

UNIVERSITY OF LJUBLJANA  
FACULTY OF ECONOMICS

**AN ANALYSIS OF A MANAGEMENT CONTROL SYSTEM IN A  
MANUFACTURING COMPANY**

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Julian Miller

## AUTHORSHIP STATEMENT

The undersigned Julian Miller, a student at the University of Ljubljana, Faculty of Economics, (hereinafter: FELU), the author of this written final work of studies with the title An analysis of a management control system in a manufacturing company, prepared under supervision of Full Professor Dr. Marko Hočevar,

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## TABLE OF CONTENTS

<b>INTRODUCTION .....</b>	<b>1</b>
<b>1. MEANING, CONCEPT, AND DEFINITION OF MANAGEMENT CONTROL .....</b>	<b>4</b>
<b>2. MANAGEMENT CONTROL INDICATORS .....</b>	<b>8</b>
<b>2.1 Management control indicators and indicator systems .....</b>	<b>9</b>
2.1.1 Indicator systems .....	10
2.1.2 Individual indicators .....	15
<b>2.2 Useful management control indicators with examples.....</b>	<b>15</b>
<b>3. COST AND ACTIVITY ACCOUNTING .....</b>	<b>19</b>
<b>3.1 Cost-type accounting .....</b>	<b>21</b>
3.1.2 Imputed costs .....	22
3.1.3 Neutral costs .....	22
<b>3.2 Cost-center accounting.....</b>	<b>23</b>
3.2.1 Cost-center plan.....	24
3.2.2 Cost allocation sheet.....	26
<b>3.3 Cost-unit accounting.....</b>	<b>29</b>
3.3.1 Cost-unit period accounting .....	30
3.3.2 Unit-costing .....	32
<b>4. INTRODUCTION OF LIP BLED D.O.O. ....</b>	<b>32</b>
<b>4.1 Control management indicators of LIP BLED.....</b>	<b>33</b>
4.1.1 LIP BLED overall picture .....	34
4.1.2 LIP BLED production indicators.....	36
4.1.3 LIP BLED sales indicators .....	37
<b>4.2 Cost and activity accounting in LIP BLED.....</b>	<b>38</b>
4.2.1 Cost-type accounting in LIP BLED .....	38
4.2.2 Cost-center accounting in LIP BLED.....	38
<b>5. POSSIBLE FURTHER STEPS FOR LIP BLED .....</b>	<b>39</b>
<b>5.1 Possible improvements of management control indicators in LIP BLED</b>	<b>40</b>
5.1.1 Material-related indicators.....	40
5.1.2 Other indicators .....	43
<b>5.2 Possible improvements of the cost and activity accounting system in LIP BLED .....</b>	<b>44</b>
5.2.1 Possible improvements of the cost-type accounting .....	44
5.2.2 Cost-center accounting .....	51
5.2.3 Cost-unit accounting in theory .....	56
<b>CONCLUSION .....</b>	<b>56</b>
<b>REFERENCE LIST.....</b>	<b>58</b>
<b>APPENDIX.....</b>	<b>1</b>

## LIST OF FIGURES

Figure 1: The alteration of the accounting functions by the management controller/treasurer .....	5
Figure 2: Systematization of indicators by Hans .....	10
Figure 3: Relations between indicators .....	11
Figure 4: Return on Investment.....	12
Figure 5: Rate of return – Liquidity indicator system (rate of return part) .....	13
Figure 6: Rate of return – Liquidity-indicator system (liquidity part) .....	13
Figure 7: Pyramid Structure of Ratios.....	14
Figure 8: Managerial Control Concept.....	15
Figure 9: Cash-flow (accounting) .....	17
Figure 10: Cash-flow (cost accounting) .....	17
Figure 11: Cost and activity accounting.....	20
Figure 12: Primary costs .....	22
Figure 13: Cost center with classification characteristics .....	25
Figure 14: Cost allocation sheet by Olfert .....	27
Figure 15: Cost allocation sheet by Preißler and Preißler .....	27
Figure 16: Integration of costs into cost-unit accounting.....	29
Figure 17: Total cost method .....	31
Figure 18: Cost-of-sales method .....	31
Figure 19: Income statement of LIP BLED .....	34
Figure 20: LIP BLED EBITDA .....	35
Figure 21: LIP BLED Gross operating income.....	35
Figure 22: Production volume of LIP BLED .....	36
Figure 23: Units/employee of LIP BLED .....	37
Figure 24: Units sold per profit-center .....	37
Figure 25: Other sales indicators.....	38
Figure 26: Table of contribution margins in LIP BLED .....	39
Figure 27: Cost-type structure.....	44
Figure 28: Operating income statement .....	46
Figure 29: Cost center plan suggestion for LIP BLED .....	52
Figure 30: Labour cost allocation example .....	54
Figure 31: Example of cost allocation at LIP BLED .....	55

## LIST OF ABBREVIATIONS

**CAS-ROW** – Cost allocation sheet-row  
**EVA** – Economic value added  
**LIP BLED** – LIP BLED d.o.o.  
**NOA** – Net operating assets  
**NOTPAT** - Net operating profit after tax  
**WACC** - Weighted average cost of capital

## **INTRODUCTION**

In general, it is known that with all the existing and accessible information worldwide, one of the big challenges for a company is not to find information, but to identify it and be able to transform relevant information into useful data and use it in a suitable way. It is no different in management control. There are enormous amounts of information about a company which can be analysed and there are many different ways to do so. The circumstances and all the activities in a company are a bundle of complex, diverse, and unstructured services. That is the reason why it is important to develop tools, which identify them and are able to create a structured overview and enable a company to regulate and convert this information into relevant data. A good working management control system with relevant indicators enables a company to recognise threats and risks and therefore react quickly enough to plan against them. The number of different management control indicators is too large for a company to analyse and at the same time, not all of the indicators would be relevant for an individual company. The key is to calculate only those indicators which are suitable for each company individually. It is important for the management of a company to sense the need of management control and actively support the development of it (Križaj, 2004, p. 52).

Once a company enters a market and has already asserted itself, one of the challenging tasks it has to face in the today's fast changing environment is to stay competitive. The fast changes are - among other things - a result of better and faster information exchange systems and again, an easy access to a countless number of information. Being able to adapt to those changes and recognise relevant information is therefore crucial for a sustainable business.

Adapting to changes means to be flexible within the organisation, which is now more than ever essential, since the demands and expectations on a company are increasing every year. As Koletnik (1996, p. 14) said, it is important for a management of a company to be able to have a quick response capability, which means to timely evaluate the advantages, weaknesses, opportunities, and threats in the environment and be able to respond to them appropriately.

In order to make decisions (new investments, strategic positioning in the market, implementing new products etc.), a company has to plan in advance. A good working management control system is the base for enabling the above-mentioned identification of relevant information, adaptation, flexibility, planning and much more.

More and more companies in Slovenia are beginning to understand the importance of management control. Through the internationalisation and capital commitment with

foreign companies, the importance and also quality of management control systems in Slovenia is increasing. According to Hočevar (1995, p. 42), the emphasis of the information gathered in a company has been changed from following the past occurrences to forming goals and tasks and searching for ways to achieve them.

The company, which I got the opportunity to work with for my thesis, LIP BLED d.o.o. (hereafter: LIP BLED), already has a management control system implemented. With the theoretical knowledge I gained during my studies and the practical knowledge I gained during my current job as a management controller, I am trying to analyse the management control system of this company and, if possible, recommend improvements.

As management control is too extensive to generalise in one thesis, I am trying to limit my work to two main topics. The first one will be management control indicators. I will choose to analyse the ones which are being used by the company LIP BLED and also indicators for which I believe would improve their existing management control system. The second topic I chose to add to my thesis is the cost and activity accounting, which I am discussing in the next chapters.

**The purpose** of my thesis is to research the field of management control and to demonstrate the importance of a management control system and a good working cost and activity accounting system within a company. It is intended for the management of the company LIP BLED, who will be able to use the information or the proposals of improvements for their management control system, for future strategic decision-making. My work is also intended for everyone, who is using and preparing that information to wit: Management controllers, accountants, analysts, and students of management control.

**The main goal** of my master thesis is to define the already existing management control system in the company LIP BLED and specially to develop propositions to improve the company's system in order to achieve better cost effectiveness. I am going to do this by using domestic and foreign literature, based on theoretical and practical experience.

Other goals of my work I can define as follows:

- To study the meaning, concept and importance of management control
- Analysing the current state of the company's management control system
- To find similarities/differences between the cost-accounting system in LIP BLED and the cost accounting systems in theory.

During the case study I am trying to answer the following **research question**:

In what ways could the management control system of LIP BLED be improved?

This main research question I will divide into three supplementary questions:

- Can the management control system be improved by implementing new indicators?
- Can the management control system be improved by implementing cost-type, cost-center or cost-unit accounting?
- Can the management control system be improved by changing the already existing cost-center plan?

In my master thesis I am using the descriptive approach, more precisely the **method** of description and the method of independent usage of deductive knowledge. I am trying to apply theoretical findings on the practical case of the company LIP BLED.

The theoretical part is based on the experience and advice from domestic and foreign authors in the field of management control and cost accounting. Using books, journals, articles, and other literature, I am trying to combine different approaches of authors and find similarities or differences. Based on my knowledge gained throughout my studies and my working experience in a German company, I am also giving some personal input and attempting to filter only the most relevant information, which help me with the analysis of the company.

In the practical part, my main research method will be a case study, with which I will analyse the current management control system of the company. This I am managing with the method of several unstructured interviews with the leading management of the company, the information from their bookkeeping, from their yearly reports and also other internal information.

Apart from the introduction and conclusion, the **structure** of the thesis is divided into four main parts.

In the first part (chapter 1 and 2) I am talking about the meaning and concept of management control systems. Also, I am discussing all the above-mentioned different interpretations more into detail. Furthermore, I am talking about the most important and used indicators and discussing their significance and information value.

In my second part (chapter 3) I am going a step further by briefly discussing the concept and meaning of management control and what it means to have an integrated cost and activity accounting system for a company. This part I will further divide into three parts: cost-type accounting, cost-center accounting, and cost-unit accounting.

The third part (chapter 4) is the first part of my practical work. In the first segment of my practical part I am briefly presenting the company LIP BLED and analysing their already existing management control system and I try to discuss possible improvements in the area of their management control indicators. This I am doing on concrete examples by showing the importance of the indicators.

In the fourth part (chapter 5), which is the second practical part, I will discuss and propose possible further steps and the possibilities of implementing cost-center, cost-type, and cost-unit accounting in a more detailed and complex way and why it would be important to do so.

## **1. MEANING, CONCEPT, AND DEFINITION OF MANAGEMENT CONTROL**

In order to understand management control, it is crucial to determine its position within a company. Management control is only one part of the accounting system of a company:

“Accounting systems have always been the base for planning, decision-making and controlling economic activities” (Abraham, Glynn, Murphy & Wilkinson, 2008, p. 3). A lot of German authors divide accounting systems into past- and future-oriented and into internal and external.

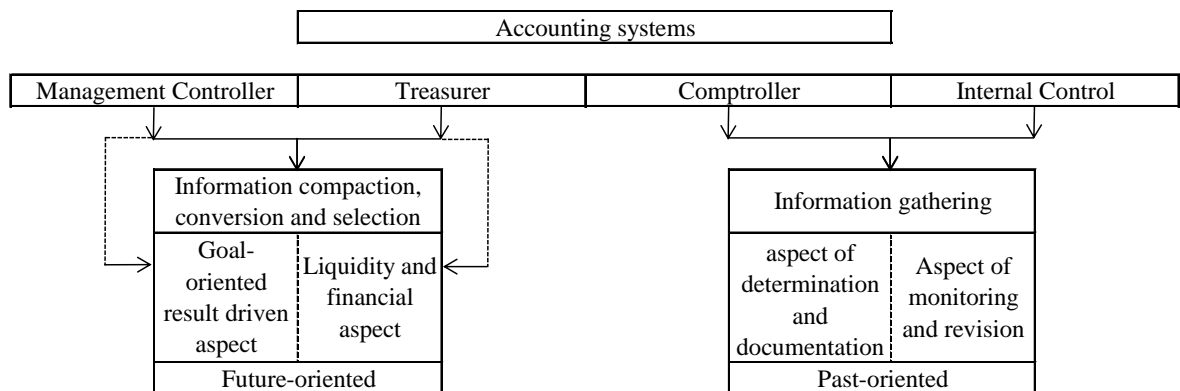
In one point of view, the accounting systems within a company can be divided into internal and external. The external accounting is regulated by law and provides data about a company, which has to be thorough, exact, in due time and are regulated by law and the IFRS Reporting Standards. The internal accounting is not as strictly regulated by law as the external. There is no law which regulates the use of management control, which is part of the internal accounting. According to Varnholt, Lebefromm and Hoberg (Varnholt, Lebefromm & Hoberg, 2012, p. 1), the purpose of the internal accounting is therefore to help the managers to achieve the goals of a company. They state, that the internal accounting consists of the cost accounting, which enables operational management control (liquidity and cashflow calculations), statement of changes in financial position and the investment calculation. They basically equate the terms “Cost accounting” and “Operating management control”.

Another interpretation and differentiation of accounting systems is being explained by Preißler (2014, p. 32). He divides it into future- and past-oriented accounting. The later can be compared with Varnholt's interpretation of the external accounting. According to Preißler, the past-oriented accounting serves solely for documentation purposes and gives information outward. On the other hand, the future-oriented accounting focuses on



processing and selecting the important information for a company and is therefore also internal.

Figure 1: The alteration of the accounting functions by the management controller/treasurer



Source: Preißler (2014).

Figure 1 shows that accounting through the implementation of management control becomes limited. The management controller and treasurer take over the functions of selecting, compacting and converting of the information and are future-oriented. The rest of the accounting on the other hand is left with the function of determining and documentation of the information (especially for external use) and is past-oriented.

Melavc and Novak (2002, p. 9) explained and translated (into Slovenian) the term “management control” with the following words: to regulate, to put in order, to estimate, to steer, to manage, to lead and not only to control.

“Management control is a functional, comprehensive steering instrument, which supports the management decision-making and steering process by goal-orientated preparation and processing of information. A management controller always makes sure that there is an economic instrument available, which above all helps to achieve the business goals through systematic planning and necessary monitoring” (Preißler, 2014, p. 2). This interpretation by Preißler is in my opinion well complemented by Hočevár's (2007, p. 19) statement that management control cannot be a managerial function, as it only supports the decision-making.

Turk (2007, p. 226) defines management control as a modern, German version of forming information for internal purposes of a company, especially for the needs of its management and it gathers those components, which are not part of bookkeeping, that is, budgeting and accounting analysis.

