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# Developing Financial Reporting in Manufacturing Business

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<p>The objective of this Master's thesis was to define the best possible cost accounting method for the case company. The case company in this thesis was a Finnish manufacturing company. The company needed more accurate financial reporting to discover which of its products, customer, etc. are profitable and which not. To answer this, the objective was to find out the best possible cost accounting method to serve the manufacturing company. Due to a confidentiality issues, the manufacturing company in this study is referred to as the case company.</p> <p>This study was conducted as an action research. This study applied qualitative data collecting methods to analyse the case company's present situation. Through interviews and surveys, the employees and other internal stakeholders were the main source for this data. The theoretical framework of this study focuses on cost accounting methods in general and decision making based on other measurement tools than just the financial tools.</p> <p>The current state analysis revealed that the case company's current financial reporting has shortages that affects the accuracy of the reports. It also showed that the employees use lots of time to produce the required reports instead of having them ready from the system. The survey for future needs revealed that the management would appreciate a standard set of reports that they would obtain regularly so they could better focus on analysing the business.</p> <p>The author recommends that the case company improves its financial accounting in a long run either by adopting the new method proposed in this study or by improving the current processes to better serve the needs arising from the organisation.</p>	
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### Appendix 1. Survey questions

## 1 Introduction

In this thesis the idea is to drill down deeper in to the world of cost accounting and to find out what is the best possible cost accounting method for manufacturing company to measure its financial performance. Based on the case company's current state evaluation and the development needs in management accounting a proposal will be stated based on findings in a literature review and the case company's needs in mind.

### 1.1 Case company

The case company is a Finnish family owned mid-size company that manufactures consumer goods in its two different factories. It has approximately 20 million euros yearly turnover and some 70 employees. Company has a strong foothold in Finland and about 25 percent of its sales goes to abroad.

The products that the company manufactures are fairly bulky and therefore it has decided to operate in a smaller niche market segment. Values and all actions are closely linked to environmental issues and to assure that the products do not consists any chemicals that aren't absolutely needed in order them to work properly. To back up these features up the company has several certificates from well recognized organizations.

The company relies strongly to its own brands but has also privet label manufacturing mainly to fulfil the capacity that it has. The goods are divided in three different segments which are monitored separately. Two of these segments are manufactured by the company itself and they generate most of the sales. The third segment is relatively small compared to the two others and the goods are bought outside of the company.

The company is facing a modernization project with its ERP-software in near future. That offers the company possibilities to adjust and improve the follow up systems and design the ERP-system to meet the possible new needs that comes up.

## 1.2 Business problem

The company has lack of proper knowledge about whether its products or customers are profitable or not. The company level situation is calculated monthly but it is time consuming and only gives overall situation of how well or unwell the company is doing.

Lack of proper internal reporting leads in a situation in where different kinds of calculations are made in different departments. Everyone uses their own ways to gather the data needed to get more specific information. That might lead in a situation in where there are several figures that differs from each other presenting the same issue. This naturally makes it hard for managers to make right decisions based on numeric evidence. Add to this forming the reports is very time consuming and therefore valuable time is used to produce the reports instead of analysing them.

In order to succeed the purchasing, manufacturing, sales and distribution must run efficiently. To be sure that this happens close follow up of all these aspects must be in good shape. The manufacturing department have to rely to the forecast that sales department has provided. There is no possibility to end up in a situation of huge over stocking or even worst under stocking neither in raw materials or in inventory of goods.

At the moment, the case company is doing quite well and has been able to cover all the aspects mentioned in an earlier chapter pretty well but this requires lots of man hours. The company has also growth plan which aims to increase the turnover significantly during next up coming years. With that kind of growth expectation, tight margins and poor tolerance for failures the company needs to focus on how to improve and automate the follow up systems and through that give the employees more time to focus on their primary tasks.

With today's tools, key performance indicators can be monitored at real time in almost anywhere the user is. One only needs to have internet access which is nowadays available practically everywhere. Add to this the computer is not the only device that can be used for monitoring. Smartphones and tablets do the task almost as well and are great devices to have a quick overview of how things have developed for example during the day.

The main focus in this thesis is to find out the best cost accounting method for the case company to measure its financial performance. The purpose is not to try to find any specific software or solution provider but to find out what needs to be monitored and how this could be achieved in this specific organization.

Every organization has its unique ways of doing business and therefore there are no obvious solution for this dilemma but the best practices must be planned with the company's conditions in mind. During this process, hopefully some improvements to internal processes can also be found.

### 1.3 Objective

The objective of the study is to identify the best possible cost accounting method that could serve the actual need for proper financial measurement in the case company.

The output of the study will be a recommendation of the best possible cost accounting method that could be taken in use in a case company to more accurately measure its financial performance.

## 2 Research design

This chapter introduces a description of how the project was designed and how the needed data was collected.

### 2.1 Research process

The whole process starts from defining the objective. The objective of this thesis was to find the best possible cost accounting method for the case company. It might be good to point out in this phase that the meaning is not to try to find any specific program or vendor but to try to find the way of analysing the case company's performance.

After the objective definition the process continues by analysing the current state of the case company's reporting status. The focus is on trying to find out current structure of

reporting. This will give valid information of the methods that are currently used to for example in allocating overhead costs. Also the focus in the current state analysis is on employee satisfaction level. It is important to know how the current reporting is felt among the employee and what would be the key development points.

As part of this phase also the case company's strategy is reviewed in order to find out what is the direction where the company is heading to. This will give some idea of the scale that is needed in future so that it can be considered when reviewing the possible choices for new reporting model.

The method used in this state will be interviews. Interviews will be held for the executive board to find out how the top management sees the situation currently and what there is good and should be kept as it is and what needs to be developed.

When the current state is known the next phase is to find out what are the needs that the organisations has. This will help to understand what is the overall level of reporting that is wanted and that way has an effect on the final proposal. This is done by conducting a survey mainly for the company's internal stakeholders. Survey is made either by e-mail or with special program called Surveypal. Surveypal is a program founded in Finland that can be used to make a surveys from any group of people.

Next step is going to be the search of possible methods that can be used for analysing the profitability in an organisation. The methods that will be chosen for reviewing must be suitable for manufacturing industry because the case company manufactures the goods that it is selling.

After the suitable methods for measuring the profitability has been found the next step is to find out which one suits the case company best. The method needs to be tested so that it has a proven history of success in a manufacturing company. It also needs to be relatively easy to implement and maintain so that it doesn't use too much resources from the organisation. This will then give the possibility to validate the best one for the case company's needs.



Based on the outcomes of all the previous steps the best possible choice for the case company's new model for internal reporting can be recommended. The possible implementation of the new model is not in the scope of this study but not be avoided if there is a possibility for that.

## 2.2 Research method

The method used in this study is action research. Action research was chosen because of its practical problem solving approach using co-operation between the researcher himself and with organisation in question. (Coughlan et. al. 2002).

The action research cycle (Figure 1) presented by Coughlan and Brannick (2010) illustrates the core steps of action research. The project starts with pre-step followed with constructing and planning action. The last two steps, taking action and evaluation action are not done during this thesis but left to be done later if the case company decides adopt new cost accounting method.

