

Saimaa University of Applied Sciences
Faculty of Business Administration Lappeenranta
Double Degree (Bachelor)
International Business

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**Developing a Cost Accounting Tool
for Small and Medium-Sized Enterprises
Case: Company X**

Thesis 2018

Abstract

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Case: Company X, 70 pages, 1 appendix

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The purpose of the study was to develop a cost accounting tool for small and medium-sized enterprises with the case company X. Regardless of the company size, cost accounting has a significant role regarding the management of an enterprise and its decision-making. An aim of the project was to analyse the case company's current situation including operational data as well as the presently used cost accounting system and afterwards to propose a recommendation on how to enhance the situation.

Data for this theoretical framework was collected from academic books, business journals as well as scientific research papers. Some updated information was gathered from reliable internet sources. During the case study, the author held several meetings and discussions with representatives of the case company in order to collect relevant information and data for the project.

The final result of this study was that the current cost accounting system of company X has to be enhanced. The author of this thesis proposed the results and recommendation of the project to the case company. In the future, the case company will focus on controlling the operational performance and will take the outcome of the project into consideration.

Key words: cost accounting, SMEs, cost centre, marginal costing, absorption costing

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Appendix 1

Current cost accounting system revised

Abbreviations

CM	Contribution margin
EBIT	Earnings before interest and taxes
EBITDA	Earnings before interest, taxes, depreciation and amortization
EU	European Union
GmbH	Gesellschaft mit beschränkter Haftung (German) = Limited liability company
SME	Small and medium-sized enterprise

1 Introduction

1.1 Background of the study

Nowadays, enterprises face various challenges, which arise from the internationalization of markets, the globalization of supply and demand, a modest economic growth, and a strong price competition (Scheld 2012, p.V). Business trends like progress in technology, rise in management adaptability, and change from a manufacturing-based to a service-based business also affect management decisions (Bhimani, Horngren, Sundem, Stratton, Burgstahler & Schatzberg 2012, p.12). Moreover, the management framework is influenced by a shorter product life cycle and development times, variant diversity and rapid development of information- and communication technologies (Dombrowski, Herrmann, Lacker & Sonnentag 2009, p.5).

In the light of this situation, available margins of enterprises decline and at the same time, management requirements increase. Years ago, it was sufficient enough to outline business figures (for instance, profit and equity ratio) in order to be profitable and competitive in the market. However, in the course of the time, business structures became more complex and for this reason, a at least simplified controlling system with budgeting and variance analysis should be implemented in every company. Therefore, management accounting has an increasingly significance for the management of an enterprise. (Schmid-Gundram 2016, pp. 2-14.) Management accounting has a threefold objective of ensuring decision- and result-oriented information supply, planning and controlling (Ossadnik, Van Lengerich & Barklage 2010, p. 108). It consists of different areas of application - it can be either operational or strategic, and addressed to internal or external target groups (Schmid-Gundram 2016, pp. 2-14). Consequently, general management accounting instruments are cost accounting, financial and liquidity calculation, investment appraisal, budgeting and ratios (Ossadnik et al. 2010, p. 109).

With the rising competition, enterprises are forced to keep track of the development of costs and their origin. Since the cost pressure is steadily growing regardless of the company size and the operating industry, processes within a company

have to be monitored. As a consequence, cost accounting became a key element for operating a successful business (Wöltje 2016, p.13.) and functions as an information tool to support management accounting internally on an operational basis (Ernst, Schenk & Schuster 2017, p.2). Cost accounting provides tools to make and keep the cost structure of products and services competitive as well as profitable (Wöltje 2016, p.13). With the raising digitalization; information technology, software and hardware support enterprises in information acquisition, processing and supply. This makes it possible to process large data volumes in a timely manner and a reasonable financial expenditure. (Szyszka 2015, p. 19.)

Due to the fact that small and medium-sized enterprises represent 99.8% of all enterprises in the EU-28 non-financial sector (European Commission 2016/2017), they contribute a substantial part to the economic development, employment creation and thus, the growth in income and social security. Apart from that, SMEs assume an essential economic role due to the support with prevention of power concentration (Ossadnik et al. 2010, p. 15). Since SMEs are integrated in the supply chain of larger companies, they have to adjust to adaptation requirements of larger businesses (Dombrowski et al. 2009, p.1). If the adaption is carried out too slow or insufficient, SMEs will lose their competitiveness and economic viability (Gomez, Hahn, Müller-Stewens, Wunderer 1994). SMEs experience intensively external challenges, because they have to respond to small changes (Dombrowski et al. 2009, p.5). Furthermore, SMEs are not able to manage wrong decision-making as problem-free as larger businesses by virtue of a smaller financial scope and fewer human resources (Feldbauer-Durstmüller & Hieble 2015, p. 193). However, in comparison with larger companies, SMEs benefit from a great flexibility within in the daily operations (Levy & Powell 1998, pp.185-186).

