex and for this reason they do not apply the model. ABB is an example of such company, the respondent expressed it clearly in the following sentence: “it was because of complexity we did not continue use the model”. They also thought it required large amount of technical resources and skills that they did not own. Patrik from ABB said that the company as whole should implement the model and it has to be less advanced in order for it to work in our company.

Unlike the former-users the user companies of ABC have worked with the model for longer period of time. For this reason, their perceptions of what is limited differ from the former-users of ABC. But this does not mean that they do not have the same experience in what is perceived to be limited. For instance Timber thinks maintenance of the model is difficult especially when they do not have new data system to work according to ABC philosophy. This is similar to the cases of the former users because they lack resources to enable them implement the model. Peter said that it is much easier to implement new cost system than changing an old one (a traditional cost system). ABB expressed the same thing with different
choice of wording; they said that it was challenging to implement new system so that it fits with their accounting system.

ABC requires complex data system such as ABS to collect and record all cost information the system accumulates. Many firms do not have this type of data system because it is too expensive to implement. What is more challenging is the effort from the staff to accept a new data system (O’Guin, 1991, p.138-139). For these reasons ABC has to be implemented for itself and not integrated with other cost systems. Furthermore, the implementation of the model requires the company to think in a new way. From the former-users and Timber, we can terminate that they have experienced such thing because they lack resources and knowledge of ABC. This can be seen in Nehler’s study of 2005 (p.203) in Cewe as they had to adapt to a new way of thinking with ABC. A company can disregard from training the staff during the implementation process (Sartorius, Eitzen & Kamala, 2007). From the former users we understand that they have applied the model as a project. Therefore, they did not go through the implementation process in order for them to trainee their employees to work accordingly with ABC. Company X addressed the difficulty in interpreting the data to the staff especially how the different steps in the calculation process affects the results. Since Company X poses great experience in ABC we asked the respondent why he thinks some companies chose not to implement the model and he said:


Astra shares the same drawback from using the model like Timber and Company X which is maintenance of the model. It is considered to be challenging because it takes long time and sometimes they have to register data manually in order for them to get the information in the right way. According to company X the model requires large amount of information to enter in the system, therefore it can be time consuming and hard for the staff to understand. The respondent from NCC said that they have not had problems in maintenance but it sure does need to be regularly maintained. Some companies consider ABC to be expensive to build and maintain (Stratton et al, 2009). The perceptions of the above mentioned statement differs between the former-users and the users of ABC because the former-users did not implement the model in order for them to maintain it in the future. Jan Saarsoo from Schenker means that if the project of ABC will cost more than it produce, then the model is not worth the investment. Many firms choose not to test ABC even as a project due the time and resource commitment the model requires. In the case of Obbola, they use simple accounting system that cannot handle tasks of ABC. Furthermore, the model has not been used in SCA Group before which leaves the staff with no proper resources and knowledge of ABC. The users of ABC do not consider the implementation or maintenance of the model to be expensive. For instance NCC does not care about the cost because they do not have another option to apply to their accounting system. Besides the respondent Niss addressed that if they need accurateness

[39] The major grounds for why some companies are not familiar with ABC and it also can be complex for many companies to implement. There is skepticism among management as it requires an insight from business management. One of the factors that enabled the model to succeed is through the support of management because they had a vision of it and say the benefits of the model. It is hard to say why companies do not use ABC because somehow all companies apply one kind of ABC.
they have to put time, resource and effort to achieve this objective. The ABC-users believe that each new system will at least cost something to implement and ABC is not more expensive to implement/maintain than other cost accounting systems.
6. Conclusion

This chapter will provide a conclusion related to the findings in the empirical part. We will also present recommendations for further research based on the observations we found during the research.

The purpose of the study is to investigate why companies are still using ABC and others abandon it! What benefits the company is experiencing from applying/using the model and what are the limitations in using it. A second purpose to study is in the case of the model being less relevant for the users/former-users, for what reasons the relevance have been minimized!