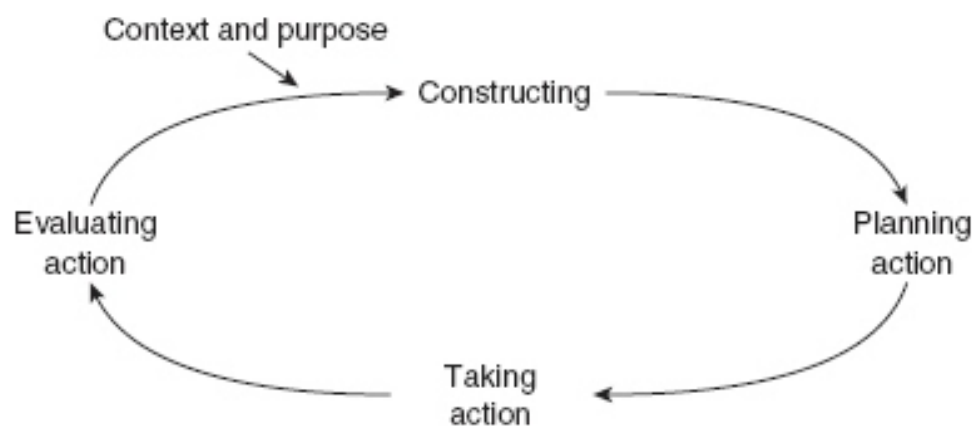


Figure 1. The action research cycle (Coughlan and Brannick, 2010)

Pre-step aims to find context and purpose of the project and through that state the objective. After the pre-step the actual core steps take turn. Constructing the actual problem is the first step. In this step it is important to engage the organisation to the project and avoid as a researcher to act as an expert of the topic in hand. After problem constructing follows the actual planning of actions which is followed by taking actions in where the planned actions are implemented. Lastly the outcome needs to be evaluated. (Coughlan and Brannick, 2010)

This cycle needs to be repeated during the process since it is meant that in every round something new is learned. This new information is then used to fine-tune the process until the final solution is accomplished (Coghlan & Brannick, 2014).

## 2.3 Data collection

The data collection was done by interviews, e-mail survey and conversations with the personnel.

### 2.3.1 Interviews

Interviews were held to find out what is the current state of internal reporting. Interviews were limited to the company's directors. The reason for this limitation was that the idea was to find out the current status of the usefulness of the reports. If the interviews would have been held to a larger group of employees the answers might have reflected more of the technical difficulties of producing the reports and not so much of the actual usefulness of the content.

Interviews were held to each director privately during spring 2017. The question was sent beforehand in order to save time in actual interview that was limited to 30 minutes. Conversations were not recorded but as the interview went forth the answers was written down and transcript later on. To make sure that everything was understood correctly the final document was sent to the interviewed and asked to correct any possible mistakes in it.

The questions in the interviews were:

1. How would you see the overall reporting in the case company?
2. Are you provided with some basic set of monthly, weekly or daily reports?
3. How much time do you use to produce ad-hoc reports?

The questions was designed so that they wouldn't be too precise in order to get broader answers of the current state. The first question will give answer to the overall situation whereas the two latter questions are more precise in order to get the idea of how the routines are handled nowadays and does the reports fulfil the needs or should some

additional work be made by directors themselves. The results of these interviews will be presented later in chapter 5.

### 2.3.2 Survey

To find out more of what was expected from the internal reporting an e-mail survey was conducted. E-mail survey was chosen because it was convenient for this purpose since the questions were limited to three open answer ones. Special survey tool designed to make these kind of surveys would not have been in its best in this kind of survey but it would have nearly added one more layer to process.

The survey was sent to three different groups, the Board (5 persons), the Executive Board (6 persons) and chosen group of employee (8 persons) from different departments. Each of these groups have its own needs when it comes to reporting the business figures. The board for example seeks to have the accurate total picture of how the company or business unit is doing. The executive board needs more specific information for example in product group level. The last group on the other hand needs to have information of single product or customer or such. So the information that the organisation needs varies quite a lot depending on from who is the end user.

The survey was sent 18<sup>th</sup> of April in 2017 with two weeks answer time. The groups were relatively small from five to eight people and the answer percentage was very high. In first two group all of the participants answered. In the third group one of the recipients didn't gave an answer but the total amount of seven out of eight was very good. The answers were then analysed and the results are presented later in this study in chapter 4.

The survey had three different open questions that are listed below.

1. What are the areas that you would like to have reports? (Customers, products, etc.)
2. How would you like to receive or interpret the reports?
3. Would you rather get standard set of reports or be able to produce them by yourself?

### 2.3.3 Conversations

Third and the most unstructured part of the data collection was the numerous conversation with the employees. These conversations wasn't recorded in anyhow as they happened but later on some notes was written down. These conversations concerned mostly the needs that employees have but also out of the box ideas of what could be achievable with today's modern tools.

Since the conversations took place randomly during the process and nothing was actually recorded this information isn't presented in this study. Naturally the conversations have had influence to the outcome of this study but even if the conversations would have been recorded in somehow the end result would still have been the same.

### 2.4 Authors own role in a case company

I have worked as a finance manager for the case company for several years. Through this position the shortages in internal reporting has become clear and was one of the reasons that this topic selected to be the one that I'm about to write my thesis.

As a finance manager I'm responsible for the correctness of the company's financial figures. To not to be able to easily look deeper what is behind the company level figures makes it hard to make sure that the overall figures are absolutely correct. In order to find out errors or inconsistencies it is essential to be able to take smaller units under investigation. This can be achieved through carefully planned internal accounting system added with modern reporting tool which can provide quick and transparent view of the figures.

As being a member of the organization makes it somewhat easier to proceed with this project. It is easier to get access to the data needed for example through questioning the managers or by investigating the current financial data. On the other hand it is harder to maintain objective because the hoped outcome of this theses will greatly affect to the daily work that the financial department will be doing in future.

### 3 Current State Analysis

#### 3.1 Drivers for Reporting Improvements

The case company has new strategy for the next five years. In this strategy, the company has defined profitability one of the areas that it should focus on. There are also many other goals defined that requires accurate information of how the company has succeeded in the choices that it has made.

During the years, the case company has created ways of calculating profitability but it isn't very harmonized. It is also time consuming and today's people are used to have answers rather earlier than later so the agility in reporting has become a certain kind of requirement too.

Company is also in a situation that the ERP-system that it uses has reached the point in where it needs to be updated to more modern one. During this process, it is also possible to take deeper look into the type of data that needs to be gathered for further analysing. Through this process, I'm confident that more detailed data can be achieved with less manual work.

#### 3.2 Reporting structure

Company has established a certain kind of structure to how to book and allocate revenues and costs. It consists basic objects such as account, cost centre, products and so on, see table 1. The current structure is presented in next chapters.

<b>Cost object:</b>	<b>Definition:</b>
Account	Bookkeeping account number
Cost centre	Cost centres for machines lines, marketing, administration, etc.
Product group	Product number
Business partner	Customer or supplier
Brand	Brand name
Inverntory	Inventory location
Project	Project number

Table 1. The case company's cost objects

The usage of the cost objects seems to vary in different kind of posting types. Sales invoices are booked by using many of the possible posting elements. That gives sales department possibility to analyse the sales from quite a few perspectives.

### 3.2.1 Variable costs

In variable costs the material and labour costs are booked to the machine lines. These costs are reviewed monthly basis mainly on the company level. The yearly budget is done by machine lines and the executive boards follows the variance between budget and occurred costs every quarter taking in consideration the production amount.

The actual booking of variable costs doesn't have effect on the calculation of product costs. The product cost is calculated in excel based on the recipe that every product has. It determines the amount of raw-material and labour that is need to produce one product. Other factors are waste percentage and other variable costs, like spare parts and maintenance. Also, the overall operating ratio of the machine is one factory in the calculation. This calculation is updated twice a year, in June and December. From that calculation comes a standard price that is used as a cost price for the product.

The current ERP-system has the same recipe and it is updated at same time as the standard excel calculation is done. The only difference between these two is that the material price of the calculation is updated every time in ERP-system when a new entry has been made to raw-material inventory. According to the case company's sales and marketing director the bases for pricing is the standard price that comes from the excel sheet. The cost price that the current ERP-system gives is used for reporting the profit for the product and customer but it is found to be unreliable because of the somewhat big fluctuation in the cost price compared to the standard cost price.

### 3.2.2 Overhead costs

For overhead costs, there is a booking instructions formed during the years. Cost allocation to cost centres and other objects are done mainly by the one who in checking the correctness of the invoice. For some overhead costs the accountant uses predetermined allocation keys that divides the costs to costs centres. For fixed wages, there is also

predetermined keys that are maintained in salary system and are updated during the budget process.

Purchase invoices are handled currently manually. This requires lots of manual work and the invoices end up lying on employee's desks and therefore the month close might last over a month. Since everything is done manually no automatic booking rules can't be made and invoices might be booked differently between months which is not ideal when comparing figures to budget or last year figures.