1.2 Objectives

The aim of the study is to determine the features and importance of cost accounting in small- and medium sized-enterprises and subsequently to develop a new cost accounting framework for the case company. Accordingly, the goal of the bachelor's thesis is to elaborate a reliable advice for cost accounting within a case company, which can be implemented in the future to compute costs more accurately and comprehensibly.

1.3 Research method and questions

The research method chosen for the bachelor thesis is a case study. According to Blichfeldt and Andersen (2006), the aim of a case-study research is to get a deeper insight of a specific phenomenon in real-life conditions. Consequently, the case study research does not acquire completely new expertise but applies to already existing knowledge in real-world circumstances. (Blichfeldt & Andersen 2006.) Typically, the needed information for case studies is collected from different kind of sources - for example, interviews, archives, etc. Consequently, the data will be qualitative. (Eisenhardt 1989, pp. 534-535.) In addition, a case study research has also the purpose to answer research questions which start as a rule with the interrogative pronoun how or why (Dooley 2003, p. 339).

The thesis investigates the research question, which is related to the objectives given above (1.2 Objectives):

- How to develop a cost accounting tool for the case company?

Due to the existence of a large number of cost accounting tools, sub-questions are required to solve the main research question. The sub-questions have the intention to build a framework for this bachelor's thesis:

- What are characteristics of small and medium-sized enterprises?
- What is cost accounting general speaking?
- What are suitable cost accounting tools for small and medium-sized enterprises?

1.4 Delimitation

The issue of this study investigates cost accounting in small and medium-sized enterprises. In this case, large companies will not be examined and may be only emphasized for the purpose of comparison.

Cost accounting is a part of management accounting, which is an extensive field of tools supporting management decisions in regard to accountancy. Therefore, management accounting assists business directors to determine and remedy problems, and also assess the overall performance. Tools supporting management accounting are financial accounting, cost accounting, budgeting and forecasting, tax planning etc. (Arora 2009, chapter 1.9-1.10.) Due to the fact that the scope of management accounting is very vast, it would exceed the appropriate contextual requirements of a bachelor thesis. For this reason, the thesis focuses on cost accounting and its development for the case company. Furthermore, the thesis is not restricted to a specific nation, though primarily concentrated on the European Union, since cost accounting is not worldwide practicably.

1.5 Limitations

As a matter of principle, there is always a possibility that limitations are arising during a study. Potential limitations are that the case company will not give enough transparency throughout the project and that the given information from interviews and questionnaires might have an error. Notwithstanding, there is no doubt that the case company would not give enough information, because the company is a start-up company and interested to benefit from the project. Furthermore, the results of the study are especially meant for the case company and no assurance can be given that the advice is valid and reliable in other cases.

1.6 Theoretical framework

To answer the research questions of this thesis, the theoretical part is mainly based on the theory of cost accounting. Due to the fact that the theory proposes no generally applicable cost accounting system, the right decision of cost accounting systems hinges on the given operational circumstances. (Ossadnik et al. 2010, p. 148.)

Previous researches have already investigated cost accounting and there is also a wide range of literature explaining theoretical aspects of the topic. Consequently, a variety of cost accounting tools exists, and the topic has to be limited. During the theoretical formulation, suitable and appropriate cost accounting tools for small and medium-sized enterprises will be elaborated.

1.7 Case Company X

Due to trade secrets and competitive matters, the selected case company wants to be kept anonymous. Company X sells food and beverages, which are organic, sugar- and calorie-free and without any other additives. Furthermore, the product range is vegan and its production is taken over by German partners. The products are sold on the case company's own website and also distributed to a supermarket "Rewe" and drugstores "dm-Drogerie Markt" and "Müller Deutschland". Currently, the company employs 10 employees in the fields marketing, purchasing, etc.

1.8 Structure of the study

The thesis consists of six chapters. The first chapter gives an introduction into the project. Chapter two starts with building the theoretical framework. Stressed are the definition, economic importance and characteristics of small and medium-sized enterprises. Furthermore, chapter three explains cost accounting in general, while chapter four highlights applicable cost accounting tools for small and medium-sized enterprises. Chapter five deals with the case study. Firstly, the case company X is reviewed regarding its product range, departments and future targets. Afterwards the current accounting and cost accounting situation is analysed and evaluated. In the end of chapter five, the author proposes a recommendation on how to improve the current situation. Chapter six gives a short summary, evaluates the study and lists the personal learning aspects of the author. Appendix 1 provides the revised cost accounting system of the case company.

2 Small and medium-sized enterprises

This chapter introduces an explanation about small and medium-sized enterprises (SME). Section 2.1 provides a definition of this business type; the economic significance and involvement is developed in section 2.2. Characteristics of SME are outlined in the last section of this chapter 2.3, where the business type is distinguished quantitative and qualitative characteristics.