One of the reasons for the emergence of ABC is that it accurately assigns indirect costs to cost objects. After studying the seven cases we conclude that indirect cost plays insignificant role in order for the company to apply/use the model. Furthermore, ABC does not necessarily work in complex business environment because the former-users do not perceive their businesses as complex. Many companies have stopped using ABC because it did not capture the complexity of their business process, but this statement does not correspond to our cases of the user companies.

There are several factors that help the user companies (Timber, Astra, NCC & Company X) to decide for regular usage of ABC. Such factors relates directly to what ABC brings to the company (benefits) and to what extent the company desire to use the model. These factors are assigning costs to cost objects in accurate way, providing the company with information of correct valuation of inventories, useful in communicating with customers, helpful in customer/product profitability analysis and supporting decisions at strategic level like investments and outsourcing. The former-users (Schenker, Obbola & ABB) of ABC experienced such benefits as well, but they did not continue to implement the model in their accounting system. This comes along with the limitations of ABC and other organizational factors like resistance of implementing new cost accounting system. Example of these limitations are the model being too expensive to build, requires time, resources and new way of thinking. In order for the staff to accept a new knowledge, they have to understand the result of the model and this objective seems to be hard to achieve even in the user-companies of ABC. Furthermore, the companies need support from management in such decisions because at the end the management would make the change possible by supplying staff with the knowledge and resources required to implement the model. This fulfills the purpose of this study and answers upon the research question.

Furthermore, to apply the model as a project differs from implementing it because in implementing the model the company invests in larger extent. A project has a beginning and an end and the former-users applied ABC as a project for certain objective. When they reached the objective of the project, they enclosed it and did not continue to implement ABC. We can also see that through applying ABC, they hired consultants to help them work with the model and did not invest any further in training the staff or including all the products of the company. It seems like it has been decided from the beginning that the former-users will only use the model for short period of time.

The financial manager of Timber thinks that it is easier to implement new cost system than changing an old one to new. We agree with this statement because changing an old system (traditional costing system) to ABC is complicated and overwhelming for the company, and for this reason we believe the former-users disregard from implementing the model. Not to mention that implementing a new cost system in the whole organization is expensive to build
as Jan Saarsoo says that if ABC generates expenses more that it gives then the model is not worth the investment. This may reflect the way the board of directors think, especially when the traditional cost system works well for them.

6.1 Research question

*What makes ABC relevant for users/former-users in manufacturing and service companies?*

After studying the cases, we conclude that ABC is still relevant because the user companies expose great benefits of the model. Regardless whether the model has been applied for short period or longer period of time, a company can benefit and use the model in various decisions (product, customer, and business). There are various reasons that minimize the relevance of ABC that we can look at from two different dimensions: one is technical that refers to the models operational process (implementation, identifying activities, and maintenance) and second is organizational which refers to resource availability and management support. We think that technical limitations does not play significant role when the organizational are eliminated.

6.2 practical benefits

Our thesis will help the user companies to identify additional benefits of ABC. Furthermore they will be able to compare with other user-companies and identify the challenges of using the model. However, our research will not give detailed recommendations of how to resolve these challenges because some of them are technical and it is too far from our purpose of the study. The former-users will better understand the model and what might make the usage of it become regular usage; this is possible through observing how the model first was implemented in the user companies. For instance one company might need support of management in order for them to implement the model while others need more technical support. This thesis will be interesting to read for the potential users because they would know what it takes to implement ABC and what challenges they might meet through applying/implementing the model.

6.3 Suggestions for further research

A number of suggestions is listed to open the subject to further research. ABC is a broad subject and it was tough to stick to one theme because we kept finding interesting ideas for further research. Our study opens to further research in studying the relevance of ABC by including several business sectors such as service, manufacturing, government and non-profit organizations. From such study, the researcher will identify the sector that mostly uses ABC and the number of user, former-user and non-user of ABC. Another interesting study is if the limitations in the implementation process minimize the relevance of ABC (usage of ABC). Because we believe the limitations of the implementation process decrease the incentives of using ABC on a regular basis.
7. Quality measurements of the study

And finally in order for us to ensure good quality of the research, we adapted methods of quality measurement on this study.