Ossadik and Ossadik (2003, p. 10) went a little further with the interpretation of the functions of a management controller, saying there are five:

1. Budgeting,
2. Strategic planning,
3. Cost-and activity accounting,
4. Internal reporting
5. Capital budgeting and divestments

One of the topics I am focusing more throughout my thesis is the cost-and activity accounting, which Ossadik and Ossadik listed under point three.

Pučko (2001) describes the essence of management control as a function of coordinating within the function of management, which follows a special paradigm of the management.

When it comes to management control, one can distinguish between **operations and strategic management control**. Piontek (2005) states that chronologically the operation comes before the strategic management control. It serves as a basis for an active coordination of a company as it helps to take measures when it comes to deviations of the plans within a short-term period up to three years. The strategic management control is long-term oriented, as it is meant to plan for five years in advance. According to Hoffjan (2009), the most important tasks of the strategic management control are the strategic planning and strategic supervision in order to ensure a sustainable existence of a company. With this information, chances and risks can be identified. Then again, the realization of those findings has to be carried out by the operations management control. The strategic management control helps a company, as stated by Risak and Deyhle (1992, p. 44), to increase the surviving odds in the international competition, if it is linked with the operations tools.

There are two main approaches when it comes to management control; the Anglo-American and German. The biggest difference between those two approaches is that the Anglo-American has implemented management accounting as a function within the company and is being carried out by the accountants, who take over the management control functions. In German companies the management accounting is not implemented and the function of management control has to be carried out separately.

The main characteristic of the Anglo-American approach, as also Koletnik (2004) sums up, is that the terms “management control” and “management accounting” are actually the same.

As I am working in a German company, I am, throughout my thesis, focusing only on the German approach.

Hočevar (1995) summed up the German interpretations of management control as follows:

- A modern concept to manage a company, which includes information, the functions to plan, analyze, control, and manage and are connected in a two-way relation; it is an instrument of managing, which surpasses the individual functions and aids the decision-making executives (Schröder).
- Managing or regulating the activities of a company considering the plan, in order to achieve the goals of the company (Heckert, Wilson).
- Support of management by helping with information (Hoffmann).
- Entirety of managerial-analytical activity, the goals of which are to relieve and improve the management of the company (Winterhalter).
- Role of a navigator on a ship – the company (Preißler, Haberland).
- Business and philosophical background mindset (Wickenhauser).
- Instrument of managing with a goal to plan, control and provide information (Horvath).

In Slovenia there are still critics of the use of the term “management control” and they refuse to use it. Below are listed Hočevar's (1995, p. 37) reasons for not using the term “management control”:

- The definition of the accounting function is already broad enough and clear; that is the reason why the introduction of management control to the accounting functions would mean, that it would be necessary to redefine the functions of (accounting) budgeting, (accounting) analysing and monitoring.
- The word “management control” is a foreign word (in Slovenian) and it is already difficult to explain it in its native language, but it is much more difficult to define it in the Slovenian language.
- “Management control” is an unsuitable term for a function, which supports the management-planning, regulation, leading and so forth.
- The introduction of the term “management control” means a constriction of the accounting functions to bookkeeping, which is not in accordance with the present understanding of accounting and the valid accounting standards.

I completely agree with Hočevar with the second and third point, as the term itself only uses confusion when being translated. But looking at it from the German perspective, meaning that there is no management accounting within the company, then the accounting is not carrying out all the management control functions. In other words, when discussing the terminology of management control, Hočevar prefers using the

term management accounting since the (management) accountants already carry out all of the management control functions.

To sum up, there are many interpretations, different approaches and differentiations when it comes to management control and what the functions of a management controller should be. In my opinion, the first important question when it comes to the terminology of management control should be, if a company has implemented management accounting, or not. If the answer is positive, then the (management) accounting does all the needed functions and the (term) management control is not needed at all. The accounting system is in that case internal, external, past – and future-oriented. If any of the above-mentioned functions do not apply to the management accounting, management control needs to be implemented and the accounting immediately becomes limited to the function of bookkeeping.

The three most frequent and in my opinion meaningful (when it comes to the positioning and purpose of management control within a company) characteristics about management control, which I found from different authors, are:

1. Management control is future oriented
2. Management control is internal
3. Management control serves as support for the decision-making executives

As already stated before, I am focusing on the cost and activity accounting and the management control indicators, which represent the basis for every management control system.

## **2. MANAGEMENT CONTROL INDICATORS**

Almost every company calculates and analyses some financial/management control indicators, for which it assumes a big informational value. As reported by Reichmann (1988, col. 2159), the most important features of an indicator are their information-character, quantifiability and specific form of their information. The information-character is given when an indicator bears reference to a relevant problem and a solution is needed. The quantifiability means that problems can be illustrated on metric scales. The specific form with cardinally measurable information ensures a compacted and prompt illustration of the operational activities. There are several challenges when it comes to those kinds of indicators:

- Identifying and calculating the right indicators specifically for the needs of each company individually
- When the right indicators are identified, it is crucial to find the right interpretations
- Not only focusing on indicators from the past, but mainly on the future

- Focusing also on non-monetary indicators
- Not focusing on too many indicators at the same time
- Etc.

According to Preißler (2014, p. 107) the management control indicators - in order to have the minimum requirements- have to:

- be goal-oriented
- be topical
- be economical
- be clearly defined, right interpreted and valid
- be correctly determined
- be flexible, user-friendly and goal-bound
- be perceived as early warning indicators
- be difficult to manipulate and ensure data-safety
- enable the consideration of non-quantifiable information
- discern the principle of responsibility and comprehensiveness

When calculating indicators, external factors have to be considered. If an indicator does not show the expected results, one has to consider all the possible circumstances, like high taxes on imported material, saturated markets etc. If those external circumstances exist for all the competitors, the negative result might not have such a heavy impact. For those purposes, benchmarking analyses are an effective way to compare a company with its competitors. According to Preißler (1995), benchmarking can be defined as an orientation value, guideline or even target figure for the management of a company.

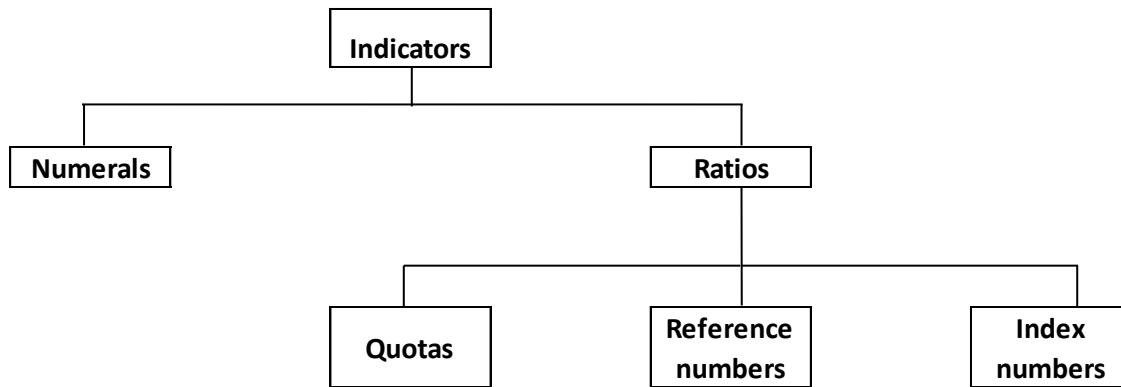
## **2.1 Management control indicators and indicator systems**

Hans (2009, p. 46) states that the planning and steering of the management controller can be supported by indicators and that they can be used for the following tasks:

- Comparing the development of circumstances in time
- Measuring relevant values of commercial units or whole companies
- Comparing the planned and actual values

As shown in figure 2, Hans divides indicators as shown below:

Figure 2: Systematization of indicators by Hans



Source: Hans (2009).

Hans (2009) defines the numerals as absolute amounts and merits, which are being planned and measured per period or due days. The Ratios represent relative values, where circumstances are being correlated with each other. The Quotas are indicators, which represent a proportion of a whole value. Reference numbers are made of diverse values which are being put together and represent a meaningful correlation. Index numbers incur when the relation of the characteristics of a value are being measured in different times.

Preißler (2014) goes a little further in regard of the division of indicators. He divides the so-called numerals (which he describes as absolute numbers) into individual numbers, summations, differences and average values.

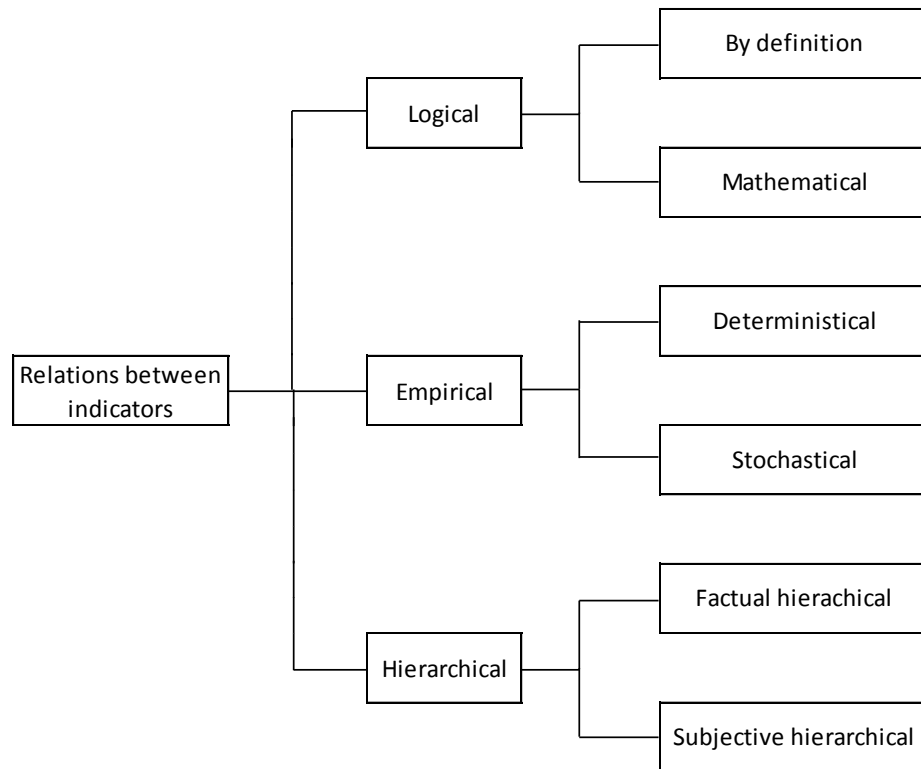
Hans not only divided indicators by their functionality, but also by the fields of work within a company. The four main fields of work according to Hans (2009, p. 47) are marketing, production, factors of production, and accounting. In all of those four fields of work, the indicators are being divided further into units. He also states that those units are only suggestions and are not complete.

The indicator systems Hans (2009, p. 52) divided into analytical and synthetical. The later ones compose several equivalent indicators and describe their functional correlation. The analytical indicator systems assume one “top indicator” which is gradually being dissociated into several “sub-indicators”.

### 2.1.1 Indicator systems

Ossadik and Ossadik (2003, p. 264) state that management control systems are a combination of indicators, which by assumption or empirical supported findings are interdependent. The possible relations between the indicators are shown in figure 3.

Figure 3: Relations between indicators



Source: Ossadik and Ossadik (2003).

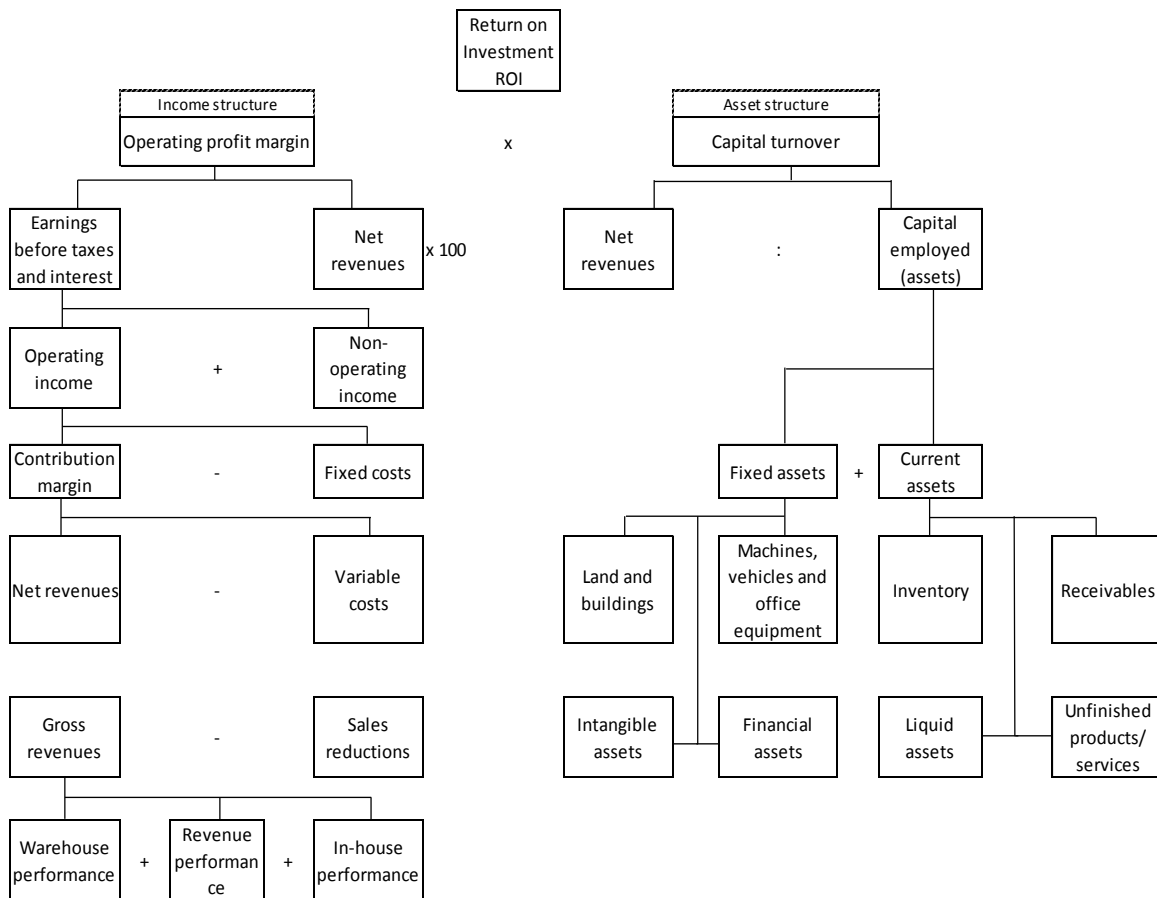
The logical relations between the indicators can be either mathematical or determined by definition. The basis for the mathematical relations is either mathematical rules or transformations. The overall profitability for example (calculated as the quotient of the profit and the total capital) can be widened by the revenue and then forming two new indicators; operating profit margin (calculated as the quotient of the total capital and the revenue) and capital turnover (calculated as the quotient of the revenue and the total capital).