Depreciations are calculated on a monthly basis using excel spreadsheets. The calculation requires lots of manual work and the accountant should know not only the basis for how to calculate the depreciations but also how to use the excel spreadsheet without breaking any of its formulas. The depreciations are booked to single cost centre and no allocations are made to the machine lines or products. Company has invested quite heavily during last years and according to the strategy the investments plays remarkable role also in the future and needs to be taken into a count when deciding future reporting solutions.

### 3.3 Current Reporting Status

To find out what is the current status for reporting in the case company an interview was conducted. Discussion were held during spring 2017 and it was limited to the executive board. After these interviews also the company's accountant was interviewed in order to get more detailed picture of how the situation in system wise.

The questions in interviews were:

1. How would you see the overall reporting in the case company?
2. Are you provided with some basic set of monthly, weekly or daily reports?
3. How much time do you use to produce ad-hoc reports?

During the interviews, lots of other aspect were noted and below is a summary of all the findings.

### 3.3.1 The overall reporting status

The overall reporting status in the case company was seen to be on a very basic level. It was said to be time consuming and laborious and the results might vary depending on the setups that the report had. It was said that if some of the parameters were accidentally changed or when running the report one forgot to mark certain tick boxes the outcome would look quite different compared to the report that was created for example yesterday.

The reporting seems to rely heavily on excel sheets and formulas built between different excel sheets. This was felt to be risky because of the possibility of the excel formulas to get scrambled or that the users didn't quite understand how the formulas actually worked.

### 3.3.2 Distribution

There isn't a specific controller or such position in the case company. The Finance Manager and the Accountant are responsible for the month closing and the distribution of the monthly reports.

Monthly internal financial reports are mainly made to the board, executive board and business unit managers. The board reports consist of company level figures that are provided and analysed by the Finance Manager. To the executive board the same excel spreadsheet as the board is provided. In addition every three months a cost comparison to budget is made and analysed in an executive board meeting. The report for that purpose is done by the director who is in charge of the particular area.

The accountant prepares on a monthly basis a report which shows the profitability in the case company's two different factories. This report needs lots of information from the ERP-system and consists of several different excel spreadsheets and is therefore very tricky to get it done correctly. The accountant is also responsible for gathering two different sales reports for the Sales Directors to analyse.

When interviewing the members of the executive board it became clear that they would really appreciate if they would be provided with a well-prepared set of monthly or yet better, weekly reports. The few reports that they get are found to be in a too robust level and therefore they are forced to use their own time to produce more detailed reports.



Owners of the case company are also all members of the board so no separate owner's reporting is made except the yearly financial statement. Other stakeholders such as Taxation office and Statistics centre are also handled through financial department. The reports that are used to full fill the needs of the above-mentioned stakeholders are done in excel spreadsheets. Especially financial statement is time consuming task for the Finance Manager. The overall financial statement consists of numerous different excel spreadsheet that needs to be combined to be able to produce the final document. Using several excel spreadsheet causes multiple problems. Firstly, the formulas between different excel spreadsheet are very fragile and needed to be checked numerous times during the process. Secondly changing figures in one excel spreadsheet causes that all the other spreadsheets needs to be checked so that the new figures are updated correctly.

### 3.3.3 The time needed

The time that employees are using to full fill their needs for reporting seems to be one of the biggest issues. The Production Director for example tells that to be able to form the cost price table it might take up to two days. This table is essential for the sales department to be able to do the pricing correctly, based on the current level of the manufacturing price. The reason for updating this report only twice a year is partly because of it is so time consuming. Luckily the raw-material prices have recently been quite stable and since it is the greatest factor in cost pricing this haven't had any major affects in the business.

The most time consuming part of the report forming is that the data conversion. The current ERP-systems provides some of data needed only in PDF-form and it needs to be converted into excel spreadsheets. Directors and managers are doing this mainly by themselves. The time that used for copy pasting is away from the actual tasks that these persons are supposed to do. To be able to reduce the time that is used for report forming tasks was considered to be extremely valuable.

## 3.4 Accuracy of Internal Reporting

Among few more minor issues one great concern was regularly mentioned during the interviews. That was the accuracy of the reporting. It was felt that too much manual work was needed to put the reports together. When this is done in a thigh schedule and when

at the same time employees are trying think the other tasks that needs to get done, the outcome might easily be false. This might in worst case lead into a situation in where important decision is made under false knowledge and the outcome of that might disastrous.

### 3.5 Summary

In overall the case company doesn't seem to have any very specific or standardized way of reporting its figures. Certainly, it doesn't use any sophisticated tool for its reporting but everything is done by excel spreadsheet. The ERP-system is somewhat capable to produce the data that is needed but it often seems to be in PDF-form and it's hard to get the data transformed to the excel-form.

This method has several points in where the end result might turn out to be quite something else than it was thought to be. For example there are no clear database from where the data is gathered but the user uses various searches to get all the data in to one excel sheet. This naturally might lead in a situation in where not all of the data is collected from the right place or it is collected with different parameter compared to the earlier periods. Other risk lies in a basic setting of the ERP-system. If for example new account or cost centre is added, can the user be sure that it comes to the report that he or she uses or should it be added there manually.

The fact that in order to get readable report out of system one needs to use valuable working time for gathering the data instead of using it for analysing makes employees feel a bit frustrated. It also might lead into a situation in where the users do not have all the knowledge about financial accounting, to have all the aspects covered when analysing company's figures. This might have long lasting negative impacts to business if for example long term agreements are made based in false calculations.

## 4 Development needs

### 4.1 Reporting needs

Each company has its unique way of reporting its performance. The case company has a history that starts from the late 70's. It was founded by one man and has been family owned ever since so no requirements towards reporting hasn't raised from for example investors. Therefore, the development of reporting has been done internally and through new employees that has been hired during the years.

To find out what are the needs for reporting a survey was conducted. The survey was addressed to three groups in the company. First group is the Board, second is the Executive Board and last was addressed to the designated group of employees.

Also, fourth group was in original plan. Fourth group would have been called "other stakeholders". In that group, there would have been banks, insurance companies etc. After considering their needs, I came in to conclusion that they typically are interested only in financial statements and budgets or forecasts and those the case company can provide nowadays.

The survey was done through e-mail and was done in late spring 2017. The questions in a survey were:

1. What are the areas that you would like to have reports? (Customers, products, etc.)
2. How would you like to receive or interpret the reports?
3. Would you rather get standard set of reports or be able to produce them by yourself?

The survey revealed following reporting needs from each of the groups.

#### 4.1.1 Board

The board has total five members of which three are the owners. One of the owners is also employed in a company and one is the founder. The two remaining members haven't any other relation with the case company.

The board was interested in more overall matters than the other groups. The needs were in product group, brand and customer figures. They also would have been keen to know the current market share in each product group but this information cannot be gathered from inside the company but needs to be purchased from a survey company. The case company does that time to time.

Board members were the only ones that were interested on balance sheet also. They felt that the inventory levels should be monitored more detailed and the turnover times from inventory, receivables and payables should also be presented.

The board wasn't too keen to be able to produce the reports by themselves but found the standard set more useful for their needs. Although some members did consider the possibility to follow for example weekly or monthly sales through an application interesting.

#### 4.1.2 Executive Board

The case company's executive board is formed from the directors of each of the company's departments i.e. sales, manufacturing, purchasing, marketing, finance and its lead by the managing director.

The executive board was also interested on the overall figures like the board. Other important issue was that they would like to have daily information of how the business is going. Also, they would like to see information in more detailed way. Product profitability, sales per day and raw material costs are in the centre of their interest.

The executive team members were interested of forming their own set of reports added with the basic set of weekly and monthly standard reports. The only requirement was that if they would be able to form their own reports it should be easy and it should happen outside of excel spreadsheets. The possibility to copy the reports to the excel spreadsheets was seen to be important.

### 4.1.3 Employees

The group of employees was narrowed to those who are dealing with sales, purchases and manufacturing in their daily tasks.

This group was interested in the most detailed information. That is understandable because of nature of their daily work. For example the purchaser need to know the exact amount of one raw-material that is in the warehouse to be able to maintain the inventory level in balance.