In order for us to ensure the quality of our research, we will have to include certain quality measures to reduce the likelihood of getting the wrong responses and increase the credibility of the research. A good qualitative study enables us to “understand a situation that would otherwise be enigmatic or confusing” (Eisner, 1991, p.58).

The most used measurement instruments when conducting a research are reliability and validity (Bryman & Bell, 2007, p.410). These concepts usually are used for testing and evaluating quantitative research, but still can be used in qualitative research. Nevertheless, these concepts are irrelevant to use in qualitative research because the purpose and methods used are different from the quantitative (Golafshani, 2003). Whereas, the concepts validity and reliability are fundamental for measuring quality in quantitative studies, in qualitative studies the concepts credibility, transferability, dependability and conformability are crucial in measuring quality (Golafshani, 2003). Therefore we are disregarding from validity and reliability and deploying credibility, transferability, dependability and conformability.

From our qualitative study we aim to understand what benefits Companies’ are experiencing from using ABC. The results have to be reliable on the respondent’s experience and perceptions of using the model. In order for us to ensure the credibility of the results, we sent the results to the respondents to validate that we understood their answers (Bryman & Bell, 2007, p.441). To make sure that our research is credible we use three studies of ABC to compare, analyze and verify the results. We also listened to the documented interviews individually and made notes about the results to see if we reach the same conclusion. Due to these procedures, we increase the credibility of our research. However, we could have achieved even greater credibility if we interviewed members at operational level and came back for a second interview. But this would not be possible with the time-limit we have and the difficulties we met reaching the right persons.

Transferability is the process of applying the research findings in one situation to another similar one (Cao, G, 2007). The researcher has to share information of the process of the study and explain the important aspects of the study. This will enable other researchers to use the results in other situations and the decision of how transferable the results are remains to them (Bryman & Bell, 2007, p.413). We have presented our research sample and on what basis we chose the respondents. The interview questions were formed in accordance with the literature review which allows the researchers to understand how the literature framework influenced the sample and the interview questions. We have put careful thoughts when choosing the sample (managers and controllers in the accounting department) and we believe that they have the information and experience we are looking for to answer on our research questions. We also interviewed two people from two participated companies and this increases the number of respondents to nine. Other researchers have to keep in mind that we are studying the relevance of ABC from the benefit perspective is very broad; therefore we had to make it general. How transferable our research is up to the readers.

Dependability refers to reporting and saving records of the research process as well as the changes that arise in the research paradigm (Bryman & Bell, 2007, p.414). It enables the reader to assess the research procedure and evaluate the quality of the research. In our research we include description of how the interviews were performed and developed. Since
the interviews were audio-recorded, we did not really have notes on paper to attach them in the research, this could increase our dependability. However the recorded interviews are saved and obtainable for inspection.

Conformability is concerned with the actions of the researchers to be in good faith which means that the process and the results of the study should not be exaggerated with the researcher's personal values (Bryman & Bell, 2007, p.414). We are still students and in the learning process, therefore we do not have great knowledge of our research subject. For this reason our opinion are kept aside and in order for us to reflect on our subject we adopted theories of ABC applied by experts.
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APPENDIX 1: FRÅGEFORMULAR- TIDIGARE ANVÄNDADE AV ABC

INDIVIDUella FRÅGOR

1. Vilken position har Ni i företaget? Vilka arbetsuppgifter har Ni?
2. Hur länge har Ni jobbat med ABC?
3. Har Ni sedan tidigare varit bekant med ABC-modellen och dess innebörd?
4. Vilken roll hade ni vid implementeringen av ABC-process/ projekt?