2.1 Definition of small and medium-sized enterprises

Due to the given circumstances of this thesis, the definition of SME was chosen based on the European treaties. The term SME is defined in the EU recommendations 2003/361. According to this recommendation, SMEs are divided into three categories: micro, small and medium-sized companies. The categorization is based on the criteria of employee headcount and either turnover or revenue. Micro as the smallest company type has less than 10 employees and a turnover or total balance sheet no more than €2 million. Enterprise type small is categorized with a staff headcount between 10 and 49 and a turnover or balance sheet less than €10 million, whereas the largest type of SMEs, medium, employs between 50 and 249 staff members with a turnover up to €50 million and a balance sheet total up to €43 million. (European Commission 2015, p.11.)

Enterprise type	Number of employees	Turnover	Balance sheet total
Medium	< 250	≤ € 50 million	≤ € 43 million
Small	< 50	≤ € 10 million	≤ € 10 million
Micro	< 10	≤ € 2 million	≤ € 2 million

Table 1. Categorization of SME (European Commission 2015, p.11)

To sum up, table 1 gives a brief overview about the factors defining a SME. Consequently, a SME is defined as a business with a staff headcount between one and 249 employees, a turnover up to €50 million and a balance sheet total no more than €43 million.

2.2 Economic importance of SMEs

The economic role and importance of SMEs is often underappreciated on the basis of their minimized meaning in business activities (Zaridis, Konstantopoulos & Karamanis 2014). Nevertheless, taking a look at the economic structure of the EU28 from 2016 in share, SMEs represent 99.8% of all companies. Consequently, only 0.2% are large enterprises with more than 250 employees and a turnover more than €50 million or a balance sheet total of more than €43 million. This information is illustrated in the pie chart (figure 1) to encourage the meaning and importance of SME in the economy.

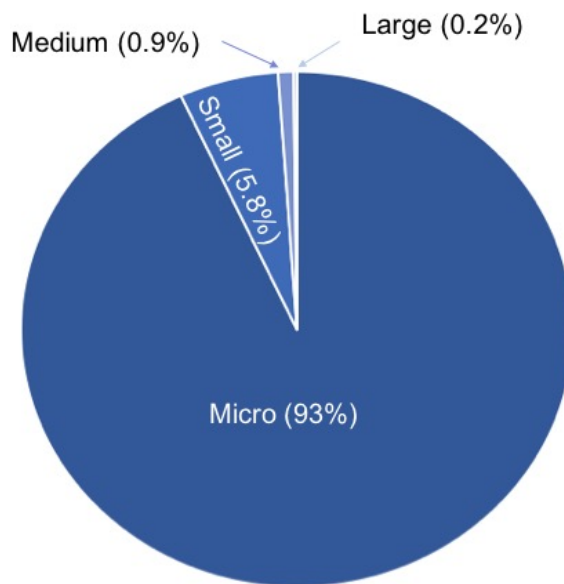


Figure 1. Economic structure of EU28, 2016 in share (European Commission 2017)

Furthermore, it is essential to describe the business structure of SMEs in order to stress their economic importance. Table 2 lists facts and figures like the number of SMEs, staff headcount and value added at factor costs of SMEs in the European Union 2016/2017. Followed by the comparison of its share in the whole economy.

Companies (total in thousands)	23,894	
Share of small and medium-sized enterprises		
Number (in thousands)	23,849	99.8 %
Staff headcount (in thousand)	93,049	66.6 %
Value added at factor costs	€ 4,131,295 m	56.9 %

Table 2. Business structure statistic 2017 (European Commission 2017, p.11)

As already mentioned in figure 1, the total share of SMEs is 99.8% with 23,849 thousand enterprises. Consequently, only 0.2% of all firms in the EU28 non-financial sector are large enterprises. SMEs are a major employer due to an employment rate of 66.6% with a total of 93,049 thousand staff headcount. This means that SMEs contribution to employment plays an important role, because they made up two thirds of workplaces provided by the non-financial business sector in 2016/2017. In addition, value added at factor costs accounted for 56.9% with a number of approximate €4,131,295 million. (European Commission 2017, p.11.) Value added at factor costs is defined by Eurostat (2013) as a gross income from operational activities after the adjustment of operating grants and indirect taxes.

SMEs also have a positive effect on the competitiveness. Due to the rising individualisation of products, SMEs have the advantage compared to larger companies that they operate customized and customer-oriented. (Dombrowski et al. 2009, p.5-18.)

All those facts combined encourage the importance of SMEs in the economy. The overall economic significance of SMEs becomes only evident when they are considered in their interaction and thereby reinforce SMEs as important function in the economy. (Dombrowski et al. 2009, pp.5-18.)