On the contrary, empirical relations are ascribable to the general correlations in the reality. The existence of those correlations is being predicated by hypotheses or theoretical statements and (dis)proved by tests in reality. The significance of the deterministical relations is the bigger, the more other relations are being ruled out. The hypotheses have a stochastical characteristic, when the relations are based only on decisions made by people.

The indicators are in a hierarchical relation, when they are arranged in a ranked system. A criterion for determining the factual hierarchy can be for example the impact of the observed circumstance on the company's goals. If the differentiation for the indicators by their importance is being determined by a decision-maker, the ranking is based on a subjective hierarchical relation.

- Figure 4 shows one of the possible ways of calculating the **Return on Investment**, which is a widely used indicator system.

Figure 4: Return on Investment



Source: Preißler (2014).

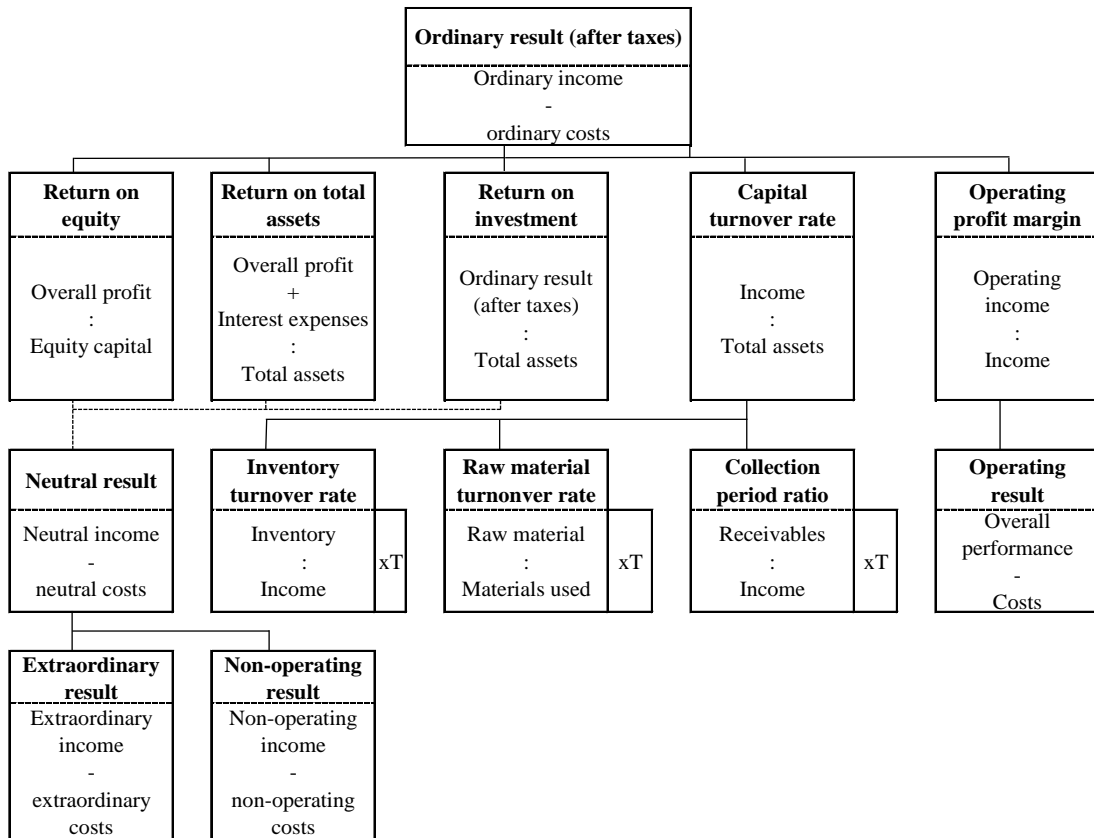
According to Jacobson (Jacobson, 1987, p. 470) the heterogeneity of companies makes it inappropriate to analyze a company only by the return. That is why the ROI is so important. It is one of the most known and used indicators to measure a company's performance, but it still comes with some limitations as for example the short-term orientation and lack of long-term vision. Nevertheless, Preißler (2008, p. 49) states that the ROI not only shows the impact of the operating profit margin, but also the capital turnover. The latter is often not considered or forgotten in practice. This division makes it a well-structured indicator with a clear overview.

– Figure 5 shows **The Rate of return -liquidity model**, which is another indicator system

One of the big differences to the ROI-system is that it does not combine the individual indicators mathematically, but in a logical connection. The lower indicators influence the higher ones, but are in no calculable connection. This model can be divided into two parts, the rate of return part (shown in figure 5) and the liquidity part (shown in figure 6).

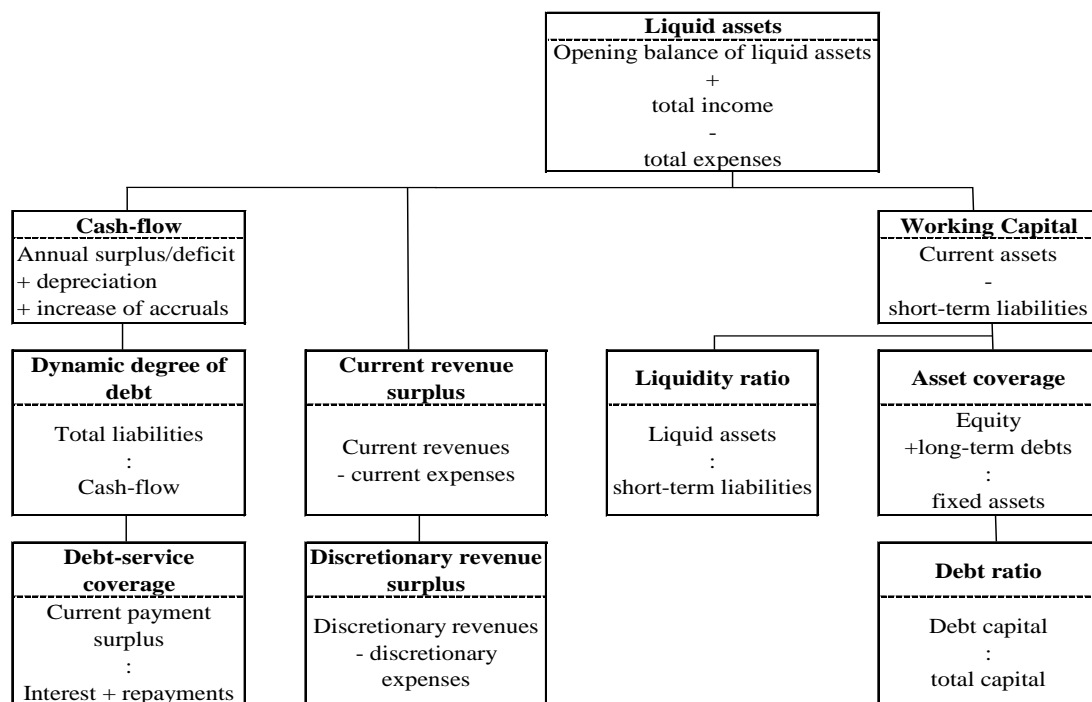


Figure 5: Rate of return – Liquidity indicator system (rate of return part)



Source: Preißler (2014).

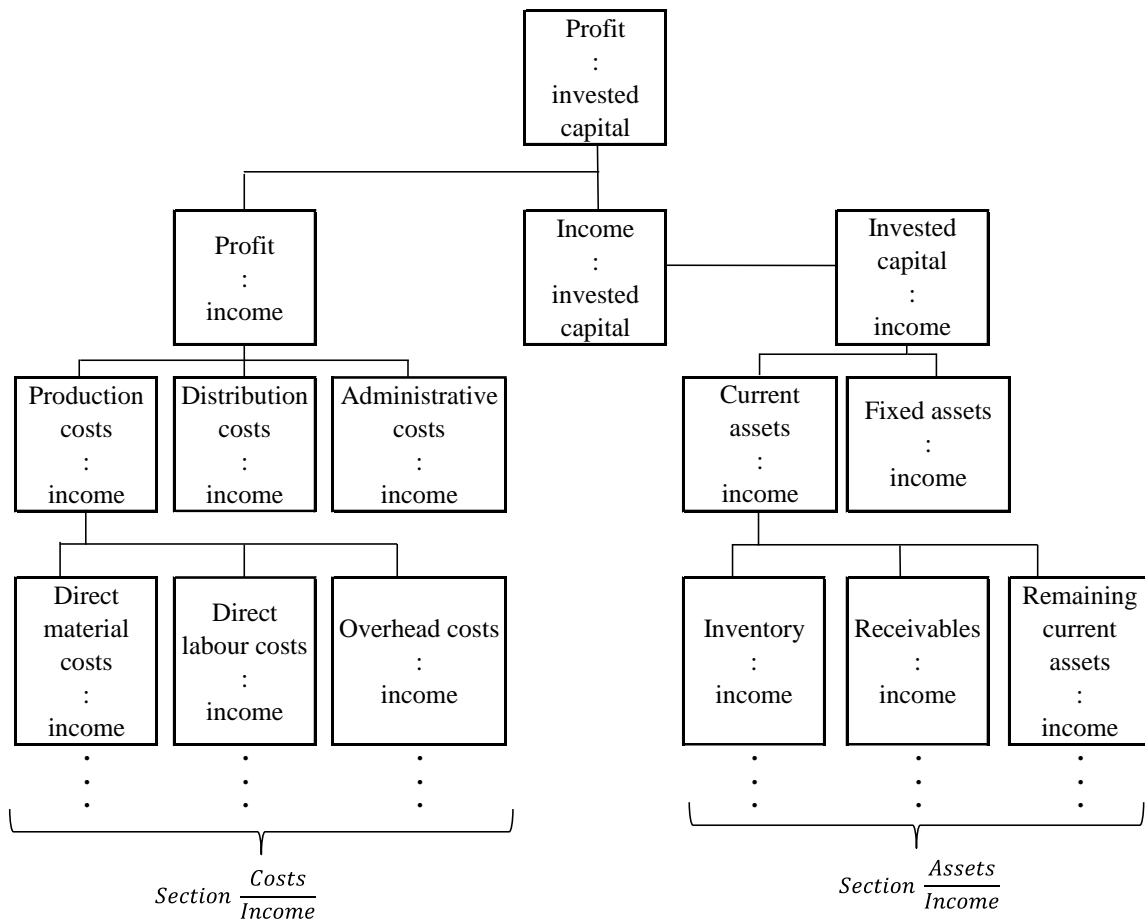
Figure 6: Rate of return – Liquidity-indicator system (liquidity part)



Source: Hans (2009).

- The **Pyramid Structure of Ratios** is an indicator system, shown in figure 7. Similar as the ROI-system, the individual indicators are connected mathematically:

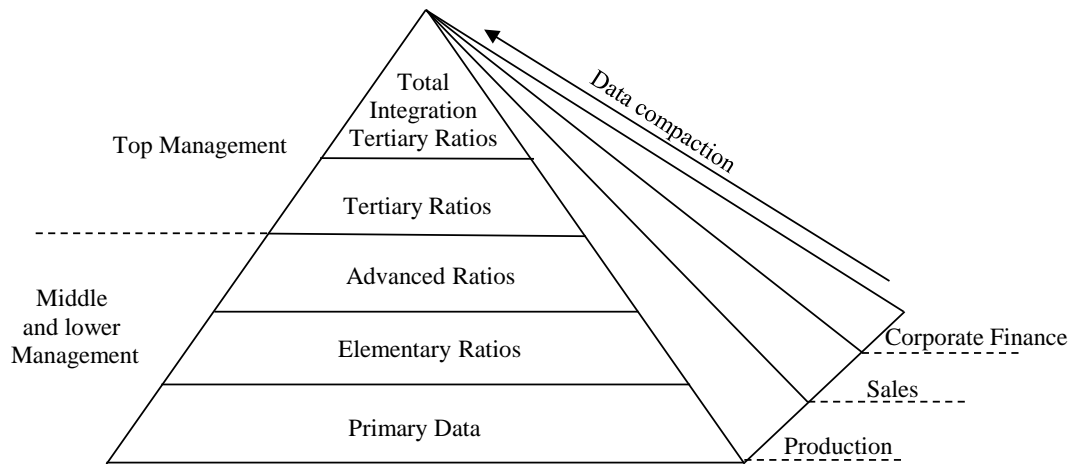
Figure 7: Pyramid Structure of Ratios



Source: Preißler (2014).

- The **Managerial Control Concept** is a three-dimensional pyramid, as shown in figure 8, which contains the areas of production, sales and corporate finance. The indicators are being calculated for every management level separately. According to Preißler (Preißler, 2014, p. 135), there are four different ratios:
  1. Elementary ratios, which are being calculated from the raw data
  2. Advanced ratios, which widen the elementary ratios by the usage of specific economic factors
  3. Tertiary ratios combine the elementary and advanced ratios for the top management in order to get decision-relevant information for every area
  4. Total Integration Tertiary Ratios should demonstrate the impact correlations between different areas by combining different tertiary ratios

Figure 8: Managerial Control Concept



Source: Preißler (2014).

### 2.1.2 Individual indicators

Various authors use different ways of dividing management control indicators. Preißler (2004, p. 113) states that a company should at least be able to divide their indicators into the following criteria:

- Indicators of success
- Productivity indicators
- Financial and liquidity indicators
- Risk indicators
- Indicators of different areas in a company

## 2.2 Useful management control indicators with examples

- Return on Sales

$$\text{Return on Sales} = \frac{\text{Operating result} \times 100}{\text{Net operating performance}} \quad (1)$$

$$\text{Return on Sales} = \frac{\text{Earnings before interest and taxes} \times 100}{\text{Net income}} \quad (2)$$

$$\text{Return on Sales} = \frac{\text{Earnings after interest and taxes} \times 100}{\text{Net income}} \quad (3)$$

Preißler (2008, p. 33) states that this indicator, as seen in the equations (1-3), expresses the relative result of the turnover. A sudden decrease of the return on sales does not necessarily have to cause a negative impact on the company, as a decrease can for example be the result of lower product (or service) prices in order to achieve a bigger market share.