They are experienced users of the current ERP-system and thereof capable of forming their own reports. They didn't feel much need for standardized report sets but more standard set of reports that they would be able to modify in order to get the outcome needed.

## 4.2 Summary

Based on the survey it can be said that there is a relevant need for some kind of reporting tool. The upcoming ERP-project most likely will serve the employee group best because most of the reporting they need can most likely be handled nowadays with these programs. This survey will give valuable information for the project about the needs that there is toward the new ERP-system.

The survey was meant to reveal the top level issues of each group. It served the idea quite well, although some of the answers went bit further than the original idea.

## 5 Theoretical Framework

### 5.1 Importance of an Internal Accounting in Manufacturing Company

Definition for management accounting can be determined that it aims to furnish a relevant information to managerial personnel and other stakeholders (Madegowda 2006).

In today's global business environment, it is vital for companies to know whether it is profitable or not in order to survive. Especially in mid-sized companies only one poor decision made relying on false figures might lead to serious problems. Therefore, companies have become more interested about the benefits of internal reporting. Software designers have noticed that and have developed more and more agile programs for data analysis. At the same time the data storing is no longer a cost issue but masses of data can be stored cheaply for later analysis. Companies don't necessarily have to invest on expensive servers but use cloud based software and simply pay monthly fee to be able to use the reporting tools.

In next chapters, I'm going to go through few of the methods that there is to choose from when deciding how to analyse the company's figures. This is part of the literature review of the study and it aims to give the theoretical background for developing the most appropriate method for the case company.

## 5.2 Cost Accounting Methods

There are many methods that can be used to measure the profitability. In next chapter, I will present few of those to show how different methods leads to different outcomes. The company needs to decide which method will be the best for its purposes and then build the follow up systems to meet the needs.

### 5.2.1 Standard Costing

According to C.I.M.A (Chartered Institute of Management Accountants) standard costing can be defined as "the preparation of standard costs and applying them to measure the variations from actual costs and analysing the causes of variation with a view to maintain maximum efficiency in production" (Arora 2010).

It basically means that the management sets standard level of what it should cost to manufacture product under efficient conditions. When the actual costs occur, they are compared to the standard cost to find out whether variances exist.

According to (Arora 2010) there are five steps in standard costing.

1. The setting of standard costs for different elements of costs, i.e. material, labour and overheads.
2. Ascertaining actual costs
3. Comparing standard with actual costs to determine the differences between the two, known as “variances”.
4. Analysing variances for ascertaining reasons thereof.
5. Reporting of these variances and analysis thereof to management for appropriate action.

Standard costing is especially suitable for manufacturing companies that has a relatively standard production. When producing for example ice cream the process is quite similar despite of the flavour or size of the product. In the case company the production is fairly standardized. It has seven different kind of machine lines and every one of them produces goods that other machine can't.

Below in table 2 there is an example of the variance analysis. The variance can be favourable or unfavourable. It is favourable when the actual costs are smaller than the standard cost set by management and vice versa.

<b>Background data for manufacturing ice cream</b>			
<b>Standard costs are as follows</b>		<b>Actual costs are as follows</b>	
<b>- Quantity of ice cream needed</b>	150 000 pcs	<b>- Quantity of ice cream produced</b>	150 800 pcs
<b>- Price of raw-materials:</b>		<b>- Price of raw-materials:</b>	
- Price of milk / 1 pcs	0,25 €	- Price of milk / 1 pcs	0,26 €
- Price of chocolate / 1 pcs	0,02 €	- Price of chocolate / 1 pcs	0,03 €
- Price of wood stick / 1 pcs	0,03 €	- Price of wood stick / 1 pcs	0,03 €
- Price of packing material / 1 pcs	0,11 €	- Price of packing material / 1 pcs	0,10 €
<b>Labour costs:</b>		<b>Labour costs:</b>	
- Standard hours per unit	0,015	- Standard hours per unit	0,016
- Standard rate per hour	15,00 €	- Standard rate per hour	15,00 €

<b>Calculation of variances:</b>		
<b>Material cost variance</b>		
- Material cost variance, milk	$150\,000 \times 0,25 - 150\,800 \times 0,26$	- 1 708,00 €
- Material cost variance, chocolate	$150\,000 \times 0,02 - 150\,800 \times 0,03$	- 1 524,00 €
- Material cost variance, wood stick	$150\,000 \times 0,03 - 150\,800 \times 0,03$	- 24,00 €
- Material cost variance, packing material	$150\,000 \times 0,11 - 150\,800 \times 0,10$	1 420,00 €
	<b>Total:</b>	<b>- 1 836,00 €</b>
<b>Material price variance</b>		
- Material price variance, milk	$(0,25 - 0,26) \times 150\,800$	- 1 508,00 €
- Material price variance, chocolate	$(0,02 - 0,03) \times 150\,800$	- 1 508,00 €
- Material price variance, wood stick	$(0,03 - 0,03) \times 150\,800$	- €
- Material price variance, packing material	$(0,11 - 0,10) \times 150\,800$	1 508,00 €
	<b>Total:</b>	<b>- 1 508,00 €</b>
<b>Material usage variance</b>		
- Material usage variance, milk	$(150\,000 - 150\,800) \times 0,25$	- 200,00 €
- Material usage variance, chocolate	$(150\,000 - 150\,800) \times 0,02$	- 16,00 €
- Material usage variance, wood stick	$(150\,000 - 150\,800) \times 0,03$	- 24,00 €
- Material usage variance, packing material	$(150\,000 - 150\,800) \times 0,11$	- 88,00 €
	<b>Total:</b>	<b>- 328,00 €</b>
Check:		
Material cost variance = Price variance + Usage variance		
<b>-1836,00€ = -1508,00€ - 328,00€</b>		
<b>Labour cost variance</b>		
- Labour cost variance	$(150\,000 \times 0,015 \times 15) - (150\,800 \times 0,016 \times 15)$	<b>- 2 442,00 €</b>

Table 2. Example of variance analysis

From the example, it can be seen that the actual costs were greater than the originally calculated standard costs. Higher costs are mainly caused because of the material price changes. Material usage creates unfavourable variance also but not that much. From this kind of calculation, it is easy for managers to see from where the variances come from and through that focus their actions to right place. In this case managers, would need to focus on the prices of milk and chocolate and on the other hand find out why the man hours per unit is bigger than expected.

The advantages of standard costing are that it looks forward rather than backwards. It requires management to set up the standard which means that the business case must be calculated carefully beforehand. It provides incentives by setting the goal that needs to be achieved. By incentives it affects to the machine operators to avoid of producing wreckage and through that it reduces the amount of waste that is created.



The system also has disadvantages. The biggest one is related to the maintaining of the system. For example, the raw-material costs are in continuous change and the standards must follow these changes. System also requires lots of work so to keep it up to date might become too expensive especially for smaller companies.

### 5.2.2 Activity Based Costing

Activity-Based-Costing (ABC) was invented in the late 80's. According to Lövingsson & Karlöf the model was invented by Thomas Johnsson and Robert Kaplan. Kaplan further developed it with Robin Cooper and they published an article in a Harvard Business Review in 1988 and that article was the real kick off for this model.

Today's industry is much more machine orientated than few decades ago. To use for example labour hours to allocate indirect costs to products may not lead good enough outcome anymore. Activity-Based-Costing was specially developed to allocate indirect or overhead costs to the product or customer more precisely than traditional cost accounting.

Activity-Based-Costing is a model which assigns indirect costs to activities that happens in the company and the costs of these activities are then allocated to the product by its consumption of the activity (Polimeni, R. Drake, P and Fabozzi, F. 2008).