2.3 Characteristics of small and medium-sized enterprises

This section addresses characteristics of SMEs, which can be divided into quantitative and qualitative characteristics. In order to understand the growing need of cost accounting in SME, it is crucial to outline their characteristics. SMEs and

large enterprises differ not only in number of employees and revenues, but also in qualitative characteristics.

Quantitative Characteristics

Regarding the definition of SMEs, the quantitative characteristics are already described in section 2.1 Definition of small and medium-sized enterprises. Summarizing, the quantitative characteristics of SMEs are a combination of the headcount (1-249 employees) of the enterprise and its turnover (up to €50 million) or balance sheet total (up to €43 million) (Official Journal of the European Union 2003).

Qualitative characteristics

However, the definition of SMEs of Institut für Mittelstandsforschung Bonn (Institute for small and medium-sized business research Bonn) enhances the quantitative aspects with a set of qualitative characteristics. The main attributes are listed subsequently, although the specified characteristics are not applicable for every SME (Ossadnik et al. 2010, p.12).

Ownership and Management. A variety of SMEs can be classified as owner-managed companies, where the ownership as well as the management is unambiguously assigned to one individual. It can be supposed that personal inclinations and attributes of the owner are reflected in the operation of the company. (Becker, Botzkowski & Urlich 2017, p.18.) If the owner of the company is also in charge of the business management, it might be virtually impossible to separate the personal and business interests. As a result, the management of the enterprise is influenced by private and entrepreneurial objectives and framework conditions. (Dombrowski, Hermann, Lacker, Sonntag 2009, p.46.) Since the management board consists of only one individual, the executive function is concentrated on one generally strong character (Ossadnik et al. 2010, p.12). Not only flat organizational structures (one to two levels of hierarchy) (Dörler 1988), but also short information paths as well as personal instructions and monitoring (Dombrowski et al. 2009, p.11) lead the ownership of only one individual to be a success factor (Ossadnik et al. 2010, p.12). Against this background, the man-

agement behaviour of an owned-managed enterprise is considered with particular importance (Ossadnik et al. 2010, p.12) and is of great significance for the business. (Kosmider 1994, p. 39). Enterprises with a family ownership have a direct influence on the operation and management of the business. The highest decision-maker is always a family member, even if a third party is included in the management structure. On the other hand, SMEs with a third-party management are owned by an individual or family (at least two persons), but the business operation is totally conducted by an external management. (Becker et al. 2017, p.19.) In conclusion, SMEs differ in ownership and management structure. Figure 2 illustrates the above described typology of SMEs. Due to the given conditions of the case company, the thesis will be concentrated on owner-managed companies with mixed financing.

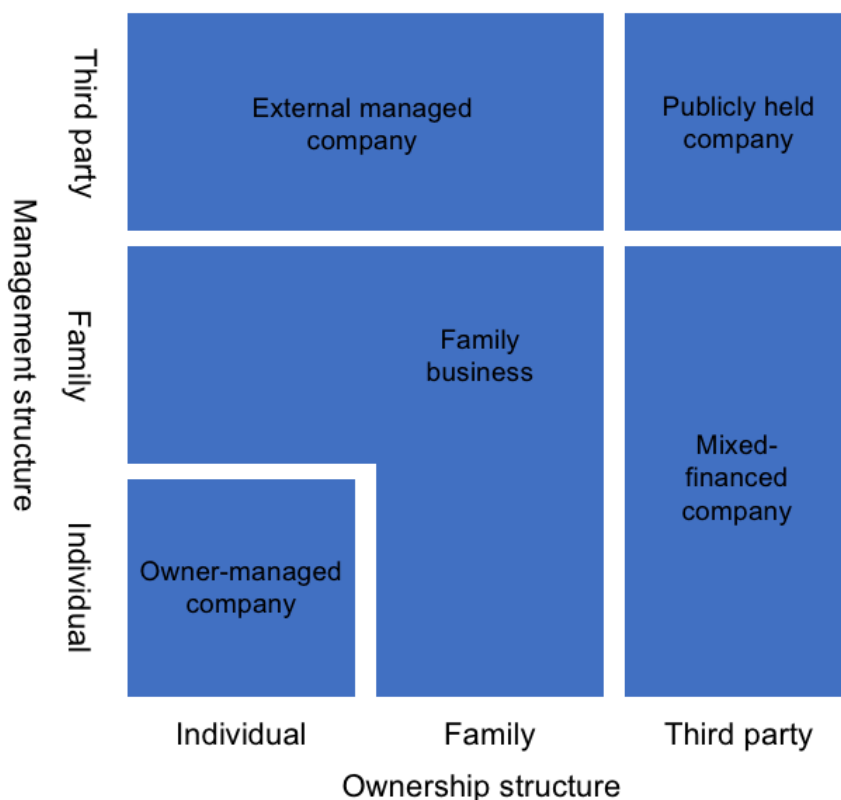


Figure 2. Typology of SMEs (fBecker and Ulrich 2011, p.30)

Low but increasing equity ratio. As a general rule, SMEs have a low equity ratio, but in accordance with a research by the German Savings Bank Association, there was an eight-fold increase up to 21 percent in 2012. Even though, the equity ratio of large businesses is on average 30.9 percent, larger SMEs with a turnover of more than €12.5 million have an equity ratio of 29.1 percent (Deutscher Sparkassen- und Giroverband 2015, p. 32).