– Return on Equity

$$\text{Return on Equity} = \frac{(\text{Operating result} + \text{imputed equity interest}) \times 100}{\text{Net operating performance}} \quad (4)$$

The significance of this indicator, shown in the equation (4) is - according to Preißler (2008, p. 34) - how much profit in regard to the equity, the equity providers draw. That means that it expresses the interest rate which the equity providers receive for their invested capital. It is therefore a significant indicator for possible investors.

– Total profit ratio

*Total profit ratio* =

$$\frac{(\text{Operating result} + \text{interest on external capital} + \text{imputed equity interest}) \times 100}{\text{Net operating performance}} \quad (5)$$

The total profit ratio, as seen in the equation (5), can determine how efficiently the invested capital (equity and external capital) works (Preißler, 2008).

– Marginal profit ratio

$$\text{Marginal profit ratio} = \frac{\text{Increase of operating result} \times 100}{\text{Increase of invested capital}} \quad (6)$$

The equation (6) shows the profitability of a new rising of capital. Preißler (2008) argues that this indicator shows how rewarding a conducted (or planned) investment is. It is crucial to note that the effectiveness of some investments starts to show only after an initial phase.

– Capital turnover

$$\text{Capital turnover} = \frac{\text{Net operating performance}}{\text{Total capital}} \quad (7)$$

$$\text{Capital turnover} = \frac{\text{Revenues}}{\text{Average capital employed}} \quad (8)$$

As said by Bennett (1966, p. 88), the capital turnover, as seen in the equations (7 and 8) “tells us how many dollars of sales are being produced from the employment of each dollar of capital”.

– Cash flow

There are many different ways to determine the cash flow of a company. The cash flow as defined from the financial accounting is shown in figure 9:

Figure 9: Cash-flow (accounting)

	Cash flow determination
	Net Profit (+)/(-) loss
+	Allocation to reserves
-	Dissolution of reserves
+	Allocation long term accruals
-	Dissolution long term accruals
+	Depreciation
=	Cash flow

Source: Preißler (2014).

The cash flow as defined from cost accounting is shown in figure 10:

Figure 10: Cash-flow (cost accounting)

	Cash flow determination
	Net operating result
+	imputed depreciation
+	imputed interest on equity
+	imputed risk
+	imputed entrepreneurs' salary
+	excessive accruals
+	other costs, which are not expenses
-	Income, which isn't revenue
=	Cash flow

Source: Preißler (2014).

– Debt factor

$$Debt\ factor = \frac{Net\ debt}{Cash\ flow} \quad (9)$$

$$Net\ debt = External\ capital - liquid\ assets \quad (10)$$

The debt factor, as seen in the equation (9), tells us how many years are necessary, to achieve a debt relief with the existing cash flow (Preißler, 2008). The equation (10) shows us, how to calculate the “Net debt”, which is a necessary indicator to calculate the debt factor.

– Working Capital

$$\text{Working Capital} = \frac{\text{Working Capital per ultimo} \times 100}{\text{Income per year/month}} \quad (11)$$

According to Preißler (2008), regardless of the financial plan, the creditors of a company can request a repayment of the short-term liabilities. Therefore it is crucial to secure these positions with liquidatable assets. This assurance can be made with the working capital, as seen in the equation (11), which should be amounted between 30 – 50% of the current assets.

– Break-Even-Point

$$\text{Break-Even-Point} = \frac{\text{Total fixed costs} \times 100}{\text{Contribution margin in \% of income}} \quad (12)$$

The Break-Even-Point, as seen in the equation (12), shows us the intersection between the total costs and the total income.

– Performance per Employee

$$\text{Performance per Employee} = \frac{\text{Net operational performance}}{\text{Number of employees (actual working hours)}} \quad (13)$$

The equation (13) tells us, how much of the net operational performance is made per capita. The number of employees considering only the actual working hours, as seen in the equation (14), is calculated by dividing the total performed working time with the average annual working time:

$$\text{Number of employees (actual working hours)} = \frac{\text{Total performed working hours}}{\text{Average annual working hours}} \quad (14)$$

The total performed working hours are all the productive working hours including overtime. The average annual working hours are calculated by subtracting the weekends, average (national) holiday days and average sick days from one calendar year (365 days).

– Economic Value Added (Hereinafter: EVA)

According to Peemöller and Geiger (2002, p. 173), the concept of EVA is to deliver information to the top management of a company, about which strategy increases or decreases value. Horvath, Gleich and Seiter (2015, p. 215) say that the EVA is an “excess profit concept”, which increases the accounting break-even point by the claims of the equity providers. The way EVA is being calculated is by subtracting the product of the net operating assets (hereinafter: NOA) and the Weighted Average Cost of Capital (hereinafter: WACC) from the net operating profit after tax (hereinafter: NOTPAT). It is shown in the equations (15 and 16).

$$EVA = NOTPAT - (NOA \times WACC) \quad (15)$$

NOA is the money needed to fund a project/investment and shown in the equation (16).

$$NOA = Total\ assets - Current\ liabilities \quad (16)$$

WACC is the average rate of return which a company plans to pay its investors.

EVA measures the periodic profit without considering future expectations. Peemöller and Geiger (2002, p. 173) also state that due to this periodic and past-orientation, it is linked with the risk of manipulation of the short-term achievements at the expense of long-term achievements.

### **3. COST AND ACTIVITY ACCOUNTING**

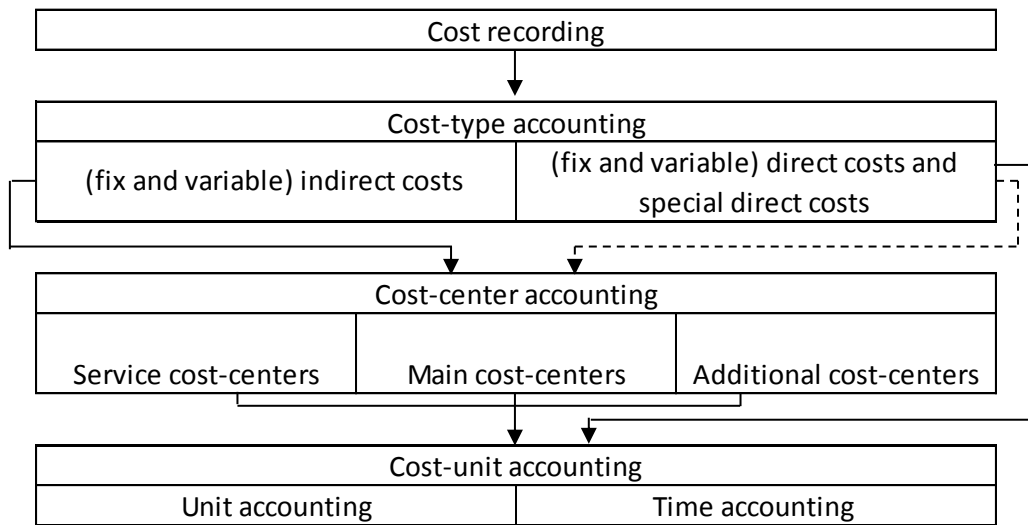
A working cost and activity accounting system can be a helping tool and become the core for decision-making.

According to Olfert (2003, p. 66), cost and activity accounting is a calculation which needs to be carried out continuously and its purpose is short-term based. It deals with the preparation of decisions about the use of already acquired goods. Olfert compares cost accounting with capital budgeting, saying that the latter is being used for the preparation of decisions about the acquisition of goods and therefore making it long-term oriented. His definition is therefore time-based.

Preißler and Preißler (2015, p. 6) state that the cost and activity accounting should ensure transparency and an unobstructed flow of all funds and activities between procurement, production and distribution within a company.

Cost and activity accounting is not based on any statutory basis. This is why a lot of companies still have not implemented any kind of cost accounting system. Other than most fields of business administration, cost accounting is not dependent on the law. Due to the ongoing changing operational needs, the methods of cost accounting are constantly being modified. Figure 11 represents the different steps of the cost and activity accounting.

Figure 11: Cost and activity accounting



Source: Preißler and Preißler (2015).

According to Preißler (2014, p. 151), a cost and activity accounting system has to ensure the following standards:

- It enables an objective determination of all the costs in a company
- It enables a better productivity and cost-benefit ratio
- It enables an objective evaluation of the contribution margins and profitability in different sectors inside a company
- It enables the evaluation of the different price categories for the products or services
- It gives information which are important for decision-making and it recognizes weaknesses in a company

One also has to distinguish between full costing and direct costing. The main difference between those two approaches is the distribution of the costs onto the cost units. The full costing approach distributes all of the incurred costs within a company onto cost units, whereas the direct costing approach does not distribute the indirect and fixed costs.

According to Wilkens (1997, p. 217), the main problem of the full costing system lies exactly in the distribution of all the costs onto the cost units. This leads to the risk of calculating the selling price too high. On the other hand, Wilkens (1997) states that the direct costing distributes mainly variable costs (particularly proportional costs) onto the cost units. Fixed costs are being treated separately whereby a proportional distribution is being avoided.



There are two main principles of allocating costs in the cost and activity accounting. Preißler and Dörrie (1999, p. 60) described them as follows:

- The principle of causation demands that each cost-unit gets allocated those costs, which have been caused only by it.
- Principle of coverage, which states that the allocation of the costs onto the cost-units does not happen in accordance with the actual wear and tear, but under the aspect of the attainable revenues.

### **3.1 Cost-type accounting**

The purpose of the cost-type accounting is to determine **which costs** have occurred in a company. Moews (1996, p.80) comments that cost-types occur through the classification of the usage of goods by their characteristics and type of goods. A cost-type is therefore the assessed activity-related usage of a specific type of good.

Preißler and Preißler (2015, p. 21) claim that a lot of companies make the mistake of measuring the operational results only with the incomes and costs from the financial accounting. They comment that those numbers are not appropriate, as they falsify the operating reality, do not deliver the required information and are frequently not up-to-date. They strongly argue that balance-sheet-policy motivated considerations (as depreciation, value adjustments and accruals), neutral costs (as additional payments of taxes, extraordinary maintenance- and restructuring costs) and incomes (as book profits, dissolution of accruals, rental income from third parties) falsify the actual operative generated earning power of a company. On the other hand, operating corrections and imputed costs (especially imputed depreciation and imputed interest), which are not represented in most business assessments, are essential for securing long-term maintenance of asset value.

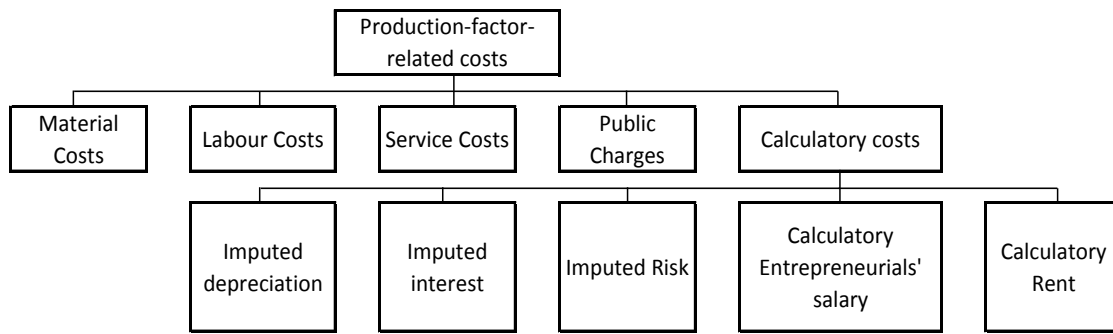
#### **3.1.1 Primary and secondary costs**

Moews (1996, p. 81) states that cost-types can only incur primary costs, whereas secondary costs have to be determined under the primary costs. Primary costs are being generated through the usage of external-based cost-goods, whereas secondary cost-types are being generated through the usage of self-made (in-house) activities. Examples:

Primary costs are external repairs, bought-in electricity, third-party advertisement etc. Secondary costs are self-executed repairs, self-generated electricity, self-made advertising material etc.

Olfert, who states that primary costs can be direct or indirect and are production-factor-related, divided them like shown in figure 12:

Figure 12: Primary costs



Source: Olfert (2003).

### 3.1.2 Imputed costs

Moews (1996, p. 95) claims that the purpose of imputed costs is to measure all the consumption of goods, which influences the performance during the production process (regardless if its expenses occur in the same extent or not).

According to Olfert (2003, p. 111) there are the following imputed costs:

- Imputed depreciation whose purpose - according to Rudorfer and Fiedler (2005, p. 52) - is to measure a technically and economically realistic estimation of the actual depreciation of an asset being used in a company. The biggest difference to the (usual) financial depreciation is that not the acquisition value is being depreciated, but rather the replacement value.
- Imputed (equity) interest, which as stated by Rudorfer and Fiedler (2005, p. 54) is being assessed, because there is no item for interest of equity (only external capital). In order to compensate the fact that equity is not being invested in any further (interest-bearing) investments, an imputed equity interest is appropriate to asses.
- Imputed risk, which according to Moews (1996, p. 110) is determined by the degree of probability that a risk-loss will occur.
- Imputed entrepreneurs' salary, which - as said by Rudorfer and Fiedler (2005, p. 60) - addresses entrepreneurs and managing partners and their profit distribution.
- Imputed rent, which can be captured, if an entrepreneur provides private office rooms or premises of any kind for the operational use.

### 3.1.3 Neutral costs

Koch (2004, p. 27) says that “neutral costs either did not occur for the realization of operating purposes or are skewing the “normal”, comparable operating result”. That is the reason why they are not considered in the cost-type accounting.

Olfert (2003, p. 84) states that costs which do not lead to any expenses represent neutral costs and are not to be considered in the cost-type accounting.

Koch (2004, p. 27) also divides the neutral costs into:

1. Extraordinary costs, which occur because of unusual business transactions. Even though these costs could occur for operations purposes, they could not be attributed to any performance (like currency losses).
2. Costs related to other periods occurred not in the relevant financial year/period (like additional payment of taxes).
3. Non-operating costs, which did not occur for the realization of operations purposes (like donations, losses from financial investments etc.).

### **3.2 Cost-center accounting**

Different authors have defined diverse functions of the cost-center accounting:

The control of profitability has been mentioned as one of the main functions by Haberstock and Breithecker (2002, p. 104), Koch (2004, p. 67) and Olfert (2003, p. 139).

Haberstock and Breithecker (2002, p. 104) comment that demonstrating the activity-relations within a company is one of the main functions. Olfert (2003, p. 139) -in my opinion - stated (with other words) the same, when he defined the implementation of internal cost allocation as one of the functions of the cost-center accounting.