Dessa frågor är satta för att förstå vad som orsaker kostnader på företaget och vilka typer av kostnader används mest i produktionen eller utförandet av en tjänst

5. Hur pass komplex är företagets teknisk utrustning, antal artikler, volym samt storlek när det gäller era komponenter/produkter?
6. Ungefär hur många aktiviteter kräver produkten under tillverkning/utförning?
7. Vilken grad av automatisering (maskin användning) anser ni att ni har idag?
8. Vilka typer av kostnader använder företaget (direkta, indirekta, fasta eller rörliga)?
9. Hur stor andel är de direkta respektive indirekta kostnader Ert företags totala kostnader består av? (i procent)?
10. Vilka traditionella samt andra kostnader system använder företaget (standard kostnad, direkt kostnad)? (svar är icke obligatorisk)
11. Hur ser konkurrensen ut på marknaden idag när det gäller priser?
12. Hur pass viktigt är ”accurate costing” ”exakt kostnad” för företaget?

Dessa frågor är satta för att kunna jämföra företagets kostnads system (traditionella) med ABC

13. Hur fördelas kostnaderna på produkterna/tjänsterna?
14. Anser Ni att den nuvarande kostnads system tillhandahåller tillfredsställande information som hjälper företaget med startegiska respektive operationella beslut?
15. Vad tillför er kostnads system information jämfört med ABC?
16. Anser ni att den nuvarande kostnads system information är enklare att förstå jämfört med ABC?
17. Anser ni att den nuvarande kostnads system information är effektivare än ABC system?
18. Är ni nöjda med den nuvarande kostnads system?

GRUNDFRÅGOR TILL VILKA ANLEDNINGAR FÖRETAGET HADE IMPLEMENTERAT ABC OCH VILKA Begränsningar upplevde de vid implementeringen

19. Vilket var huvudsyftet med tillämpningen av ABC?
20. Har den uppfyllt syftet med tillämpningen? Om Ja/Nej, på vilket sätt
21. Vilka utmaningar mötte företaget vid implementeringen av ABC (tids kränande, komplex, dyr)?

Dessa frågor kommer att besvara inom vilka områden respektive beslut utnyttjade företaget ABC till.
22. Hur använde ni informationen från ABC? För vilka typer av beslut brukade ni använda informationen? Varför?

23. Till vilken utsträckning har företaget använt ABC i
   — Produkt relaterade beslut (design, prissättning, outsourcing, produkt lönsamhet)
   — Kund relaterade beslut (kundsegmentering, kundlönsamhet)
   — Företags relaterade beslut (planering, budgetering och prestations mätning)

Dessa frågor är grundfrågor för att studera relevansen med ABC som företaget upplevde

24. Vilka fördelar har företaget upplevt vid användning av ABC?
25. Vilka begränsningar har företaget upplevt vid användning av ABC?
26. Har ni upplevt några resultateffekter vid införandet av ABC? I så fall vilka?
27. Var ni nöjda med införandet och resultatet av ABC?
28. Vad tycker Ni allmänt om modellen?
29. Tänker ni tillämpa metoden igen? I så fall av vilka anledningar?
Appendix 2: Frågeformulär- användare av ABC

Individuella frågor

1. Vilken position har Ni i Företaget? Vilka arbetsuppgifter har Ni?
2. Hur länge har Ni jobbat med ABC?
3. Har Ni sedan tidigare varit bekant med ABC-modellen och dess innebörd?
4. Vilken roll har ni ABC-process/ projekt?

Dessa frågor är satta för att förstå vad som orsaker kostnader på företaget och vilka typer av kostnader används mest i produktionen eller utförandet av en tjänst.

5. Hur pass komplex är företagets teknisk utrustning, antal artikler, volym samt storlek när det gäller era komponenter/produkter?
6. Vilken grad av automatisering (maskin användning) anser ni att ni har idag?
7. Vilka typer av kostnader använder företaget (direkta, indirekta, fasta eller rörliga)?
8. Hur stor andel är de direkta respektive indirekta kostnader Ert företags totala kostnader består av? (i procent)?
9. Hur ser konkurrensen ut på marknaden idag! när det gäller priser?
10. Hur pass viktigt är ”accurate costing” ”exakt kostnad” för företaget?
11. Finns det andra kostnads system som kombineras med ABC? I så fall vilka och vad bidrar detta med till företaget?