Scarce financial resources. Due to limited financing options and strict bank lending directives (for instance Basel II), the acquisition of new financial resources for SME is associated with high requirements. Furthermore, SMEs have generally an aversion against external shareholder, which makes the acquisition of new financial resources not simpler. By dint of scarce financial resources, SMEs cannot afford major advertising campaigns to expand their regional awareness level to a wider name recognition. (Dombrowski et al. 2009, pp. 10-11.)

Highly innovative. SMEs are considered to be highly innovative (Münzel, Oesterdiekhoff, Schmidt & Tröster 2005, p. 12). This is shown by the research and development data report of 2013, where SMEs invested twice the amount of money compared to the amount that large companies invested (Federal Ministry for Economic Affairs and Energy 2012).

Employees. As already alluded in chapter 2.1 Definition of SMEs, the headcount of SMEs varies from one to 249 employees (European Commission 2015, p.11). On the basis of a lower number of employees, one employee is responsible for several tasks and is also the only knowledge carrier in his or her field. Thereby, employees cannot be replaced at short notice by a new or other contributor. (Dombrowski et al. 2009, p. 11.) The motivation of the staff members is assumed to be higher in comparison to larger enterprises, as they tend to have an intensive relationship of interdependence (Münzel et al. 2005, p. 13). Furthermore, the owners and staff members have a trustful relationship due to short communication paths and flexible hierarchies (Mäder & Hirsch 2009, p. 15). Nevertheless, SMEs struggle to acquire qualified and suitable workforce by reason of their size and name recognition. Consequently, the smaller and unknown an enterprise, the more they have to invest in recruiting to find equally suited employees. (Schmid-Gundram 2016, p.91.)

Flexibility and adaptability. Nowadays, SMEs have to react flexibly and in a timely manner to changes in framework conditions (Dombrowski et al. 2009, p.1). The current dynamism in the markets requires a fast capacity to adapt (Malik 2006). In this way, the flexibility of SMEs in relation to production and operating the business (Dombrowski 2009, p.11) as well as the high adaptability to changes which also result from a simple organization structure become one of the most important key success factors of SMEs (Mitchell & Reid 2000, p. 385).

In conclusion, the alluded qualitative characteristics can be utilized to determine SMEs in addition to the quantitative point of view. Since these aspects can also inhibit SMEs negatively, the given factors may be rated as critical factor of success. (Mäder & Hirsch 2009, p. 15.)

3 Cost accounting in general

The chapter gives an overall overview about the topic cost accounting. Starting in section 3.1 with a comparison of financial accounting, management accounting and cost accounting. Section 3.2 stresses the objectives and functions of cost accounting, followed by a detailed explanation of costs in section 3.3. The sub-chapter 3.3 introduces different cost accounting systems and the last section highlights the advantages of cost accounting to its stakeholders.

3.1 Cost accounting in comparison with financial and management accounting

In order to introduce cost accounting in general, the term accounting has to be clarified. Since accounting has a wide scope, it is subdivided into three groups, which are the following: financial accounting, management accounting and cost accounting. Figure 3 illustrates this classification to emphasize its relevance.



Figure 3. Classification of Accounting (Kohli 2010, p.5)

For the purpose of comprehending the scope of accounting and the delimitation of cost accounting, the above-mentioned terms are briefly explained.

Financial accounting is responsible for preparing and providing financial information to external stakeholders (Drury 2012, p. 6). This includes the provision of profit and loss account, balance sheet and trial balance for a predetermined period (Kohli 2010, p.5). The scope of financial accounting is regulated by binding policies set by the respective state. Enterprises are dictated to comply with the guidelines when reporting to external parties. (Bhimani et al. 2015, p.3.)

Management accounting, on the other hand provides information to internal parties (Drury 2012, p. 6) in order to assist the management in managerial decision-making. Data created in cost and financial accounting (Kohli 2010, p.5) help the management board to achieve their objectives and operate a thriving business. Managers are required on an optional basis to combine the generated data with analysing and evaluating techniques. Optional basis in this context means that there are no authoritative guidelines compared to financial accounting. (Bhimani et al. 2015, p.3.) However, to perform and enhance the operational effectiveness, management accounting is considered to be necessary for every enterprise (Drury 2012, p. 6).