Koch (2004, p. 68) argues that with the given information from the cost-center accounting, the ones responsible for the costs can be informed and also budgeting guidelines are given. Haberstock and Breithecker (2002, p. 105) came to the same conclusion by saying that one of the main functions is to deliver relevant costs from individual operation areas for planning purposes (like budgeting).

There are many diverse definitions from other authors about the functions of cost-center accounting, but all authors agree that one of the main functions and purposes is to determine, **where the already determined costs have occurred** in a company. During the cost-type accounting, the costs have already been determined and classified according to their type. After that, those costs have to be dispensed onto operations areas, where they have incurred.

Once it is known where the costs in a company have occurred, those costs can then be allocated further onto the created activities (cost-unit accounting). According to Preißler and Preißler (2015, p. 58), if a company has extreme homogeneity and clarity regarding operations relations, the cost-center accounting is not a necessity. In such a case, the whole company is one cost-center. With an increasing complexity and heterogeneity, an implementation of different cost-centers is crucial.

There are three different types of cost-centers:

- Main cost-centers
- Additional cost-centers
- Service cost-centers

As stated by Haberstock and Breithecker (2002, p. 113), the **main cost-centers** are all cost-centers, whose costs are not being allocated onto other cost-centers, but directly onto cost-units. Preißler and Preißler (2015, p. 61) add that an own overhead rate is being calculated for the main-cost centers and that they occur in the primary activities within a company. Usually, in a manufacturing company, main cost-centers are costs which occur in the production, administration and distribution. Ehrmann (1992, p. 80) also adds parts of the research and design costs as main cost-centers.

Similarly, as with the main cost-centers, an own overhead rate for the **additional cost-centers** is being calculated. The difference to the main cost-centers is that these costs are oriented towards secondary activities within a company. Ehrmann (1992, p. 81) states recycling costs or costs which occur for side products as additional cost-centers.

Haberstock and Breithecker (2002, p. 113) describe the **service cost-centers** as cost-centers, whose costs are not being allocated directly onto cost-units, but first onto other cost-centers. No overhead rate is being calculated for the service cost-centers. The costs, which have been gathered on the service cost-centers are being allocated further onto the main- and additional cost-centers.

### 3.2.1 Cost-center plan

In order to organise all the cost-centers in a company, it is advisable to arrange a cost-center plan. Every company has a different structure and therefore each company has an individual cost-center plan.

Wilkens (1997, p. 141) states that all the cost-types have to be allocated onto the cost-centers by the principle of causation. That means that the costs should be imputed to those cost-centers, where they occurred or will occur. This way of imputation is possible only with direct cost. Overhead costs have to be imputed via scales onto the cost-centers.

Examples of the above-mentioned scales are:

- Headcount for the allocation of company-party costs.
- Headcount for the allocation of parking lots or outdoor facilities (per square meter).
- Headcount for the allocation of coffee and kitchen costs, which can be divided evenly on every employee.
- Machinery in operation (in hours), which can be used for the allocation of the tool costs in the production.
- Square meters, which can be used for the allocation of rental costs.
- KWh consumption, which can be used for the allocation of electricity costs in the production.
- The number of used PCs or Laptops in a company is a fair scale to allocate IT-related costs.
- Actually worked hours in production, where the used machines can be traced back to the product.
- Etc.

An example of a cost-center plan with classification characteristics was given by Preißler and Preißler as seen in figure 13 (Preißler & Preißler, 2015, p. 62):

*Figure 13: Cost center with classification characteristics*

<b>Cost-center group</b>		<b>Classification characteristics</b>
General area/ distribution service centers		These are service cost-centers, which serve the company but do not generate any direct and applicable services for the market. Their services are being claimed by all the cost-centers. Examples: Buildings, properties, boiler house, power supply, IT, social services.
Production area	Production main- and additional centers	These are the production centers, which are directly involved in the production process. Examples: Milling shop, turning shop, drilling, assembly, paint shop, sewing.
	Production service centers	Cost-centers, which are involved only indirectly in the production process. They support the production without working directly on the product. Examples: Production planning, technical supervision, tool making, repair shop, design office, handyman (like carpentry, joinery, locksmith's shop), possibly payroll office.
Research and construction area		Cost-centers of the research and construction area. Examples: Basic research, design office, development workshop, laboratory, patent office, scientific library, scientific documentation.

(table continues)

(continued)

Figure 13: Cost center with classification characteristics

Cost-center group		Classification characteristics
Area of the material		Cost-centers which serve for the procurement, acceptance, examination, storage and issue of the overall material usage. Examples: Purchasing, storage of raw, auxiliary and consumable materials (not finished goods storage!), incoming goods inspection.
Administrative area		Cost-centers of the corporate management, finance and accounting departments, planning and statistics, operating management, personnel office, general administration.
Distribution area		The overall distribution organisation (Sales, advertisement, sales promotion, marketing, branch offices), finished goods storage, shipping and fleet, customer service.
Neutral area		Non-operating area, whose costs and incomes are being gathered by the financial accounting, but have no causal link with the operating result; Cost-centers which belong to the company but are not part of the operating business. Examples: outsourced gardening, recreation home, dog breeding.
Segregation area/ neutral area		In the segregation area the costs are being allocated for vacant operating buildings/ areas which are not being used or discontinued and unused capital assets, because they should not be considered in the cost allocation sheet. Neutral expenses and incomes like the counterparts for the calculable depreciation can be collected in the neutral area in order to guarantee a reconciliation with the data of the financial accounting.

Source: Preißler and Preißler (2015).

### 3.2.2 Cost allocation sheet

Cost-center accounting is usually being performed with the help of a cost allocation sheet. According to Mayer and Neunkirchen (1988, p. 87) its main purpose is the allocation of the indirect costs (cost-types) onto the cost-centers, by complying with the principle of cost causation.

Olfert (2003, p. 141) states that in industrial companies, the cost allocation sheet should have the basic structure as shown in figure 14:

Figure 14: Cost allocation sheet by Olfert

Cost-centers	Numbers from the financial accounting	General area	Area of the material	Production area	Administrative area	Distribution area
Cost-types						
Direct costs						
Indirect costs						

Source: Olfert (2003).

According to Olfert, the indirect costs (all the occurred costs in the company which cannot be allocated directly onto the cost-units), are positioned vertically. The direct costs are not being included in the calculation because they can be allocated directly onto the cost-units. They are nevertheless included for information purposes. When calculating the overhead rates (in a later stage), the direct costs represent the reference sizes.

The numbers from the financial accounting should be the numbers, which have already been “corrected” with the imputed costs and the neutral costs already eliminated. Figure 15 is another, more precise example of a cost allocation sheet.

Figure 15: Cost allocation sheet by Preißler and Preißler

Cost-centers	Numbers from the financial accounting	Service cost-centers	Material cost-centers	Production main cost-centers	Administrative cost-centers	Distribution cost-centers
Cost-types						
(Direct costs)						
Indirect material						
Indirect labour						
Salaries						
Cost of energy						
Maintenance						
Rental costs						
Imputed costs						
Sum primary costs						
Apportionment general cost-centers						
Apportionment production service cost-centers						
Sum secondary costs						
Total costs						

Source: Preißler and Preißler (2015).

The indirect costs from the cost-type accounting are being allocated directly onto the cost allocation sheet as seen in figure 15. The direct costs which have been incurred in the cost-type accounting are being allocated directly onto the cost-unit accounting and are irrelevant in the calculation in the cost-center accounting and cost allocation sheet (therefore they are presented in brackets). The indirect costs which are being used in the cost allocation sheet are being processed into overhead rates and later used in the cost-unit accounting.

### *3.2.2.1 Preparation of the cost allocation sheet*

Several authors determined different steps of the process for creating the cost allocation sheet. The three steps, which were in my opinion stated most frequently (for example Olfert (2003, p. 151) and Preißler and Preißler (2015, p. 68), were the following:

1. Allocating the primary indirect costs onto the cost-centers.

Once the numbers from the financial accounting are “corrected”, the allocation of the primary indirect costs onto the cost-centers can begin. It is important not to mix the direct with the indirect costs.

2. Allocating the secondary indirect costs (internal activity allocation), especially allocating the costs of the service cost-centers onto the main- and additional cost-centers.

Once the primary costs from the cost-type accounting have been identified and allocated onto main-, additional- and service cost-centers, the internal activities between cost-centers have to be included. An example of an internal activity between cost centers, as stated by Preißler and Preißler (2015, p. 71) can be, if the production planning department prepares activities for all the production main cost-centers, without receiving any activities back.

3. Determining the overhead rates in order to consider the indirect costs in the calculation which will follow later on.

As reported by Olfert (2003, p. 158), the overhead rates are being determined by dividing the individual indirect costs from the main cost-centers with the reference values of each main cost-centers.

When calculating the reference values, the direct costs are needed and that is the reason they play an important role in the cost allocation sheet.

Examples of how to calculate overhead rates:



$$\text{Material overhead rate} = \frac{\text{Indirect material costs}}{\text{Production material}} \times 100 \quad (17)$$

$$\text{Production overhead rate} = \frac{\text{Indirect production costs}}{\text{Production wages}} \times 100 \quad (18)$$

$$\text{Administration overhead rate} = \frac{\text{Indirect administration costs}}{\text{Production costs}} \times 100 \quad (19)$$

$$\text{Distribution overhead rate} = \frac{\text{Indirect distribution costs}}{\text{Production costs}} \times 100 \quad (20)$$

The material overhead rate, shown in the equation (17), is being calculated by dividing the indirect material costs with the production material. The production overhead rate, shown in the equation (18), is being calculated by dividing the indirect production costs with the production wages. The administration overhead rate, shown in the equation (19), is being calculated by dividing the indirect administration costs with the production costs. The distribution overhead, shown in the equation (20), is being calculated by dividing the indirect distribution costs with the production costs.

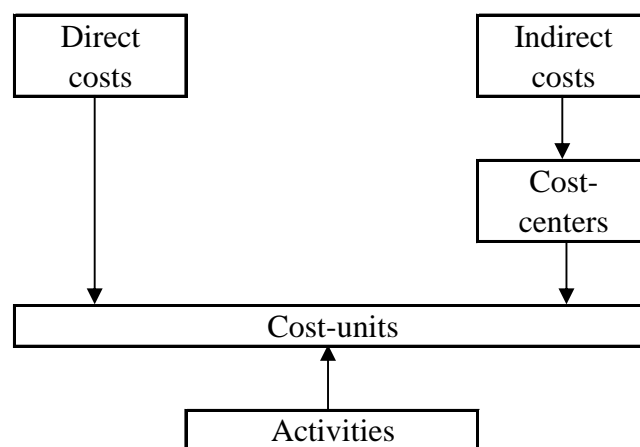
### 3.3 Cost-unit accounting

The purpose of the cost-unit accounting is to determine, **for what purpose the costs** have occurred in a company.

Haberstock and Breithecker (2002, p. 143) state that the cost-unit accounting is the last step of the cost and activity accounting. After the costs have been gathered and allocated onto the cost-centers, they have to be allocated further onto the cost-units.

Figure 16 shows how all the costs have been separately integrated onto the cost units. The direct costs go straight into the cost-units, whereas the indirect costs allocate first onto cost-centers, which later on integrate onto the cost-units.

Figure 16: Integration of costs into cost-unit accounting



Source: Olfert (2003).

Haberstock and Breithecker (2002, p. 143) state that the cost-units are operational activities, which cause the consumption of goods and services.

Preißler and Preißler (2015, p. 83) determined the three different types of cost-units as follows:

- **Main cost-units** are activities, whose creation and distribution are the actual subject of the company
- **Additional cost-units** are activities, whose creation is in a technical or economical connection with the creation of the main cost-units. Besides the main cost-units, they are offered on the market.
- **Service cost-units** are activities, whose outcome for the usage is intended within the company. They indirectly serve for the creation for the main- and additional cost-units (like self-created assets, in-house maintenance)

Bestmann and others (2001, p. 633) states that cost-unites are in general operational services, whose costs have to be covered by sales proceeds or internal allocations. Cost-units are above all saleable products/services, whether or not the products/services are being produced within the company or used as merchandise.

There are two different types of cost-unit accounting:

- Cost-unit period accounting
- Unit-costing

### 3.3.1 Cost-unit period accounting

The cost-unit period accounting, which is also called the short-term income statement, determines the incurred costs within a period of time by pre-structured cost-types.

Preißler and Preißler (2015, p. 85) claim that this kind of accounting ensures information about how the overall result spreads onto individual cost-units or cost-unit groups.

According to Schierenbeck (1999, p. 648), the cost-unit period accounting is divided into three steps:

- The allocation of the direct costs from the cost-type accounting, directly onto the cost-units.
- The allocation of the indirect costs with the help of scales from the cost-type accounting, indirectly onto the cost-units. The basis for this is the cost allocation sheet and the determined overhead rates.

- The inclusion of the period performances, divided into cost-units and the determination of the short-term operating profit.

The operating result within a period can be determined by two different methods:

- Total-cost method
- Cost-of-sales method

As stated by Olfert (2003, p. 207) the **total-cost method** is the method usually used when the annual period-result of a company has to be determined. The total costs of a financial period, which are structured by cost-types, are being contrasted with the total operations incomes.

*Figure 17: Total cost method*

<b>Total cost method</b>
Revenues (adjusted with sales reductions) +/- change in inventory of (un)finished goods + other capitalised services
= overall performance
- operating costs
= Operating performance

*Source: Olfert (2003).*

As seen in figure 17, the change in inventory is being considered, because in many cases the created products/services are not sold in the same period of time.

Olfert (2003, p. 214) states that in the **cost-of-sales method** the costs are being contrasted with the incomes of the sold goods (shown in figure 18). Seeing as only the sold goods are being considered, the change in inventory is not observed.

*Figure 18: Cost-of-sales method*

<b>Cost-of-sales method</b>
Revenues (adjusted with sales reductions) - Production costs of the performed services for achieving the revenues
= Gross performance of the revenues
- Distribution costs - General administrative costs - Other operational costs
= Operating performance

*Source: Olfert (2003).*

The total costs of the individual products or product groups are gathered from the unit-costing and the revenues from the accounting.

### 3.3.2 Unit-costing

As stated by Schierenbeck (1999, p. 648), the unit costing is based on the cost-unit period accounting. There are numerous different types of unit-costing calculations, but I am not discussing them in detail in this thesis. All those different types of unit-costing calculation can be performed as preliminary calculation, interim calculation, and post calculation.

The preliminary calculation which is also known as the offer calculation is being carried out before any activity. Preißler and Preißler (2015, p. 90) state that its purpose is to determine the expected consumption of goods with the presumably correct valuation. AS no statement about the actual costs can be made at this particular time of the preliminary calculation, the direct and indirect costs have to be calculated as target values (planned costs).