Dessa frågor är satta för att förstå logiken bakom ABC som företaget har skapat

12. Vilken är den huvudsakliga kostnadsbärare i Er ABC-modell? (produkt, service, kund)
13. Hur många aktiviteter konsumerar produkten/tjänsten under tillverkning/utförning?
15. Vilka och hur många kostnadsdrivare används i företaget? Varför valdes dessa kostnadsdrivare?
16. Hus ser fördelningen av kostnader (kostnadsslag) till kostnadsbärare ut i Er modell? Beskriv hur kalkylarbetet går till?
17. Vilka kostnader upplever ni som mest svåra att fördela ut på kalkylobjekt? och varför?

vilket var huvudsyftet med tillämpning av ABC och inom vilka områden respektive beslut utnyttjar företaget ABC till.

18. Vilket var huvudsyftet med tillämpningen av ABC?
19. I vilken utsträckning använder företaget ABC i
   — Produkt relaterade beslut (design, prissättning, outsourcing, produkt lönsamhet)
   — Kund relaterade beslut (Kundsegmentering, kundlönsamhet)
   — Företags relaterade beslut (planering, budgetering och prestations mättning)

Dessa frågor är grundfrågor för att studera relevansen med ABC som företaget upplever
20. Anser ni att ABC ger en rättvisande kostnadsfördelning?
21. Vilka fördelar upplever företaget vid användning av ABC?
22. Vilka begränsningar upplever företaget vid användning av ABC? t.ex. Upplevs uppdateringen och underhållet av systemet som tidskrävande och kostsamt?
23. Upplever Ni några resultateffekter vid användning av ABC? I så fall vilka? Vilka oförväntade resultat?

Avslutnings frågor

24. Av de användningsområden ni inte använder ABC till, är det något ni har tänkt pröva/ har provat med mindre lyckat resultat?
25. Anser Ni att syftet med ABC har uppfyllts i företaget? är ni nöjda med användningen och resultatet av ABC?
26. Anser ni att ABC är en investering som är värd den tid och resurser ni investerade?
27. Kommer ni i framtiden att även fortsätta använda ABC för verksamhetsutveckling? Om ja, hur?
Appendix 3: Interview Questions – Former users of ABC

Individual Questions

1. What is your position in the company?
2. For how long have you worked with ABC?
3. Have you previously been familiar with ABC and the concept of the model?
4. What role did you have in the implementation of ABC?

These questions are asked to understand how costs are incurred in the company and which types of cost is mostly used in production or performing a service

5. How complex is the company's technical equipment, number of articles, the volume and size when it comes to your components/products?
6. Approximately! How many activities you consume in manufacturing/performing a product/service?
7. What degree of automation (machine use) do you think you use today?
8. Which type of costs the company uses (direct, indirect, fixed or variable)?
9. How much in percentage is the direct and indirect costs of your company's total costs?
10. Which traditional cost system the company uses today (standard cost, direct cost)?
11. How is the competition on the market today? In terms of prices?
12. How important is "Accurate cost" for the company?

These questions are asked to be enable us to compare the company’s cost system (traditional) with ABC

13. How do you assign costs to cost objects?
14. Do you think the current cost system provides the company with adequate information that helps in taking decisions at strategic and operational level?
15. In comparison to ABC what does your current system contribute to?
16. Do you think that the current cost system information is easier to understand compared to ABC?
17. Do you think that the current cost system information is more effective than ABC? Why?
18. Are you satisfied with the current cost system?

Basic questions on why the company implemented ABC and what were the challenges from implementing the model

19. What was the main purpose of applying ABC?
20. Has the model fulfilled the purpose of its application? If Yes / No, in what way?
21. What challenges the company faced in implementing the model (time-consuming, complex, and expensive)?

These questions will answer on which areas ABC has been used in and in what decisions the information of the model served
22. How did you use the information from ABC? For what types of decisions did you use the information? Why?