Cost accounting is regarded as a vital information tool which helps to control businesses and support the management (Ernst et al. 2017, p.2). According to Bragg (2012), cost accounting has the most important task in the accounting section. It collects and provides non-financial and financial information of an enterprises procurement and usage of operating material and other resources. Therefore, cost accounting not only makes information available for the management board (management accounting), but also for the financial accounting department. (Bhimani et al. 2015, p.3.) As a result, cost accounting is especially set up for the requirements of the management (Arora 2009, chapter 1.2) and gives a summary of particularized information about product or service costs and the costs of operating the business in general (Periasamy 2009, p. 298). The implementation of costing systems and techniques to identify costs is a key function in order to control costs and also to assess the efficiency of a company. Furthermore, with providing information about resource consumption, cost accounting is able to give suggestions about cost reduction and savings. (Kohli 2010, pp.3-5.) Consequently, well-implemented cost accounting systems can provide useful valuation in terms of product costs and pricing, resource capacity and profit centres. Given this information, it might support the management in framing a business plan. (Bragg 2012, p. 71.)

Table 3 highlights and compares the most important characteristics of financial accounting, cost accounting and management accounting. It is worth emphasiz-

ing that the greatest difference is the various information recipients. Financial accounting reports to external and internal stakeholders under commercial and tax regulations, whereas management and cost accounting provides voluntary information for internal parties to simplify decision-making. Another difference is the format of giving data and its reporting period. External accounting (financial accounting) gives information about actual values in a uniform format like profit and loss account and balance sheet, while internal accounting (management and cost accounting) uses actual, normal and planned values for tailor-made provision of information.

	External Accounting	Internal Accounting	
	<i>Financial Accounting</i>	<i>Cost Accounting</i>	<i>Management Accounting</i>
Objective	Documentation, information- and calculation of payment function	Provide information about costs	Documentation, control, planning and management
Basic principle	Creditor protection in accordance with a certain law	Rationality and expediency	
Recipients	Stakeholder (for instance, owner(s), management, creditors and lenders, (tax) authorities, suppliers and customers	Internal parties (for example, board of management, owner(s))	
Regulation characteristics	Legal obligation to keep records, commercial and tax regulations	optional (except in particular sectors, where the record of costs is mandatory under the companies act	optional (no legal requirements), orientation towards the information need of the recipients
Reporting period	past actual values	past actual, normal and planned values	
Format of providing data	Single consistent format (for instance, profit and loss account, funds flow statement and balance sheet)	Lack of uniform formats due to tailor-made provision of information	
(Non-)monetary measurements	only monetary information	monetary and non-monetary information	

Table 3. Comparison of financial accounting, cost accounting and management accounting (Wöltje 2016, p.23 and Arora 2009, chapter 1.4 and 1.12)

3.2 Objectives and functions of cost accounting

To acquire a deeper comprehension about the purpose of developing a cost accounting tool for an enterprise, its objectives and functions are explained in this subsection.

Price policy. With calculating the operational performance, cost accounting is a decision support for sales policy as well as procurement policy (Joos 2014, p.105). The price determination is dependent on price evaluation and calculation (Arora 2009, chapter 1.3). Price evaluation is used to specify a price floor and price ceiling when a market price is given. In contrast, with launching a new product or a made-to-order production, no market price is given, and the price has to be calculated. (Plinke, Rese & Utzig 2015, p.20.)

Determination of operating income is not considered as a specific task of cost accounting, because the main purpose of financial accounting is to determine the business performance of elapsed accounting periods. Generally, this determination takes place only once a year at the end of a financial year. However, the results are too late available to react to developments within a company. Consequently, cost accounting prepares an operating income statement more frequently on a voluntary basis. (Joos 2014, p.102.) With determining the operating income, costs and performance are contrasted with each other (Plinke et al. 2015, p.21) and for an improved outline categorized into the individual products, product group, business units, customer groups, sales regions etc. (Wöltje 2016, p.25).

Monitoring function in relation to cost accounting means to record costs in order to control them and thereby to achieve the corporate objective (Singh 2007, p. 173). For this purpose, cost control guides and manages actual figures towards planned figures and if they differ, the actual figures will be regulated (Kohli 2010, p.3-4).

Maintaining profitability. Cost accounting identifies the short-term success of actual operating activity and thereby describes the profitability of the core business (Szyszka 2015, p. 36). By monitoring the profitability, not only products with the strongest profit contribution can be determined, but also weaknesses and economic inefficiencies (Wöltje 2016, p.25). The attention will be directed in this

way to chances and risk (Ernst et al. 2017, p.5). By means of analysis, solutions depending on the circumstances can be found (Ernst et al. 2017, p.5). The most used method in this regard is the cost-volume-profit analysis or break-even analysis (Singh 2007, p. 173).

Evaluation function. The inventory of finished products and work in progress have to be evaluated in the external accounting as well as the internal accounting (Wöltje 2016, p.26).