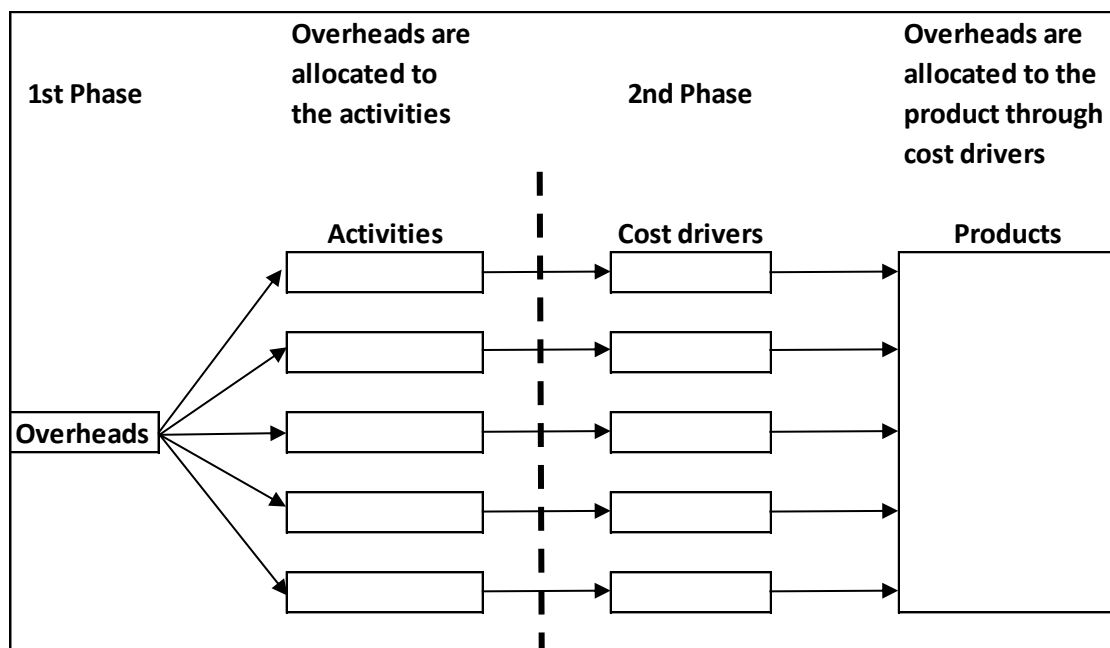


Figure 2. The idea of Activity-Based-Costing model. (Ala-Juoni P. 2005)

Figure 2 shows the overall idea of the Activity-Based-Costing. There are two main elements in this costing model, activities and cost drivers.

Activities happens in company and they are caused by the products, services and customers. (Lövingsson, F and Karlöf, B. 2005). Activities uses company's resources and thereof generates costs. Examples of activities are presented in table 3.

Cost drivers are measurable units that are used to allocate the costs of each activity to the product, service or customer. Table 3 shows cost drivers for the activities. In a ABC-project it is important that the cost drivers are chosen correctly. Cost driver should always be the kind of that causes the cost of the activity.

<b>Type of Activity</b>	<b>Cost Driver for Activity</b>
Purchase of material	Quantity of materials purchased
Machine setups	Number of machine setups
Computer usage	Computer time
Running of machines	Machine hours
Inspections	Hours of inspection time
Testing	Hours of testing time
Prepare billings	Customers served

Table 3. Examples of activities and cost drivers. (Polimeni, R. Drake, P and Fabozzi, F. 2008)

For example, if the company has one machine line that produces two different products from which product number two needs more setups than product number one. Traditional cost accounting would use most likely labor hours to allocate the setup costs to the product. Let's say that the line is operated by one person and the time is used equally to both product. It would mean that both products would get 50 per cent of the setup costs. In Activity based method the total number of setups and the costs that the setups create are calculated. By dividing the cost by the number of setups the price of one setup can be calculated. When knowing that product number one uses 2 setups and product number two needs 6 setups the it is easy to calculate how much the cost of setups are in both products.

Setup cost	5 000,00 €	Use of labour hours:	Use of setups:		
Labour hours	16	- Product no. 1	8	- Product no. 1	2
Number of setups	8	- Product no. 2	8	- Product no. 2	6
<b>Traditional cost accounting</b>					
- Product no. 1	5000,00€ / 16 x 8 = 2500,00€				
- Product no. 2	5000,00€ / 16 x 8 = 2500,00€				
<b>Activity based cost accounting</b>					
- Product no. 1	5000,00€ / 8 x 2 = 1250,00€				
- Product no. 2	5000,00€ / 8 x 6 = 3750,00€				

Table 4. Example of traditional and activity based cost accounting.

To implement activity-based-costing system in a company it requires great deal of cooperation between different departments of the company. The cost drivers must be carefully chosen and not one person could have the kind of information from all of the departments. So, it is important that whole organization is involved in order to get the best possible outcome.

According to Karlöf & Lövingsson there are four steps when implementing ABC-model.

#### 1. Activity Analysis

First the activities that are connected to the object must be specified and analyzed. It helps if the organization has documents of its processes.

#### 2. Use of resources

The activities are using resources and second step is to calculate the costs.

#### 3. Specification of cost drivers

Third step is the most critical one. Right cost drivers need to identify to establish the connection between activities and the analysis object.

#### 4. Costing of the cost to object

Last step is to allocate the cost to the object.

There are many advantages in activity-based-costing model. It is accurate and points out the sources of different costs understandably. In today's business, the overhead costs are significant and the ABC-model provides management vital information from where the costs comes from. Through that it is easier to take corrective actions based on accurate data. ABC-model is costly to build and it requires lots of man hour and these can be considered as a disadvantages.

### 5.2.3 Lean Accounting

Lean accounting is more of a term that gathers the changes needed in accounting department in a company that has taken the lean idea to use. Often when a company is deploying the lean concept they ran into situation in where the accounting is holding the lean development back. The reason is that traditional accounting is designed for mass production when lean is all about creating value to the customer. (Maskell B.).

According to Maskell and Baggley the principles of lean accounting can be divided into five different areas:

#### 1. **Lean and simple business accounting**

Meaning that the accounting process must follow the lean principles. The “waste” must be removed from the accounting process, meaning unnecessary transactions, processes and reports.

#### 2. **Accounting process that supports the lean transformation**

Lean accounting reports and methods should support the lean transformation by producing reports that aim for continuous improving. Reports shows the value stream flow instead of focusing in single product or jobs. Accounting should focus on the aspects that creates value to the customer.

#### 3. **Clear and timely communication of information**

The reports that lean accounting provides needs to be understandable. All the information should be presented in a way that everyone can understand it. That the questions in meeting transforms from “what does this mean” to “what we need to do”. One popular method is so called “Box Score” which will be presented later on.

#### 4. **Planning and budgeting from a lean perspective**

Planning uses so called Hoshin policy which is a strategy for next year. Strategy is rolled from top to down in that way that every participant can have effect on the final outcome. When the plan for the year is ready it is normally reviewed monthly.

#### 5. **Strengthen internal accounting controls**

Lean accounting shouldn't weaken the control of accounting processes but enhance. Therefore it is vital to have the company auditor involved at the very beginning of the lean process.

In overall lean-accounting is an accounting method developed for companies using lean model in their other processes also. The idea behind lean accounting is the same than

in all lean thinking, remove the useless parts of the accounting value stream. Basically that means that the unnecessary costs and reports are removed from the cost accounting process.

The concept of value stream is important in lean thinking. Value stream consist of all the actions needs to be taken in order create value. (Hakkila M. & Pakanen H. 2013). A typical value stream is presented in a figure 3.