23. To what extent has ABC been used in
   — Product-related decisions (design, pricing, outsourcing, product profitability analysis)
   — Customer-related decisions (customer segmentation, customer profitability analysis)
   — Business-related decisions (planning, budgeting and performance measurements)

These questions are asked to study the relevance of ABC

24. What benefits the company has experienced from ABC-usage?
25. What limitations, the company has experienced from ABC-usage?
26. Have you experienced any performance effects of the introduction of ABC? If so, what?
27. Were you satisfied with the implementation and results of the ABC? If Yes / No, in what way?
28. What do you generally think about the model?
29. Do you intend to apply the model again? If so, for what motives?
Appendix 4: Interview Questions – Users of ABC

Individual Questions

1. What is your position in the company?
2. For how long have you worked with ABC?
3. Have you previously been familiar with ABC and the concept of the model?
4. What role did you have in the implementation of ABC?

These questions are asked to understand how costs are incurred in the company and which types of cost is mostly used in production or performing a service

5. How complex is the company's technical equipment, number of articles, the volume and size when it comes to your components / products?
6. What degree of automation (machine use) do you think you use today?
7. Which type of costs the company uses (direct, indirect, fixed or variable)?
8. How much in percentage is the direct and indirect costs of your company's total costs?
9. How is the competition on the market today? In terms of prices?
10. How important is "Accurate cost" for the company?
11. Is there other cost system that is combined with ABC? If so, who and what they contribute to the company?

These questions are asked to understand the logic of ABC in the company

12 What are the cost objects in your ABC model? (Product, service, customer)
13 How many activities your products / services consume during the manufacturing/performing process?
14 How do you select your activities? How is the resource costs assigned to activities?
15 How many cost drivers are used in the company and which are these? How have these cost drivers been chosen?
16 How does allocation of costs to cost objects appear in your model? Describe the calculation process?
17 What cost is mostly hard to assign to cost objects? And why?

These questions will answer on which areas ABC has been used in and in what decisions the information of the model served

18 What was the main purpose of implementing ABC?
19 To what extent has ABC been used in
   — Product-related decisions (design, pricing, outsourcing, product profitability analysis)
   — Customer-related decisions (customer segmentation, customer profitability analysis)
   — Business-related decisions (planning, budgeting and performance measurements)

These questions are asked to study the relevance of ABC

20 Do you think that ABC provides a fair allocation of costs?
21 What benefits the company has experienced from ABC-usage?
22 What limitations, the company has experienced from ABC-usage?
23 Have you experienced any performance effects of the introduction of ABC? If so, what?

Summary questions

24 Of the applications you did not employ is there anything you would like to attempt to undertake?
25 Do you think that the purpose of ABC have been fulfilled in the company? Are you satisfied with the use and results of the ABC?
26 Do you think that ABC is an investment worth the time and effort? And why?
27 Will you continue to use ABC in the future? If yes, how?
## Appendix 5: Comparison of the seven cases developed of the empirical evidence

<table>
<thead>
<tr>
<th>Company characteristics</th>
<th>DB Schenker AB (former-user)</th>
<th>SCA Packaging Obbola AB (former-user)</th>
<th>ABB AB (former-user)</th>
<th>SCA Timber AB (user of ABC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of company</strong></td>
<td>Service company</td>
<td>Manufacturing company</td>
<td>Manufacturing &amp; Service</td>
<td>Manufacturing company</td>
</tr>
<tr>
<td><strong>Complexity in regard to working process</strong></td>
<td>Not complex</td>
<td>Not complex</td>
<td>Complex</td>
<td>Complex</td>
</tr>
<tr>
<td><strong>Number of activities</strong></td>
<td>20-25</td>
<td>X</td>
<td>X</td>
<td>2</td>
</tr>
<tr>
<td><strong>Automatisation</strong></td>
<td>non</td>
<td>High</td>
<td>High</td>
<td>High</td>
</tr>
<tr>
<td><strong>Type of cost</strong></td>
<td>direct costs</td>
<td>fixed costs &amp; variable costs</td>
<td>direct, indirect, fixed and variable</td>
<td>indirect cost &amp; direct costs</td>
</tr>
<tr>
<td><strong>Activity based costing</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Perspective</strong></td>
<td>Project</td>
<td>Project</td>
<td>Project</td>
<td>Regular usage (implementation)</td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Analyzing the process of performing service</td>
<td>Analyzing the steps of production process</td>
<td>Implement an advanced cost system such as ABC</td>
<td>Identify the cost of each step in production process</td>
</tr>
<tr>
<td><strong>Usage area</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product/service related decisions</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Customer related decisions</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Company related decisions</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td><strong>Benefits of ABC</strong></td>
<td>-Clear picture of the real cost</td>
<td>-Accurate cost allocation</td>
<td>-Profitability assessments of products and customers</td>
<td>-Accurate cost information of each step the raw-materials goes through</td>
</tr>
<tr>
<td></td>
<td>-Used as communication tool with customers and staff</td>
<td>-Identify how and where expenses are incurred</td>
<td>-Efficient follow-up tool of divisions like purchase division</td>
<td>-Correct valuation of inventory</td>
</tr>
<tr>
<td></td>
<td>-Useful in strategic decision making (extra order, budgeting)</td>
<td>-Provide management with information to improve efficiency</td>
<td>-helps in decision making in regard to leasing and taking orders</td>
<td>-Improved operational planning such as purchase of material</td>
</tr>
</tbody>
</table>
## Company Characteristics