Decision-making tool. Cost accounting is also regarded as a decision-making tool and forms a foundation to support the management in stating a business policy (Rama Gopal 2009, p. 350, Arora 2009, chapter 1.3). Furthermore, cost accounting can help in decisions about what kind of products should stay in the product range, if the production should be in-house or outsourced, if an inquiry should be accepted or not (Horsch 2010, pp.16-17) and how much should be produced (Wöltje 2016, p.25).

3.3 Costs

After explaining the concept of accounting with its subtopics, the term costs has to be explained. Literature proposes several definitions. For instance, Nickenig (2017) defines costs as a consumption of production factors for manufacturing products or services whereas Wöltje (2016) defines costs as a valued consumption of goods and services in an accounting period for operational performance and maintaining the operational readiness. All given definitions in literature follow the basic idea of costs as an amount that has to be paid or spent to buy or obtain something (Oxford dictionary n.d.) as well as the transformation of goods and services into tangible or intangible benefits (Singh 2007, p. 171).

Elements of costs

As businesses use different kind of resources, there are various cost types according to their usage purpose (Arora 2009, chapter 2.2). Figure 4 introduces an overview of the elements of costs. The main groups material cost, labor cost and expenses are divided into direct and indirect costs. The sum of all direct costs are

prime costs while the number of all indirect costs equals to overhead which is subdivided into manufacturing, office and administration, selling and distribution.

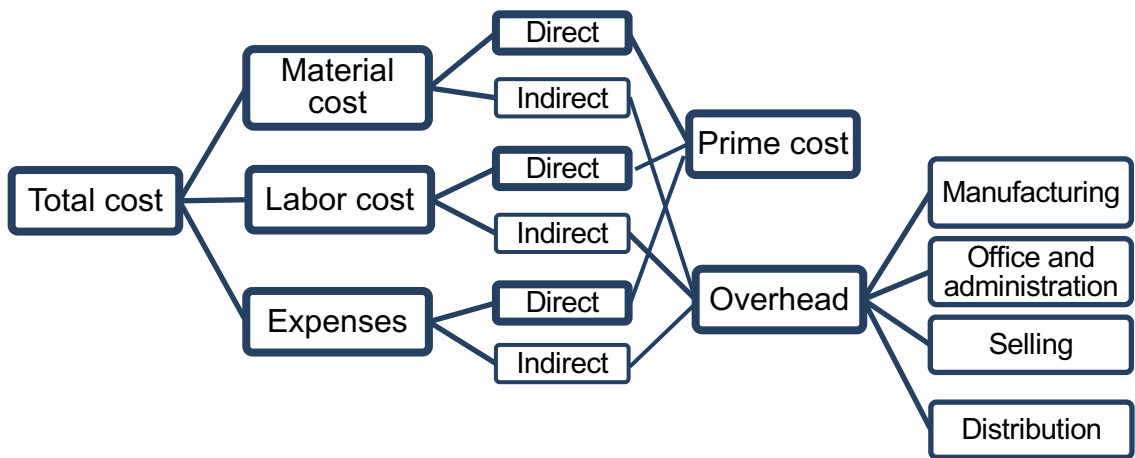


Figure 4. Elements of cost (Rama Gopal 2009, p. 352)

Material costs are defined as the valued consumption of raw materials, auxiliary materials and operating materials (Ernst et al. 2017, p.19). While service providers and merchandising organizations do not use (many of) these materials, material costs represent a significant cost component in industrial companies (Szyszka 2015, p.60; Drury 2012, p. 25). As already mentioned above, material costs are divided into direct and indirect material costs. Direct material costs are material costs which can be precisely allocated to a specific cost object. More simplified expressed, direct material will be a part of the finished product. (Drury 2012, p. 24.) They occur only due to operational purpose related consumption of materials (Plinke et al. 2015, p.64). On the contrary, indirect material costs cannot be assigned to a certain product or unit of costs and therewith indirectly utilized for manufacturing the final product, for instance, electricity for the production machines (Periasamy 2009, p. 311).

When it comes to the **registration of material consumption**, a distinction is made between quantity component and value component. The quantity component again is divided into four systems: inventory and roll-over method, retroactive inventory accounting and estimation procedure. The inventory method comprises a constant physical inventory. (Ernst et al. 2017, p.20.) As a result, the material consumption arises from the difference between the initial inventory of the prior period plus additions during the financial year and the final inventory of

the financial year (Wöltje 2016, p.88). The roll-over method calculates the material consumption based on continual registration of all stock ingresses and usages with the help of receipts (Ernst et al. 2017, p.20). Furthermore, by using the retroactive inventory accounting, material consumption is computed based on bills of material or formulas (Wöltje 2016, p.90). The last quantity component is a method, which calculates the material consumption based on estimation procedures (Ernst et al. 2017, p.20). On the contrary, the principles of the value components are contained in five different methods: average method, last-in-first-out, first-in-first-out, highest-in-first-out and lowest-in-first-out. The first method is the average method, where the consumption arises from the average acquisition value. (Plinke et al. 2015, p.65.) The material consumption methods last-in-first-out (lifo) and first-in-first-out (fifo) address the temporary receipt of the material. By using lifo, it is assumed that the last received units are taken first (Ernst et al. 2017, p.20). In contrast, the method fifo assumes, that the materials are used which are bought first (Horsch 2015, p. 56). The value components which are based on highest-in-first-out (hifo) and lowest-in-first-out (lofo) are focused on the purchasing price. While hifo supposes that the consumed materials are priced with the highest possible amount (Ernst et al. 2017, p.20.), the lofo method assumes that the used materials are based on the lowest purchasing price (Wöltje 2016, p.96).