The interim calculation is according to Haberstock and Breithecker (2002, p. 146) important for cost-units with a long production period (such as heavy engineering, aviation industry, large-scale constructions etc.).

The post calculation is being carried out after the activities in a company have already happened and is based on actual costs.

## **4. INTRODUCTION OF LIP BLED D.O.O.**

The company LIP BLED d.o.o. is a timber industrial company, which specializes in the manufacturing of wooden doors. It is a medium-sized company with 295 employees (31. December 2016).

The vision of LIP BLED is as follows: LIP BLED d.o.o. aims at becoming an internationally successful company with the renowned trade mark lipbled. It strives to achieve an important position in Central Europe, to assume a leading role in Slovenia and Southeast Europe, and to play an important part in the concentration and reorganisation of the regional timber industry. LIP BLED d.o.o. will become an essential player in the EU's wood-processing industry. In Slovenia and across Southeast Europe, lipbled will be made into a renowned trademark. Their mission is: "Our mission is to increase the satisfaction and living standards of our customers. In future, our products and services will still continue to meet high quality standards. We will continue to consider our customers' demands for high-quality products, timely delivery and competitive prices. Whether we are dealing with in-house affairs or customer

service, all employees at LIP BLED d.o.o. will remain true to the company's slogan "The Song of the Forest in your Home" with their fair treatment, resourcefulness, hard work and responsibility."

The Company LIP BLED was founded on the 17 May 1948. Since then there have been some organisational changes. In 1992 the company LIP BLED p.o. has experienced a reorganisation and became a business concern with seven companies with limited liabilities. Due to further restructuring and the privatization which was happening at that time, LIP BLED became public in 1997. In the year of 2007 the second phase of the privatization happened and the country stepped out of the co-ownership. In the same year, the company's new name became LIP BLED, which works as a uniform with profit centers that are organisationally divided into:

- PC Notranja vrata (manufacturing of internal doors)
- PC Maloprodaja (there are sales stores which are either owned by LIP BLED or work as franchises)
- PC Inženiring
- Direkcija (top management, financial and general sector)

This is the practical part of the thesis and is divided into two main parts. In the first part I am analysing the current control management situation at LIP BLED. This I am doing by presenting their control management indicators and showing how far they went with implementing a cost and activity accounting system.

Regarding the control management indicators, I am limiting my focus on the overall picture, the production area (specifically the material costs) and the sales department. The part of the cost and activity accounting system is, as already described in the theoretical part, sectioned into cost-type-, cost-center-, and cost-unit accounting. The focus lies with the cost-type and cost-center accounting, in which I give concrete examples and suggestions of improvements. I am approaching the cost-unit accounting only in theory and how its implementation could improve their already existing system.

For reasons of confidentiality, no employees, numbers, products or any kind of actual data from LIP BLED are shown in this thesis. All the indicators, tables and calculations are based on fictional numbers or are merely not displayed in the tables and are left empty.

#### **4.1 Control management indicators of LIP BLED**

The company LIP BLED calculates and follows several indicators on a monthly basis. It uses indicators for every profit center separately and also for the company as a whole.

The first part shows an overall picture of the company, the second part the production and the third part the sales department.

#### 4.1.1 LIP BLED overall picture

LIP BLED produces **income statements** on a monthly basis, for every profit center separately and one more cumulated for the whole company. Figure 19 shows how the income statement of LIP BLED is structured.

*Figure 19: Income statement of LIP BLED*

<b>Income statement</b>
1. Net turnover
a) Non-domestic market
b) Domestic market
2. Change in the value of inventory of (un)finished goods
3. Other operating income
<b>4. Gross operating income (1+2+3)</b>
5. Costs of goods and materials
6. Labour costs
7. Write-downs
8. Other operating expenses
9. Internal allocation of costs
10. Other internal services as agreed
<b>11. Operating expenses (5+6+7+8+9+10)</b>
<b>12. Operating result (4+11)</b>
13. Financial income from shares
14. Financial income from loans granted
15. Financial income from operating receivables
16. Financial impairment expenses
17. Financial expenses from financial liabilities
18. Financial expenses from operating liabilities
19. Other income
20. Other expenses
<b>21. Net result of the observed period (before tax)</b>
22. Income taxes
23. Deferred tax
<b>24. Net result of the observed period</b>

*Source: LIP BLED d.o.o. (2017b).*

In order to achieve an organised overview, the company calculates the costs for each of the above listed positions in comparison with the turnover.

Example shown in the equation (21):

$$\textit{Proportion of labour costs} = \frac{\textit{Labour costs}}{\textit{Total turnover}} \times 100 \quad (21)$$

With this approach, LIP BLED detected a slight percent increase of the costs of goods and materials (when dividing the costs of goods and materials with the total turnover), while comparing numbers from 2016 to 2017 and knows that it has to react and find the reason which caused this increase of costs. More about this issue in chapter 5.2.

LIP BLED also calculates the **EBITDA** (earnings before interest, taxes, depreciation and amortization) for every profit center individually and also cumulatively for the whole company. Figure 20 shows how the EBITDA is being calculated:

*Figure 20: LIP BLED EBITDA*

Operating result
+ Write-downs
= EBITDA

*Source: LIP BLED d.o.o. (2017b).*

One of the important indicators that LIP BLED follows is the **added value per employee**. The way it is being calculated is demonstrated in figure 21 and the equation (22):

*Figure 21: LIP BLED Gross operating income*

<b>Gross operating income</b>
- Purchasing costs of the sold goods and materials
- Costs of the used materials
- Costs of services
- Provisions
- Other operating expenses
<b>= Total added value</b>

*Source: LIP BLED d.o.o. (2017b).*

$$\textit{Added value per employee} = \frac{\textit{Total added value}}{\textit{Number of employees (actual working hours)}} \quad (22)$$

Some of the control management indicators, which LIP BLED calculates and tracks on a monthly basis are the following ones:

- Return on sales
- Return on equity
- Total profit ratio
- Capital turnover
- Cash-flow
- Working capital
- Break-even-point
- Others

The company calculates those indicators almost the same way as described in my theoretical part. In the future if a cost and activity accounting system will be integrated, when calculating indicators (using the numbers gathered from the cost and activity accounting), the results will differ from the present one, as the operating result will change. The indicators calculated with the numbers of the cost and activity accounting will show a more realistic picture of the company's situation.

Using the control management indicators LIP BLED can easily detect early irregularities and seeing as they provide the monthly updates they will be able to start immediate counter-measures.

#### 4.1.2 LIP BLED production indicators

- Production volume per product

LIP BLED tracks all of their main products and calculates their production volume. It compares it with previous years (mostly 2 years) and also does predictions for the future. Figure 22 demonstrates how LIP BLED differentiates their production volume per product.

*Figure 22: Production volume of LIP BLED*

Product type	Production volume 2015	Production volume 2016	Production volume 2017
Product 1			
Product 2			
Product 3			
Etc.			
Total			

*Source: LIP BLED d.o.o. (2017a).*

- Units produced per employee



Similar to the production volume, LIP BLED calculates, compares and predicts the units produced per employee for each of their main product-group separately and this is shown in figure 23:

*Figure 23: Units/employee of LIP BLED*

	2015	2016	2017
Product 1 Units/employee			
Product 2 Units/employee			
Product 3 Units/employee			
Product n Units/employee			

*Source: LIP BLED d.o.o. (2017a).*

#### 4.1.3 LIP BLED sales indicators

The sales indicators are being calculated for each profit-center and for LIP BLED in total. Their sales are divided into sales in Slovenia, in Ex Yugoslavian countries and in other countries.

– Units sold per profit-center

As seen in figure 24, the sold units are being separated per profit center and shown also for the past years to provide a comparison.

*Figure 24: Units sold per profit-center*

<b>Profit center</b>	2015	2016	Slovenia 2017	EX YU 2017	Other 2017	Total 2017
Internal doors						
Others						
<b>PC Notranja vrata</b>						
Products LIP Bled						
Merchandise						
Services						
<b>PC Maloprodaja</b>						
Products LIP Bled						
Merchandise						
Services						
<b>PC Inženiring</b>						
<b>Direkcija</b>						
<b>LIP BLED d.o.o.</b>						

*Source: LIP BLED d.o.o. (2017a).*

- Other sales indicators

As seen in figure 25, the indicators sales volume per employee, units sold per employee and price per unit are being prepared for each of the main products separately and on a monthly basis.

*Figure 25: Other sales indicators*

	2015	2016	2017
Product 1 Sales volume/employee			
Product 1 Units sold/employee			
Product 1 Price/ unit			
Product 2 Sales volume/employee			
Product 2 Units sold/employee			
Product 2 Price/ unit			
Product 3 Sales volume/employee			
Product 3 Units sold/employee			
Product 3 Price/ unit			

*Source: LIP BLED d.o.o. (2017a).*

## 4.2 Cost and activity accounting in LIP BLED

LIP BLED has a clear, transparent and well-organised management control system. It has already implemented some of the steps to provide for an integrated cost and activity accounting system. The base for a cost-type and cost-center accounting is already present in LIP BLED.

### 4.2.1 Cost-type accounting in LIP BLED

LIP BLED measures their operational results with the incomes and costs from the financial accounting, preparing income statements for every profit center. All the cost-types which are being considered by LIP BLED are demonstrated in figure 19.

### 4.2.2 Cost-center accounting in LIP BLED

LIP BLED already has a **cost-center plan** with over 60 cost centers. It has cost-centers for the following areas listed below and it is also separated by location:

- Different branches
- Management cost-centers
- Administration
- General area
- Marketing

- Purchasing
- Sales
- Warehouses
- Production steps
- Development
- IT and organisation
- Transportation
- Other

One of the most significant and meaningful indicators, which LIP BLED analyses is the **table of contribution margins per profit center**. Figure 26 collectively points out which profit center has a positive/negative contribution margin on a monthly basis:

*Figure 26: Table of contribution margins in LIP BLED*

<b>Profit center</b>	Contribution margin 2015	Contribution margin 2016	Slovenia 2017	EX YU 2017	Others 2017	Total 2017
Internal doors						
Others						
<b>PC Notranja vrata</b>						
Products LIP Bled						
Merchandise						
Services						
<b>PC Maloprodaja</b>						
Products LIP Bled						
Merchandise						
Services						
<b>PC Inženiring</b>						
<b>Direkcija</b>						
<b>LIP BLED d.o.o.</b>						

*Source: LIP BLED d.o.o. (2017a).*

## **5. POSSIBLE FURTHER STEPS FOR LIP BLED**

In the following two chapters (5.1 and 5.2) I am discussing possible improvements and further steps for LIP BLED. The first part consists of suggestions for implementing new management control indicators and in the second part I am discussing the possibility of implementing further steps for an integrated cost and activity accounting system.

## 5.1 Possible improvements of management control indicators in LIP BLED

All the indicators, which are mentioned in this part of the thesis should be calculated after the cost and activity accounting was performed. After the results of the cost and activity accounting are known, the given results can be used for calculating the indicators.

The sales- and production indicators calculated by LIP BLED are in my opinion on a high level and have a high significance. In addition, all these indicators are prepared on a monthly basis, which enables the company to react quickly in case of any changes.

### 5.1.1 Material-related indicators

After talking with the management of LIP BLED, one of the few issues they had was the material area. Compared to 2016, the costs of goods and materials increased for a few percentage points. The main reason for this increase, as believed by the management of LIP BLED, is a lack of qualified workers in the production. This may be true, but it will not answer the question as to where exactly in the company the increase occurs and which employees (if at all) exactly cause the increase.

Due to that slight increase, I decided to focus on the material-based management control indicators.

The reason for that increase might be possible to identify with the following indicators, which are all connected with material/goods costs:

– Material proportion

$$\text{Material proportion} = \frac{\text{Costs for consumables, supplies and goods} \times 100}{\text{Total turnover}} \quad (23)$$

This indicator, shown in the equation (23), expresses the total material costs in % of the total turnover of a company. This indicator is already being used by LIP BLED. With the help of this indicator, the company discovered the increasing material costs in the first place.

Preißler (2008, p. 167) stated that the reason for a change in this indicator might be a different production program or rather selling mix in order to push products with high contribution margins. Another reason might be more favourable or expensive purchasing sources. The last possible reason he gives us is a change from external procurement to in-house production.

- Material consumption per capita

In order to be able to calculate this indicator, as seen in the equation (24), the company needs to determine the number of employees calculated with the actual working hours:

$$\text{Material consumption per capita} = \frac{\text{Material costs}}{\text{Number of employees (actual working hours)}} \quad (24)$$

If the cost and activity accounting exists in a company and a well-structured cost-center plan is given, then the material costs can be, according also to Preißler (2008, p. 168), divided into cost-types or cost-centers. If there are large differences between individual employees, there is an immense chance of inefficiency, wastage or even thievery in a company.

- Raw material proportion of the total purchase

$$\text{Raw material proportion} = \frac{\text{Raw material purchasing} \times 100}{\text{Total purchasing}} \quad (25)$$

or

$$\text{Raw material proportion} = \frac{\text{Purchase of semi-finished goods} \times 100}{\text{Total purchasing}} \quad (26)$$

Preißler (2008, p. 169) states that only differentiated breakdown of the costs can lead to starting points regarding an improvement of the cost structures. The equations (25 and 26) show the proportion of the raw materials from the total purchasing. This breakdown of costs helps determining what kind of material lead to the increase.

- Proportion of the procurement costs in % of the purchasing volume

According to Preißler (2008), the procurement costs are the costs, which accrue in addition to the purchasing costs (like order costs, freight costs, salaries, wages etc.).

$$\text{Proportion of procurement costs} = \frac{\text{Procurement costs} \times 100}{\text{TPurchasing volume}} \quad (27)$$

This indicator, shown in the equation (27), can be used for separate orders or for an overall period.

- Average discount rate

$$\text{Average discount rate} = \frac{\text{Total discount} \times 100}{\text{Total purchasing before discount}} \quad (28)$$

This indicator, shown in the equation (28), represents the relationship between the discounts and the total purchasing.

- Proportion of purchases without discount

$$\textit{Proportion of purchases without discount} = \frac{\textit{Purchases without discount}}{\textit{Total number of purchases}} \quad (29)$$

If the number of purchases without discounts is low, Preißler (2008, p. 172) says that it usually means that the order quantities are too small. Calculating and tracking this indicator, shown in the equation (29), helps preventing a low quantity of orders.