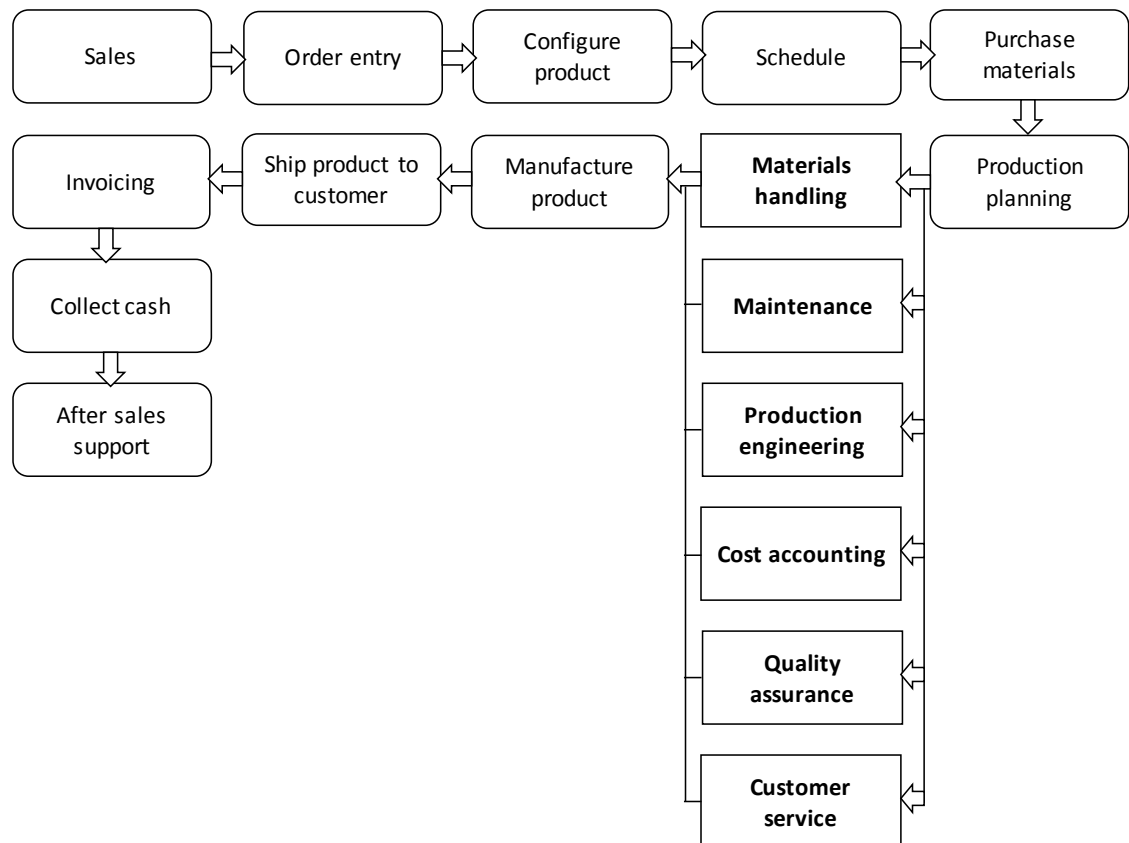


Figure 3. Value stream. (Baggley B. 2003)

Lean accounting relies on so called Value Stream Costing. It differs quite a lot from traditional cost accounting. Firstly, it doesn't divide costs to direct and indirect costs. Secondly it doesn't measure the product unit costs but the costs from the whole value chain in given time period. For example, in one week period it calculates all the labour costs occurred in that week. In material wise it takes in consideration only the costs from the material purchases in that week. So, the warehouse plays no role in lean-accounting model and according to the original lean-thinking the inventory value should anyway be

as low as possible. (Hakkila M. & Pakanen H. 2013). Figure 4 shows how costs are related to the value stream.

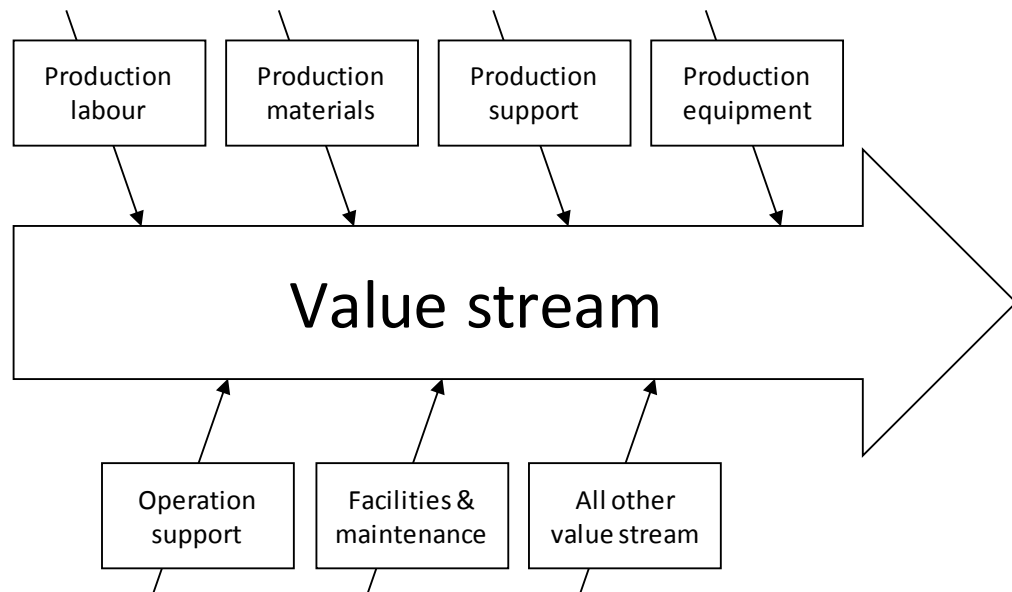


Figure 4. Costs included in a value stream. (Maskell et. al. 2011)

The term Box Score was introduced earlier in this chapter. Box score is a tool for presenting the performance in a value stream. It is suggested to be done on weekly basis and it should be, as mentioned earlier, clear and easy to understand to all readers. (Hakkila M. & Pakanen H. 2013). Table 5 shows an example of economical part of the box score.

	2017	Week 1	Week 2	Week 3	Week 4	Week 5	Target week 10
<b>Financial</b>	Turnover	1 611 456,00 €	1 816 986,00 €	1 816 986,00 €			1 954 006,00 €
	Material costs	490 296,00 €	674 183,00 €	581 926,00 €			625 810,00 €
	Conversion costs	497 933,00 €	559 091,00 €	498 129,00 €			486 804,00 €
	Inventory	221 163,00 €	211 223,00 €	223 648,00 €			176 433,00 €
	<b>Value stream profit</b>	<b>623 227,00 €</b>	<b>583 712,00 €</b>	<b>736 931,00 €</b>			<b>841 392,00 €</b>

Table 5. Example of economical box score. (Hakkila M. & Pakanen H. 2013).

The advantages that arise from lean accounting method lies in the simplicity of actual reporting. From the table 5 it is easy to see what is the goal and how has the company performed compared to the goal. It also appreciates the customer more than the traditional cost accounting methods and through that the price setting doesn't base on the cost of the product but value that is created to the customer. That might lead in to a situation in where the price is set higher because of the lack of knowledge of how much

it actually costs to make one product. The biggest disadvantage on the other hand is that in order to be able to use the lean accounting method the whole company needs to follow the lean philosophy. To transform the whole company under lean thinking is a long process and needs lots of preparation before implementation.

#### 5.2.4 Summary

Now we have gone through few quite different ways to handle the cost accounting in a company. It cannot be said that one model is better than the other or that some model is meant just for example manufacturing business. Activity-based-costing was considered to be useful only in manufacturing business but nowadays it is in use in service business also. Much depends on the company itself, its culture and interest in cost accounting. Not all companies need specific system to tell them how profitable they are but it is important to keep in mind that the decisions managers make every day should be based on facts instead of assumptions.

## 6 Comparison of the possible methods

### 6.1 Background information

During the project, several discussions took place to find out what it is that actually needs to be monitored. Participants were from different departments and from different positions. By that I tried to ensure that all aspects would be covered, not only the manager's needs.

In order to find out what does the organisation want to monitor in the future, simple e-mail survey was conducted to the managers. In the e-mail, I asked to specify the areas that need to be monitored. The results are presented in table 6.

<b>Dimensions:</b>	<b>Time measures:</b>	<b>Quantitative measures:</b>	<b>Inventory:</b>
- Cost center	- Year	- Euros	- Amount of shipments
- Area (Domestic and export)	- Quarter	- Profit (€)	- Amount of lines shipped
- Country	- Month	- Profit (%)	- Amount of sales unit shipped
- Customer	- Day	- Per 1000 pcs	- Amount of pallets
- Customer class (A/B/C)	- Week	- Consumer unit	- Amount of post-deliveries
- Customer groups	- Hour	- Sales unit	- Shipments per carrier
- Salesperson	- Shift (In production)	- Discounts	
- Brand			
- Product group			
- Sub-product group			
- Product			
- Production line			
- Certificates (Allergy- and asthma association)			

Table 6. List of aspects that needs to be monitored.