<table>
<thead>
<tr>
<th>Astra Zeneca (user of ABC)</th>
<th>NCC Construction AB (user of ABC)</th>
<th>Company X (user of ABC)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of company</strong></td>
<td>Manufacturing company</td>
<td>Service company</td>
</tr>
<tr>
<td><strong>Complexity in regard to working process</strong></td>
<td>Complex</td>
<td>Complex</td>
</tr>
<tr>
<td><strong>Number of activities</strong></td>
<td>9-10</td>
<td>10-400</td>
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<td><strong>Automatisation</strong></td>
<td>High</td>
<td></td>
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<tr>
<td><strong>Type of cost</strong></td>
<td>direct costs</td>
<td>Direct costs &amp; indirect costs</td>
</tr>
<tr>
<td><strong>Activity based costing</strong></td>
<td>Regular usage</td>
<td>Regular usage</td>
</tr>
<tr>
<td><strong>Purpose</strong></td>
<td>Each product will carry out its own expenses</td>
<td>Accurateness in the calculation process</td>
</tr>
<tr>
<td><strong>Usage area</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Product/service related decisions</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Customer related decisions</td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>Company related decisions</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Benefits of ABC</td>
<td>Limitations of ABC</td>
<td></td>
</tr>
<tr>
<td>----------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>- Determining accurate cost/price of the manufactured product</td>
<td>- Resource and time-consuming</td>
<td></td>
</tr>
<tr>
<td>- Detailed information of how much the product cost to manufacture</td>
<td>- Complex calculation system</td>
<td></td>
</tr>
<tr>
<td>- Useful in decisions making like outsourcing and investments</td>
<td>- Resource and time-consuming</td>
<td></td>
</tr>
<tr>
<td>- Valuation of inventory</td>
<td>- Complex calculation system</td>
<td></td>
</tr>
<tr>
<td>- Accurate cost allocation</td>
<td>- The model requires regular maintenance</td>
<td></td>
</tr>
<tr>
<td>- Useful in strategic decision making (Planning &amp; budgeting)</td>
<td>- Resources and time-consuming</td>
<td></td>
</tr>
<tr>
<td>- Provides the company with efficient calculation</td>
<td>- Resource and time-consuming</td>
<td></td>
</tr>
<tr>
<td>- Improves profitability of the company’s operation process</td>
<td>- Complex calculation system</td>
<td></td>
</tr>
<tr>
<td>- Determining customers and products that are most profitable</td>
<td>- Resource and time-consuming</td>
<td></td>
</tr>
<tr>
<td>- Gives good foundation for negotiation with customers</td>
<td>- Complex calculation system</td>
<td></td>
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<tr>
<td>- Used like a selling-tool that helps the company get new customers</td>
<td>- Resource and time-consuming</td>
<td></td>
</tr>
<tr>
<td>- Provides the company with detailed results</td>
<td>- Resource and time-consuming</td>
<td></td>
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</tbody>
</table>