- Average costs per order

$$\textit{Average costs per order} = \frac{\textit{Total procurement costs}}{\textit{Total number of purchases}} \quad (30)$$

Calculating this indicator, as seen in the equation (30), gives information about the cost per order. One can for example compare this indicator with previous years and compare it to the as-is situation.

- Required time per offer

$$\textit{Required time per offer} = \frac{\textit{Number of performed hours for procurements}}{\textit{Number of procurements}} \quad (31)$$

Similar as the equation (30), the required time per offer, shown in the equation (31), can be compared with previous years. If the time has risen in time, the process of procurement has to be quickened. As with any other indicator, if a well-organized costs structure and cost activity accounting are present in a company, it can be sectioned into more precise indicators. The procurement costs can be divided into packaging, freight costs, insurances etc., as it is possible in the case of rising procurement costs to determine which exact procurement costs have actually risen.

- Average storage period

$$\textit{Average storage period} = \frac{\textit{Number of units in a period}}{\textit{Turnover rate}} \quad (32)$$

According to Preißler (2008, p. 181), the lower the average storage period, shown in the equation (32), the faster the exchange goods for money happens. The turnover rate measures how often the average inventory within a specific period of time gets sold.

– Proportion of packaging material

$$\text{Proportion of packaging material} = \frac{\text{Packaging weight}}{\text{Sold weight}} \quad (33)$$

Another way to determine the increase of material costs can be to analyze the usage of packaging material, as seen in the equation (33).

To conclude the determination of the increase of the material costs, it is not necessarily only due to lack of qualified employees/workers in the production. The increase can be a consequence of many other reasons, as shown in the indicators above. I propose LIP BLED to track those indicators at least quarterly from now on and also for the last two years in order to determine the cause of the increase.

In the future, when using this basic, material-related indicator system LIP BLED can not only determine irregularities but also discover where they happened immediately. If sporadic incidents occur, the company would not always have to search for the cause from scratch, but already narrow it down in detail. In my opinion, having such integrated indicator systems would improve the already existing management control system and therefore give the decision-makers of LIP BLED a much better overview and especially flexibility in terms of reacting to irregularities. That is why I would suggest implementing more detailed indicator systems for every part of the company, not only for the material area.

#### 5.1.2 Other indicators

The **income statement** (chapter 4.1.1), which LIP BLED tracks on a monthly basis could be divided into more specific cost-types, which would allow a more precise overview of complete costs in the company. I am demonstrating this division in chapter 5.2.1. and it is part of the cost-type accounting. The result is an operating income statement; and all the cost-types can be analysed the same way as LIP BLED already practices it – dividing all cost-types by the total turnover.

As already stated in chapter 4, all the indicators calculated by LIP BLED can be prepared with the numbers, which arise as a result from the cost and activity accounting. In the future, when calculating indicators, the company should use the numbers of the cost and activity accounting in order to show a more realistic picture.

## 5.2 Possible improvements of the cost and activity accounting system in LIP BLED

As we have already seen in chapter 4, LIP BLED has implemented some steps of a cost and activity accounting system. The cost-type (chapter 5.2.1.) and cost-center (chapter 5.2.2) accounting are being shown on real examples in the next few chapters. The cost-unit accounting (chapter 5.2.3.) is being explained in theory with indications on which areas a functioning cost-unit accounting can improve in a company.

### 5.2.1 Possible improvements of the cost-type accounting

In order to get an even more transparent overview of the costs, LIP BLED would have to rearrange the cost structure, adapt this structure to the operating income statement and add imputed costs, as shown in figure 27. At the end, possible neutral costs can be subtracted.

- Suggestion of a rearranged cost structure

*Figure 27: Cost-type structure*

CAS- ROW	Cost-types	Year ____
		TEUR
1	Production material	
2	Purchased parts/ merchandise	
8	Indirect material	
9	Total material consumption	
10	External activity/ external labour	
11	Temporary work	
12	Wages	
13	Incidental wage costs	
14	Gross salaries	
15	Incidental salary costs	
16	Other personnel costs	
17	Total personnel costs	
18	Energy costs	
19	Maintenance	
20	Taxes/levies/dues	
21	Insurances	
22	Advertising costs	
23	Transport and traveling costs	
24	Vehicle costs	
25	Rental and lease costs	
26	Licenses	

(table continues)



(continued)

Figure 27: Cost-type structure

CAS- ROW	Cost-types	Year ____
		TEUR
27	General business costs	
28	Total indirect costs	
29	Imputed depreciation	
31	Imputed risk	
32	Total imputed costs	
33	Special production costs	
34	Special distribution costs	
36	Total costs	
50	Net operating performance	
52	Operating result	

Source: LIP BLED d.o.o. (2017b).

The CAS-Row is the row on the cost allocation sheet, which is demonstrated and explained in chapter 5.2.2.3.

The implementation of imputed costs would show a better and more realistic picture of the company situation. Comparing this cost structure with the figure 19 leads to the conclusion that the „new “structure provides a more detailed insight and gives the opportunity to analyze the company on a greater level of precision.

The operating result should be used when calculating the management control indicators from chapter 4.1.

#### 5.2.1.1 Operating income statement

Figure 28 represents an example of how the operating income statement could look in LIP BLED. It is a more detailed cost-type structure than that in the previous chapter to demonstrate a division of costs which is as detailed as possible.

Figure 28: Operating income statement

Operating income statement		LIP Bled d.o.o. Year___:
<b>CAS ROW</b>	<b>COST-TYPE (Revenue-type)</b>	<b>TEUR ACCOUNTING</b>
101	Incoming goods wood (door)	
102	Incoming goods glass (door)	
104	Incoming goods jamb (door)	
105	Incoming goods doorhandle	
106	Incoming goods locks (door)	
107	Incoming goods other	
108	Discounts received, bonuses	
109	Change of inventories	
110	Etc.	
100	Production material	
201	Purchased parts	
202	Merchandise	
200	Purchased parts/ merchandise	
<b>300</b>	<b>Production material/required goods (1+2)</b>	
401	Packaging material	
400	Packaging material	
501	Auxiliary and operating materials	
502	Etc.	
503	Etc.	
500	Auxiliary and operating materials	
601	Tool costs	
600	Tool costs	
700	Operational goods	
<b>800</b>	<b>Total indirect costs (4 to 7)</b>	
<b>900</b>	<b>Total material consumption (3 + 8)</b>	
1001	External activity	
1002	External labour	
1003	Etc.	
1000	External activity/ external labour	
1101	Temporary work	
1100	Temporary work	
1200	Wages	
1301	Incidental wage costs	
1302	Etc.	
1300	Incidental wage costs	
1400	Gross salaries	

(table continues)

(continued)

Figure 28: Operating income statement

Operating income statement		LIP Bled d.o.o. Year___:
<b>CAS ROW</b>	<b>COST-TYPE (Revenue-type)</b>	<b>TEUR ACCOUNTING</b>
1501	Social welfare costs	
1502	Employee education and training	
1503	Direct insurance	
1504	Vehicle use/ vehicle taxes	
1505	Etc.	
1500	Incidental salary costs	
1601	Employers' liability insurance association	
1602	Compensatory payments	
1603	Expenses for pensions	
1604	Etc.	
1600	Other personell costs	
1700	<b>Total personell costs (11 to 16)</b>	
1801	Electricity	
1802	Water	
1803	Gas	
1804	Etc.	
1800	Energy costs	
1901	Maintenance buildings	
1902	Maintenance machines	
1903	Repair work tools	
1904	Cleaning	
1905	Maintenance Harware/Software	
1906	Etc.	
1900	Maintenance	
2001	Taxes	
2002	Levies	
2003	Dues	
2004	Capital gains tax	
2005	Etc.	
2000	Taxes/levies/dues	
2101	Insurances	
2102	Etc.	
2100	Insurances	
2201	Advertising costs	
2202	Representation costs	

(table continues)

(continued)

Figure 28: Operating income statement

Operating income statement		LIP Bled d.o.o. Year__:
<b>CAS ROW</b>	<b>COST-TYPE (Revenue-type)</b>	<b>TEUR ACCOUNTING</b>
2203	Hospitality costs	
2204	Donations	
2205	Trade fair costs	
2206	Etc.	
2200	Advertising costs	
2301	Traveling costs employees	
2302	Mileage costs	
2303	Etc.	
2300	Transport and traveling costs	
2401	Vehicle costs	
2400	Vehicle costs	
2501	Rental/lease costs for buildings	
2502	Rental/lease costs for machines	
2503	Etc.	
2500	Rental and lease costs	
2601	Licences	
2600	Licences	
2701	Telephone, telefax, internet	
2702	Postage costs	
2703	Legal and advisory costs	
2704	Office requirements, newspapers	
2705	Audit fees	
2706	IT costs	
2707	Other operational costs	
2700	General business costs	
<b>2800</b>	<b>Total indirect costs (18 to 27)</b>	
2901	Depreciation	
2902	Imputed depreciation	
2900	Imputed depreciation	
3001	Expenses for loans	
3002	Money transfer costs	
3003	Equity yield rate	
3000	Imputed interest	
3101	Extraordinary expenses	
3102	Complaints/warranties	

(table continues)

(continued)

Figure 28: Operating income statement

Operating income statement		LIP Bled d.o.o. Year___:
<b>CAS ROW</b>	<b>COST-TYPE (Revenue-type)</b>	<b>TEUR ACCOUNTING</b>
3103	Imputed risk	
3100	Imputed risk	
<b>3200</b>	<b>Total imputed costs (29 to 31)</b>	
3301	Tool costs	
3302	Development costs	
3300	Special production costs	
3401	Outgoing freight	
3402	Commissions	
3403	Packaging (direct costs)	
3403	Transport insurance	
3400	Special distribution costs	
<b>3600</b>	<b>Total primary costs (9+10+17+28+32+33+34)</b>	
3700	Internal cost allocation +	
3800	Internal cost allocation -	
3900	Apportionments +	
4000	Apportionments -	
<b>4100</b>	<b>Total secondary costs (37 to 40)</b>	
<b>4200</b>	<b>Total costs (36 + 41)</b>	
	<u>Main revenues:</u>	
4301	Revenues domestic market	
4302	Revenues non-domestic market	
4303	Other revenues	
4300	Main revenues	
4401	Interest income	
4402	Extraordinary revenues	
4403	Other revenues	
4404	Etc.	
4400	Incidental revenues	
<b>4500</b>	<b>Invoiced revenues (43+44)</b>	
4600	Own work capitalised	
4701	Changes in inventory	
4700	Changes in inventory Semi-finished and finished products	

(table continues)

(continued)

Figure 28: Operating income statement

Operating income statement		LIP Bled d.o.o. Year__:
<b>CAS ROW</b>	<b>COST-TYPE (Revenue-type)</b>	<b>TEUR ACCOUNTING</b>
<b>4800</b>	<b>Gross operatinal performance(45+46+/-47)</b>	
4901	Discounts granted	
4902	Rebates/bonuses granted	
4900	Sales reductions	
<b>5000</b>	<b>Net operating performance (48-49)</b>	
<b>5100</b>	<b>Total costs (42)</b>	
<b>5200</b>	<b>Operating result (50 - 51)</b>	

Source: Own work.

As seen in the operating income statement from rows 29 to 31, the following three imputed costs have been included:

- Imputed depreciation
- Imputed interest
- Imputed risk

The **imputed depreciation**, as already discussed in the theoretical part of the thesis, differs from the usual known depreciation, which is regulated by law. When calculating imputed depreciation, a fixed asset is being depreciated as long as it is being expected to be used in a company. The write-down tables are irrelevant when it comes to imputed depreciation. Therefore, in order to illustrate a correct decline in the value of assets, the „regular“ depreciation costs have to be eliminated (only for internal purposes of the cost and activity accounting) and replaced by the estimation of the imputed depreciation. In doing so, all the fixed assets have to be considered along with the ones which have been completely depreciated by law but are still being used.

The **imputed (equity) interest costs** are actually costs which are independent from capital structure and are more specifically equity yield rates. In other words, usually only the interest on borrowed (external) capital is being considered, not the equity capital. In order to yield interest on the whole capital employed, imputed interest costs are being calculated.

The **imputed risk** cost's purpose is to illustrate potential risks like bad debts, machine stoppages etc.

## 5.2.2 Cost-center accounting

The first step of cost-center accounting is to create a cost-center plan, which LIP BLED already has. It does, on the other hand, not have a cost allocation sheet.

### 5.2.2.1 Cost-center plan

Even though LIP BLED has a clear and well-structured cost-center plan, it treats all of the cost-centers as main cost-centers. In order to allocate all of the costs onto cost-units, service cost-centers are necessary. The principles of causation and coverage always have to be considered.

The cost-centers which are being used for the different branches should be used as main cost-centers. Those costs should also be divided more specifically if this is possible. Example: Costs, which occur in a branch can be identified as electricity costs, leasing costs, purchasing costs for different materials etc.

The cost-centers for the management should also serve as main cost-centers, as the cost causation can be tracked easily.

The administration cost-center(s) can usually also serve as main cost-centers.

The general area cost-center should serve as a service-cost center as they are indirect costs and cannot be directly allocated onto cost-units.

Marketing is a main cost-center and can be directly allocated onto cost-units.

If possible, the cost-center purchasing should be further divided into the type of purchasing. Example: Purchasing wood, purchasing glass and purchasing other. This would provide a better overview of the whole company. Purchasing is a main cost-center.

The Sales area serves as a main cost-center.

The warehouses should not only be categorized by finished or unfinished goods, but also by the type of material it holds. Example: Warehouse wood, warehouse glass and warehouse other. If one warehouse holds different types, it has to be divided by square meters. They are also main cost-centers.

The production steps are main cost-centers.

The development area serves for the creation of products in the future. Therefore, it should serve as a service cost-center whose costs can then be allocated onto cost-units, which cause those costs.

The IT should be treated as a service cost-center as its costs can be allocated onto main cost-centers in further steps. IT-costs are usually allocated by the number of computers/laptops per cost-center (the administration area usually uses more computers than the warehouses).

Also, I would suggest adding cost-centers like social services, power supply and buildings:

Social services would be a service cost-center, which would be allocated onto every employee equally. Costs that subjected to this category would be for example costs for company parties, kitchen costs, utility costs etc.

Power supply has to be allocated with the help of the consumption kw/h. This is important as the largest consumers of energy are the machines in the production facilities and therefore need to be allocated correctly.