Results can be divided in four different groups. First group “dimensions” are the kind of objects that needs to be monitored. There are quite obvious ones like product, customer, geographical area and brand. Specific to case company is certificates. The case company has several certificates from different institutes to ensure the customer that the product is with high quality. These certificates create costs to company but not all the products use these certificates. Therefore, it is important to separate the cost that comes from certificates and be able to allocate them to the right products or customers.

Second category focuses on time measures. There isn't anything special in that category. The case company has a need for quicker reporting cycle specially in manufacturing and therefore there is also shorter periods like day, work shift and hour listed.

Category number three is quantitative one. It consists naturally euros and percentages but also some company or industry specific measurements. When dealing with grocery stores the unit “sales unit” becomes essential. The case company is able to follow its production in single product level. Grocery stores on the other hand buys sales units that consists customer units which consists single products. All these measurements need monitoring and for every product there is factor that tell how many of each measurement unit belongs to different packaging size.

Last category is purely for inventory purposes. The inventory process plays important role in the case company. When dealing with grocery stores the ordering cycle is relatively short. That creates pressure to warehouse personnel to be able to deliver the



goods in time. The follow up system for deliveries is essential in order to full fill the demands that comes from the customers and to be able to find out the causes for possible post-deliveries.

The list that is presented most likely isn't complete. It is anyway a good starting point for possible future reporting project and gives vital knowledge about the objects that needs monitoring.

## 6.2 Reasoning for the need of new reporting model

As mentioned before the case company has strategy that focuses on growth, profitability and digitalization. Giving that the current reporting procedures are relatively overall views of how things have developed in fairly undetailed level, some improvements would be highly recommended.

To avoid false decisions the product profitability needs to be in such a level that everyone could agree that this is the reality and the figures can be trusted. Same goes with customers. Even though the case company does not have that many customers it is vital to know the real profit that they generate. Also, giving that the strategy aims to increase export sales through new customers it is vital to know what are the actual costs that new customer brings. Through sophisticated system it can be calculated in advance and the sales price level is known well before any major actions is taken.

With this background the new model needs to be transparent, explainable and since the case company doesn't have any specific resource reserved for this task, it should be easily maintained. The proposal for new reporting model is presented in the next chapter.

## 6.3 Advantages and disadvantages of different methods

Of the three suitable internal cost accounting methods presented in chapter 3 all have both advantages and disadvantages. Commonly it can be said that all of the identified methods has the disadvantage that they are relatively laborious to build.

When considering the possible advantages and disadvantages in the different methods it is important to recognize the case company's business. It produces tens of millions

products per year that are quite similar to each other. Keeping that in mind it doesn't seem reasonable to utilize the standard costing method. In standard costing method there must be a standard established to which the actual figures are then compared. The case company purchase raw material basically daily and that causes fluctuation in the price of the used raw material. So in that sense there would always be differences between the standard set and the actual outcome. This kind of method would suite better for the kind of businesses that is not so raw material depended and through that the standard cost would better meet the standard cost calculated for the business case. The standard cost method could suite quite well for the case company's private label business in where each business case is calculated beforehand and has a limited amount of products. The private label manufacturing on the other hand isn't in the core of the case company's business as it aims to increase the sale of its own brands. So the whole cost accounting system cannot be build based only on that business area.

When thinking the lean accounting method the biggest advantage would be that it emphasizes the customer perspective. The price setting doesn't rely on the cost of the product but the value that the product would give to the customer. Nowadays companies tend to look what it cost to make a product the then add the margin on top of that to have the sales price. This of course is a healthy way when considering the business but could it be wiser to ask the sales persons to find out what the customers are willing to pay for the product and then calculate the costs and see whether it is profitable or not. Nevertheless in the business that the case company operates the prices are more or less given by the customers and they aren't ready to pay extra without any remarkable new feature that the product has compared to others.

The greatest disadvantage in lean accounting is that in order to fully utilize this method the whole organization would need to take the lean philosophy in use. When considering the case company it would be far too big of risk to change the whole organization into lean model. It would take years to fully understand the lean philosophy and to take it in to use in a whole organization.

The activity based costing method seem to suite quite well in manufacturing industry. It allocates the indirect cost that plays remarkable role in today's business into the products or customer or whatever is causing the costs. It changes the idea from allocating indirect costs based on some general factor to more precise factor, the factor that actually causes the cost. It doesn't require changes in the organisations behaviour or ways of doing the

business as does the lean accounting method. On the other hand it doesn't look in the future same way as standard costing does but merely tells how the company has done in a given period. Although it can be used to calculate the kind of standard as in standard costing based on the activities and the cost drivers.

The biggest advantage in the activity based costing is that it is understandable for the users. For example it is easy to understand that if sending one sales invoice costs 2 euros then every sent invoice reduces the customer margin with that very same amount. Or if changing the machine setup costs 10 euros per hour then the fewer changes need to be done the more profitable the product will be. On the other hand the great disadvantage in activity based costing model is that it is very laborious to take in use. The whole organization needs to be taken in consideration and all actions get a price tag. This on the other hand is also a possibility and somewhat advantage also since it is very good point to let the managers give their opinion and insight on the matters.

Table 7 shows the advantages and disadvantages from the three different methods compared.

	<b>Advantages</b>	<b>Disadvantages</b>
<b>Activity Based Costing:</b>	<ul style="list-style-type: none"> <li>- Accurate</li> <li>- Shows the source of the cost</li> <li>- Helps to improve processes</li> </ul>	<ul style="list-style-type: none"> <li>- Costly to build</li> <li>- Requires lots of work to set up</li> </ul>
<b>Standard Costing</b>	<ul style="list-style-type: none"> <li>- Looks forward</li> <li>- Forces managers to set goals</li> <li>- Offers incentives</li> </ul>	<ul style="list-style-type: none"> <li>- Needs constant maintaining</li> <li>- Standard setting must be accurate</li> <li>- Costly for small companies to maintain</li> </ul>
<b>Lean Accounting</b>	<ul style="list-style-type: none"> <li>- Simplicity for viewers</li> <li>- Has the customer in focus</li> </ul>	<ul style="list-style-type: none"> <li>- Requires LEAN-philosophy in an organisation</li> </ul>

Table 7. The advantages and disadvantages of different cost accounting methods

## 7 Proposal

### 7.1 Background for the proposal

During the interviews it became clear that there are certain shortages in reporting. The main concern was related to the accuracy of the reporting and the time that the directors

themselves needs to use to get certain set of figures they need. They would rather spend time in analysing rather than producing the reports. Also one of the findings was that the reporting isn't detailed enough. The correct margin for customer, product or some other category should be available easily and the calculation method should be transparent so that everyone could agree that this is the right way to calculate it and the result therefore can be trusted.

The case company is starting a project which aims to modernize the current ERP-system. The current system is old and it doesn't provide the kind of tools that are needed for the managers to get reliable data. The project is about to start in the upcoming months and it would give the possibility for the case company to rearrange all the basic setups so that new reporting model could be take in use.

The case company is relatively aware of what is the price for one single product. It has a recipe of how much material is used and how much labour costs it takes to manufacture one product. The problem in product profitability lies more in the overhead costs. Since the company uses same production line to manufacture different products it needs to change the parts to the production line every time when the product changes. This creates costs that are nowadays divided to the products based on the production amount. It also has big property mass to maintain and mainly it is needed for the machines and warehousing. These costs aren't calculated in the product price and therefore the impact that it has to the profitability is unknown.

The two factories that the case company has are operating quite independently. Rough factory results are calculated every month but it doesn't quite tell why other is doing better than the other. Is it because warehouse activities are handled better in other factory or is it because the factories are producing different kind of products and the margin therefore differs. The proposed model would give better insight of the factory profitability by distributing the overhead cost more accurately than they currently are.

## 7.2 The proposal for new reporting model

The proposal for the new reporting model is activity-based-costing model. The proposed model would serve the case company well and it is widely recognized to be well suited for manufacturing environment.

Add to this it is recommendable for the case company to take in use some kind of light reporting program. During the upcoming ERP-project this is good to keep in mind because there might be a suitable package ready which has both elements, the ERP and the special tool for reporting also.