Figure 29 is a first suggestion of a cost-center plan for LIP BLED which would be structured differently than the existing one. This is only a proposal of how it could be structured:

*Figure 29: Cost center plan suggestion for LIP BLED*

Cost-center plan	Company: LIP BLED d.o.o.	Year _____
<b>1 General area</b>		
1.1 Buildings & properties	Service cost-center	
1.2 Power supply	Service cost-center	
1.3 Social services	Service cost-center	
1.4 IT	Service cost-center	
Etc.	Service cost-center	
<b>2 Area of material</b>		
2.1 Purchasing wood	Main/additional cost-center	
2.2 Purchasing glass	Main/additional cost-center	
2.3 Purchasing other material	Main/additional cost-center	
2.4 Etc.	Main/additional cost-center	
<b>3 Production service area</b>		
3.1 Production management	Service cost-center	

(table continues)



(continued)

Figure 29: Cost center plan suggestion for LIP BLED

Cost-center plan	Company: LIP BLED d.o.o.	Year _____
3.2 Production planning	Service cost-center	
3.3 Disposal	Service cost-center	
3.4 Etc.	Service cost-center	
4 Production main area		
4.1 Workshop management	Main/additional cost-center	
4.2 Production step 1	Main/additional cost-center	
4.3 Production step 2	Main/additional cost-center	
4.4 Production step 3	Main/additional cost-center	
Etc.	Main/additional cost-center	
5 Distribution area		
5.1 Sales management	Main/additional cost-center	
5.2 Advertisement/Marketing	Main/additional cost-center	
5.3 Shipping and fleet	Main/additional cost-center	
5.4 Customer service	Main/additional cost-center	
6 Administration area		
6.1 CEO	Main/additional cost-center	
6.2 Financial accounting	Main/additional cost-center	
6.3 General administration	Main/additional cost-center	
7 Segregation area		
7.1 Machines not used	Main/additional cost-center	

Source: Own work.

The biggest difference in the suggested cost-center plan compared to the one LIP BLED uses now is that the suggested cost-center plan has service cost-centers, which help allocate a part of the indirect costs onto other main cost-centers to help ensure the tracking of all of the costs (or at least most of them) exactly to their cause.

#### 5.2.2.2 Allocation of labour costs

LIP BLED has approximately 290 employees, whose costs are already being allocated onto the existing cost centers. With a new cost-center plan the employees would be allocated onto the new cost-centers almost the same way:

Figure 30: Labour cost allocation example

Pers. number	Name, surname	Name of cost-center 1	Type of cost-center 1	% of cost-center 1	Name of cost-center 2	Type of cost-center 2	% of cost-center 2
1		Purchasing wood	Main cost center	50%	Purchasing glas	Main cost center	50%
2		Workshop management	Main cost center	100%	/	/	/
3		IT	Service cost-center	100%	/	/	/
4		Advertising/Marketing	Main cost center	60%	Sales management	Main cost center	40%
5		Customer service	Main cost center	100%	/	/	/
6		Production planning	Service cost-center	80%	Production management	Service cost-center	20%
7		Production management	Service cost-center	50%	Workshp management	Main cost center	50%
Etc.							

Source: Own work.

There can be an n-number of cost-centers per employee. With this method, all the labour costs can be allocated correctly onto their cost-centers. Each new employee gets ascribed to cost-centers. The labour allocation-spreadsheet should be updated at least once a year.

#### 5.2.2.3 Cost allocation sheet overall company

When finishing all the above steps, the cost allocation sheet can be created. In the following figure 31 is an example of how the cost allocation sheet for the whole company could look like. The cost-types and revenues (which were created in the cost-type accounting part) are shown vertically, while the main areas from the cost-center plan are shown horizontally:

Figure 31: Example of cost allocation at LIP BLED

<b>CAS Overview</b>	<b>LIP Bled</b>	<b>Costs/revenues</b>	<b>Area of material</b>	<b>Production areas</b>	<b>Distribu- tion area</b>	<b>Administra- tion area</b>	<b>Machines not used</b>
1	Production material						
2	Purchased parts/ merchandise						
8	Indirect material						
9	Total material consumption						
10	External labour						
11	Temporary work						
12	Wages						
13	Incidental wages						
14	Gross salaries						
15	Incidental salary						
16	Other personnel						
17	Total personnel						
18	Energy costs						
19	Maintenance						
20	Taxes/levies/dues						
21	Insurances						
22	Advertising						
23	Transport and traveling costs						
24	Vehicle costs						
25	Rental and lease						
26	Licences						
27	General business						
28	Total indirect						
29	Imputed depreciation						
30	Imputed interest						
31	Imputed risk						
32	Total imputet costs						
33	Special production						
34	Special distribution						
36	Total costs						

(table continues)

(continued)

Figure 31: Example of cost allocation at LIP BLED

<b>CAS Overview</b>	<b>LIP Bled</b>	<b>Costs/revenues</b>	<b>Area of material</b>	<b>Production areas</b>	<b>Distribution area</b>	<b>Administration area</b>	<b>Machines not used</b>
50	Net operating performance						
52	Operating result						

Source: Own work.

Comparing this allocation sheet with the table of contribution margins of LIP BLED (figure 26), it shows a significantly more precise allocation of all the costs. It makes sense to implement such a way of accounting as it gives the decision-makers a better overview. In the case of rising costs, the cause would be much easier to determine.

Once the cost-center accounting is finished, the base for the cost-unit accounting is given and can get started.

### 5.2.3 Cost-unit accounting in theory

The table, which shows the contribution margins per profit center on a monthly basis (figure 26), is already an informative way of calculating. With a functioning cost- and activity accounting system, as shown in the chapters above and implementing cost-unit accounting in the further/last step, it would be possible for LIP BLED to calculate contribution margins for every order/project they receive. As described in the theoretical part, those calculations can be made before, during and after an order/project.

With an operational cost-unit accounting system, the management control system of LIP BLED would become even more transparent and would help save a lot of costs, as every order's contribution margin can be checked individually.

## CONCLUSION

Management control is a supporting tool, which helps the management of a company with the decision-making. It pushes the already existing company goals and always supports the management of a company.

Within a company there is an unlimited number of activities, which can be quantified. Management control is a tool to identify relevant information and transform it into a structured database. A management control system enables a company to recognize threats and risks and therefore react quickly enough to plan against them. A

management controller can focus on different functions like budgeting, strategic planning, internal reporting, capital budgeting, cost and activity accounting and according to various further interpretations also others. Depending on the time of the implementation, one can distinguish between operating management control, which is a tool to coordinate a company with short-term measures, and strategic management control, which is long-term oriented. There are also two main approaches of management control, which mainly differ from the divisions of functions in a company: the German and the Anglo-American approach.

From the aforementioned functions of management control, the focus in this thesis lies on the cost and activity accounting and the related management control indicators. The latter are an useful tool for every area of the company and provide support for the decision-making. The cost and activity accounting is divided into cost-type-, cost-center- and cost-unit accounting and is, according to the majority of the authors, short-term oriented. As cost and activity accounting is not regulated by law, many companies still have not implemented it.

Always keeping in mind, the principles of causation and coverage, the cost and activity accounting has to be carried out step by step. Beginning with the cost-type accounting, the purpose of this step is to determine which costs have occurred in a company. The next part is the cost-center accounting, where one has to answer the question: where those costs have occurred. In the last step it is necessary to determine the cause of these costs.

Analyzing the company LIP BLED regarding management control indicators and the cost and activity accounting has led to the following conclusions:

All the indicators mentioned should be calculated after the cost and activity accounting was performed. After the results of the cost and activity accounting are known, they can be used for calculating the indicators.

In my opinion, the sales- and production indicators calculated by LIP BLED are on a high level and have a high significance. In addition, all these indicators are prepared on a monthly basis, which enables the company to react quickly in case of any changes.

The increase of the material costs in LIP BLED has led me to the development the material-indicator system. This system can help determine, if the cause of the increase actually lies - as assumed by the management of the company- in the lack of qualified employees in the production department. Implementing and tracking such a system can help determine future irregularities much easier. In the future I would suggest LIP BLED implement an indicator system, which applies to the whole company and not only the material area.

The cost-type division of LIP BLED could be performed in a more detailed way. What follows is an operating income statement, which could be more precise and have many more cost-types as it does now. This would help the company to determine costs on every level of the company more easily. When preparing an operating statement for internal use, I suggest calculating imputed costs, as they give a much more realistic picture of the overall situation of the company. At the same time, this is only the first out of three steps for implementing an integrated cost and activity accounting system.

In the second step, the cost-center plan would have to be changed to enable an integration of service cost-centers. Secondly, same as the cost-type accounting, it would give a better overview of the company, if the cost-centers would be divided into more specific areas. After the cost center plan stands, a cost allocation sheet can be prepared and contribution margins for every main area of the company can be calculated.

Implementing a cost-unit accounting would enable the company to calculate every order and determine the selling price by knowing the calculated contribution margin.

In my opinion, LIP BLED has a well-structured and especially fast-working control management system looking at it as a whole. Irregularities can easily be detected, but in order to find the cause, new measures have to be taken every time. When implementing a cost and activity accounting system with the corresponding indicator system(s), every sporadic occurrence is detected and traced easier and would save the management a lot of time.

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## **APPENDIX**



## **Appendix 1: Povzetek**

Kontroling je podporno orodje, ki pomaga managementu podjetja pri odločanju. Že obstoječe cilje podjetja dvigne na višji nivo in vedno podpira management podjetja.

V podjetju obstaja neomejeno število aktivnosti, ki jih je mogoče izmeriti. Kontroling je orodje, ki prepozna relevantne podatke in jih pretvori v strukturirano bazo podatkov. Sistemom kontrolinga managementu podjetja omogoča, da prepozna grožnje in tveganja ter se lahko hitro odzove oz. naredi načrt, kako se jim izogniti. Kontrolor se lahko osredotoči na različne funkcije kot so načrtovanje proračuna, strateško načrtovanje, interno poročanje, načrtovanje investicij, stroškovno računovodstvo, računovodstvo aktivnosti; obstajajo tudi druge interpretacije, kjer je teh funkcij še več. Glede na čas vpeljave lahko ločimo med poslovnim kontrolingom, ki je orodje za uskladitev podjetja s kratkoročnimi ukrepi, in strateškim kontrolingom, ki je dolgoročno usmerjeno. Obstajata dva glavna pristopa pri kontrolingu, ki se v glavnem razlikujeta glede na razdelitev funkcij v podjetju: nemški in anglo-ameriški pristop.

Od zgoraj omenjenih funkcij kontrolinga leži poudarek te magistrske naloge na stroškovnem računovodstvu in računovodstvu aktivnosti ter s tem povezanimi kazalci kontrolinga. Slednji so uporabno orodje za vsako področje podjetja in nudijo podporo pri odločanju. Stroškovno računovodstvo in računovodstvo aktivnosti se deli glede na tip stroškov, stroškovne centre in stroškovne nosilce. Po mnenju mnogih avtorjev je usmerjeno v kratkotrajni učinek. Ker stroškovno računovodstvo in računovodstvo aktivnosti ni urejeno z zakonom, ga mnoga podjetja sploh še niso vpeljala.

Ob upoštevanju načela vzročne zveze in kritija, morata biti stroškovno računovodstvo in računovodstvo aktivnosti izvedena korak za korakom. Začne se z računovodstvom glede na tip stroškov, pri čemer je namen tega koraka določiti kateri stroški so nastali v podjetju. Naslednji del je računovodstvo stroškovnih centrov, kjer je potrebno odgovoriti na vprašanje: kje so nastali ti stroški. V naslednjem koraku je nujno določiti vzrok za te stroške.

Analiza podjetja LIP BLED glede kazalcev kontrolinga in stroškovnega računovodstva ter računovodstva aktivnosti je vodilo k naslednjim zaključkom:

Vsi omenjeni kazalci bi morali biti izračunani po opravljenem stroškovnem računovodstvu in računovodstvu aktivnosti. Ko so znani rezultati stroškovnega računovodstva in računovodstva aktivnosti, se le-ti lahko uporabijo za izračun kazalcev.

Menim, da so prodajni in proizvodni kazalci, ki so jih izračunali v podjetju LIP BLED, na visokem nivoju in so zelo pomenljivi. Poleg tega so vsi ti kazalci pripravljani mesečno, kar omogoča podjetju, da se hitro odzove v primeru sprememb.

Povečanje materialnih stroškov v podjetju LIP BLED me je vodilo k razvoju sistema kazalcev materiala. Ta sistem lahko pomaga določiti, če vzrok za povečanje dejansko leži v pomanjkanju kvalificiranih zaposlenih v proizvodnji – kot je domneval management podjetja. Vpeljava in sledenje takšnemu sistemu lahko pripomore k lažjemu določanju bodočih nepravilnosti. Za v prihodnje bi podjetju LIP BLED predlagal, da vpeljejo sistem kazalcev, ki bi se lahko uporabljal v celotnem podjetju, ne le na področju materialov.

Razdelitev glede na vrsto stroškov pri podjetju LIP BLED se lahko opravi na bolj podroben način. Sledi izkaz poslovnega izida, ki bi bil lahko bolj natančen in bi lahko vseboval veliko več vrst stroškov kot doslej. To bi pripomoglo podjetju, da veliko lažje določi stroške na vsakem nivoju podjetja. Pri pripravi poslovnega izkaza za interno uporabo predlagam računanje prisojenih stroškov, saj ti dajejo veliko bolj realistični pogled na celotno stanje podjetja. Hkrati je to le prvi od treh korakov za vpeljavo integriranega sistema za stroškovno računovodstvo in računovodstvo aktivnosti.

Pri drugem koraku bi morali spremeniti strukturo stroškovnih centrov, da bi omogočili integracijo pomožnih stroškovnih centrov. Poleg tega bi – enako kot pri računovodstvu glede na tip stroškov – podjetju omogočili boljši pregled, če bi bili stroškovni centri razdeljeni na bolj podrobna področja. Po tem, ko se določi nova struktura stroškovnih centrov, se lahko pripravi tabela razporejenih stroškov in se izračuna stopnja kritja za vsako glavno področje v podjetju.

Vpeljava računovodstva po stroškovnih nosilcih bi omogočila podjetju, da preračuna vsako naročilo in določi prodajno ceno, saj bi poznali izračunano stopnjo kritja.

Po mojem mnenju ima LIP BLED – gledano kot celota - dobro strukturiran in posebno hitro delujoč sistem nadzora vodstva. Nepravilnosti je mogoče hitro zaznati, vendar pa je za iskanje vzroka le-teh potrebno vedno znova sprejeti nove ukrepe. Pri vpeljavi sistema stroškovnega računovodstva in računovodstva aktivnosti z ustreznim(i) sistem(i) kazalcev pa bi se zaznal vsak posamezen dogodek in bi bilo precej lažje sledljiv sistem, hkrati pa bi to managementu prihranilo veliko časa.