### 7.2.1 Advantages

One of the advantages that the new reporting method would bring is the transparency. When defining the activities and cost drives all departments will participate and give their opinion in the matter. Through that the managers will understand the logic and it becomes clear how the overhead costs are allocated. The questioning of whether the salary of the person who is responsible for billing should be divided this way or that way can be forgotten. The total amount of invoices and to whom they are addressed to will give the correct answer through mutually agreed cost drivers, which in this case would be the amount on invoices sent.

### 7.2.2 Disadvantages

The main disadvantage would be that building the activity-based-costing model needs lots of work before it can be utilized. All the activities need to be identified. The case company has documented its processes which will help to identify all the activities. To find all the appropriate cost drivers is also a difficult task but fortunately not for all activities the cost drivers need to be found by self but some can be taken from those who have already done this project. Mostly this kind of cost drivers would relate to administrative costs that are more or less the same in every company.

## 8 Conclusions

### 8.1 The objective

The objective of this study was to identify the best possible cost accounting method for a manufacturing company to follow up its financial performance. Based on the surveys that

were made and the numerous conversations with the personnel lots of valuable background information was gathered. Of this information it became clear what was needed and wanted from the internal reporting. Also it became obvious that that the current state of internal reporting wasn't in good enough shape and would not serve the needs arising from the strategy that focuses on growth and profitability.

Add to the findings inside the case company the literature review gave valuable perspective of the methods that is used to analyze manufacturing companies. It became clear that one of the methods was already partially in use and didn't gave all the information needed. The chosen method Activity Based Accounting seem to fit quite well to the case company's requirements or profile so to say.

When comparing the end result to original objective it can be said that the study served the objective rather well. The best practice at least in authors opinion was found and the steps how to build the system is presented in earlier chapters and yet went through more closely at the end of this chapter.

## 8.2 Benefits from new reporting

The benefits of having the new reporting model added with the specific reporting tool can be justified with benefits that they would bring. There are few major issues that the new proposed idea would bring remarkable improvements in.

Firstly the accuracy of the reporting would increase from at least two point of view. Common database would give all the users same source for the data. Compare to what the situation currently is this would increase the reliability of the reports. On the other hand it would also reduce the time needed for forming the reports and this valuable time could be used for the operational tasks.

Secondly or perhaps even firstly it would remove the frustration that was seeing during the interviews. To be able to do the tasks that is felt to be meaningful will most likely increase the satisfaction level that each employee has towards he's or hers job and employer.

The renewal of the old ERP-system would give great opportunity to design the new system in the way that it would be able to take into account the needs that the activity-based-

costing needs. Without a doubt new reporting model would require that all the parameters and object are carefully examined and it is most likely easier to do the changes during a project which already has effects on the way of things are done.

### 8.3 Limitations

At the same time that renewal of the current ERP-system can be seeing as an opportunity it also is a threat. The upcoming ERP-project itself requires a lot from the staff and if yet added with implementation of new reporting model and even reporting tool, it can be too much. There is a risk that both projects end up with an outcome that is somewhat acceptable but not nearly what was expected. Therefore, the timing and resources would need careful consideration to avoid the projects to end up being something that wasn't meant.

The new proposed reporting model would most likely change the overall picture of the profitability of the products or customers. This might bring up doubts whether the new method is showing correct figures or not. Therefore, it is vital to make sure that everyone understands the logic behind the new method and agrees that this is more correct and sophisticated way of presenting the actual profitability in the case company. So this project would also require skill in how manage the changes in an organisation.

### 8.4 Next steps

Since the proposal for new reporting model differs quite a lot from the one that the case company currently uses there wasn't enough time to actually do the change project during this thesis work. Therefore this thesis gives the authors opinion based on the founding's inside the case company and literature review of what would be the best reporting model for the case company.

If the company decides to proceed with the recommendation and take Activity Based Costing as a new method for internal reporting it should start by focusing the four step presented earlier in this thesis.

These steps were:

1. **Activity Analysis** which aims to find out what happens in the company to be able to fulfil all the needs that arises from the own organization and other stakeholders such as customers, suppliers, etc. Activities uses the company's resources and are therefore the primary cause for any cost that happens in a company. In the case company it should be relatively easy to write down these activities since during the ERP-project some kind of process map needs to be made and from that top level map each department can find out what their primary tasks are. Examples of activities that are most likely found are purchasing of raw materials, invoicing and maintenance and so on. After this is done the activities are clear and it is time to move to the step two.
2. **Use of resources** aims to find out how much the activities found in a step one needs company's resources. For example the purchase of raw materials doesn't happened automatically but it needs some work to make it happened. Someone needs to be aware what raw materials and currently in a warehouse and how much of that is consumed in future. This will give the purchaser indicator to when to place the order for new shipment and how much it would be wise to order. This is in a case company at least done through two purchaser so the resource that the purchasing of raw material needs is the work of these persons. The cost for these resources can be easily calculated by adding the salaries and social costs together. For all the activities it will not be this easy to find the actual resource nor the cost for it. In this step effort should be placed to find out as clear and measurable resources for the activities as possible because the more accurate the outcome of this step is the more reliable is the overall outcome of whole project.
3. **Specification of cost drivers** is perhaps the most difficult and yet most critical step in this project. Cost drivers are used to direct the cost that arises from the use of activities to the actual products. Cost drivers should be measurable units such as pieces of sales invoices, time that is used or the total quantity of raw materials purchased. Some of the cost drivers are relatively easy to choose and there are plenty of literature that will give the answer to the mostly used cost drivers for certain activities. For example the cost driver for the purchased material activity is typically the quantity of raw material purchased. For the case company that probably isn't the best one because raw materials are purchased in different units such as kilograms, meters or square meters. The problem obvi-



ously is how to equalize the different units so that the end result is correct. Perhaps better cost driver for this activity would be the total number of purchase orders or invoices per year. This would also give kind of added bonus for the manager because through this calculation it then would be known how much it costs to pay one lot of raw material. By reducing the number of purchase orders the purchaser would save time for some other tasks and the total cost for the activity of purchased material would decrease. Naturally the cost would go to another activity but nevertheless it would increase the cost awareness.

4. **Costing of the cost to object** is the very last step. This is probably to most exciting part of the whole project. Now when the costs of activities are known and the cost drivers set up properly it is time to allocate the cost to the actual object. The outcome of this phase is the total cost that one product bears for the total amount of overhead costs that the case company has. Since the amount of products that the case company manufactures per year is calculated in tens of millions it would not be wise to try to allocate the cost to one product but maybe to the product family or machine line that is used to manufacture certain product range. Let's say that one machine line uses only three raw materials that are purchased one to three times per year. That would give nine as a maximum amount of raw material orders per year. Other machine line uses ten different raw materials that needs to be purchased two to three times per year. When comparing the cost that arises from the raw material purchase activity the machine line number two might use as many as thirty purchase order per year. That is over three times more than what the first machine line needs. If the costs would be divided equally the second machine line would benefit greatly and would give wrong total cost for both products.

Each of these steps should be considered as an individual part of the project and use enough time to carefully think through so that the outcome is best possible. Yet the overall outcome must be in mind at the same time. Otherwise the end result might be that all the different aspects are in great shape but they don't fit together all too well and the total outcome is either inaccurate or something that the managers cannot trust.

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## Survey questions

# Kysely liittyen tulevaisuuden raportointitarpeisiin

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**Toivoisin sinun vastaavan oheiseen kyselyyn liittyen taloudellisen raportoinnin kehittämiseen.**

**Kysely on osa Metropolia Ammattikorkeakoulussa suorittamaani tutkintoa ja siihen liittyvää opinnytetyötä.**

- 1. Mistä osa-alueista haluaisit saada raportointia? (Asiakkaat, tuotteet jne.)**
  
  
  
  
  
  
  
  
  
  
- 2. Missä muodossa haluaisit vastaanottaa tai tulkita raportteja?**
  
  
  
  
  
  
  
  
  
  
- 3. Haluaisitko mielummin saada aina saman raporttipaketin vai tuottaa raportteja itse?**

**Title of the Appendix**

Content of the appendix is placed here.