Labor costs are the cost of remuneration which includes salaries, wages, bonuses, commission etc. for employees. These costs are grouped into direct and indirect costs, too. Direct labor costs represent the salaries and wages given to the employees with a direct connection to the manufacturing process (Rama Gopal 2009, p. 351). Meaning that the wages can be precisely assigned to a particular job, work order, contract or any other cost of unit (Periasamy 2009, p. 311). With the help of physical observation, the amount of labor used to directly manufacture a product or perform a service can be assessed (Drury 2012, p. 25). Conversely, indirect labor costs have a more general and broad character. They cannot be traced to a specific cost of unit and are used for the support in operating a business. (Rama Gopal 2009, p. 351.) Indirect costs are for instance wages and salaries of supervisors, marketers, secretaries, management etc. (Periasamy 2009, p. 311).

Expenses. The last main group of the elements of costs are expenses. Expenses are defined as all other costs except material costs and labor costs and can be as well as the above-mentioned divided into direct and indirect expenses. (Rama Gopal 2009, p. 351.)

Prime costs are the sum of all direct costs, which are the costs that can be allocated precisely to a unit of cost (Plinke et al. 2015, p.36).

Overhead is in contrast to prime costs the sum of all indirect costs, which cannot be identified with a particular cost of unit (Plinke et al. 2015, p.36). They occur for operational reasons but cannot be easily assigned to a cause. The greater the overhead share of total costs, the more improper the profitability assessment of the individual cost objects. (Dietzel 2013, p.69.) As illustrated in figure 4, the subgroup overhead is divided into manufacturing overhead, office and administrative overhead, selling overhead and distribution overhead. Manufacturing overhead is considered as all costs of the production except of direct material and labor (Drury 2012, p. 25), whereas office and administrative overhead includes all indirect expenses caused by conceiving the business policies, determination of targets, organizing, controlling and planning enterprise operations. Selling overhead contains all costs arising from sales promotion, assuring orders, satisfying demand and maintaining customers. The last subgroup of overhead is distribution overhead. Costs of distribution overhead occur from the work when the product is packed until its destination will be reached. Those costs include packing, storage and transport costs. (Periasamy 2009, p. 312.)

3.4 Cost behaviour

While prime costs and overheads are allocated to cost objects by means of their causation, fix and variable costs are determined by the reaction of cost amount to the change in work (Plinke et al. 2015, p.36). Cost behaviour is the awareness of cost variation with various levels of volume or activity (Drury 2012, p. 29). In cost accounting, there are typically two kinds of cost behaviour: variable and fixed costs (Bhimani et al. 2015, p.34). These cost types vary in their cost behaviour depending on activity levels (Rudorfer 2017, p. 17).

Variable costs only incur when performance is delivered. The various types of variable costs differ in their reaction to changes in level of activity. Proportional costs vary to the same extent as the performance (Wöltje 2016, p.48.) and hence, the costs change to an identical and constant proportion (Plinke et al. 2015, p.31). With a cost depression, the costs increase to a small extent like the activity (Wöltje 2016, p.48). Meaning, a change in activity leads to a small but relevant cost increase (Horsch 2015, p. 26). Progressive costs increase to a higher extent in relation to the level of activity (Wöltje 2016, p.48). A change in activity is followed by a relatively high increase in costs (Horsch 2010, p. 26). In contrast to proportional cost, cost depression and progressive costs, regressive costs increase with a lower level of activity and decrease with a higher level of activity (Wöltje 2016, p.49), however, this kind of cost behaviour is a rare case (Plinke et al. 2015, p.32).

Fixed costs are independent from the output quantity and thereby also from the employment fluctuations (Wöltje 2016, p.48). The cause of fixed cost is rather the intention of the business operation to cover capacity needs and to ensure operational readiness (Plinke et al. 2015, p.32).

Figure 5 highlights the most important cost behaviour types. Variable, fixed, depressive and progressive costs are compared as total costs, unit costs and marginal costs. In the light of this situation, total cost is the sum of all costs, unit cost represents the cost of one output and marginal costs are defined as *the cost of producing one more item [...] compared to the cost of producing all items so far* (Cambridge dictionary, n.d.).

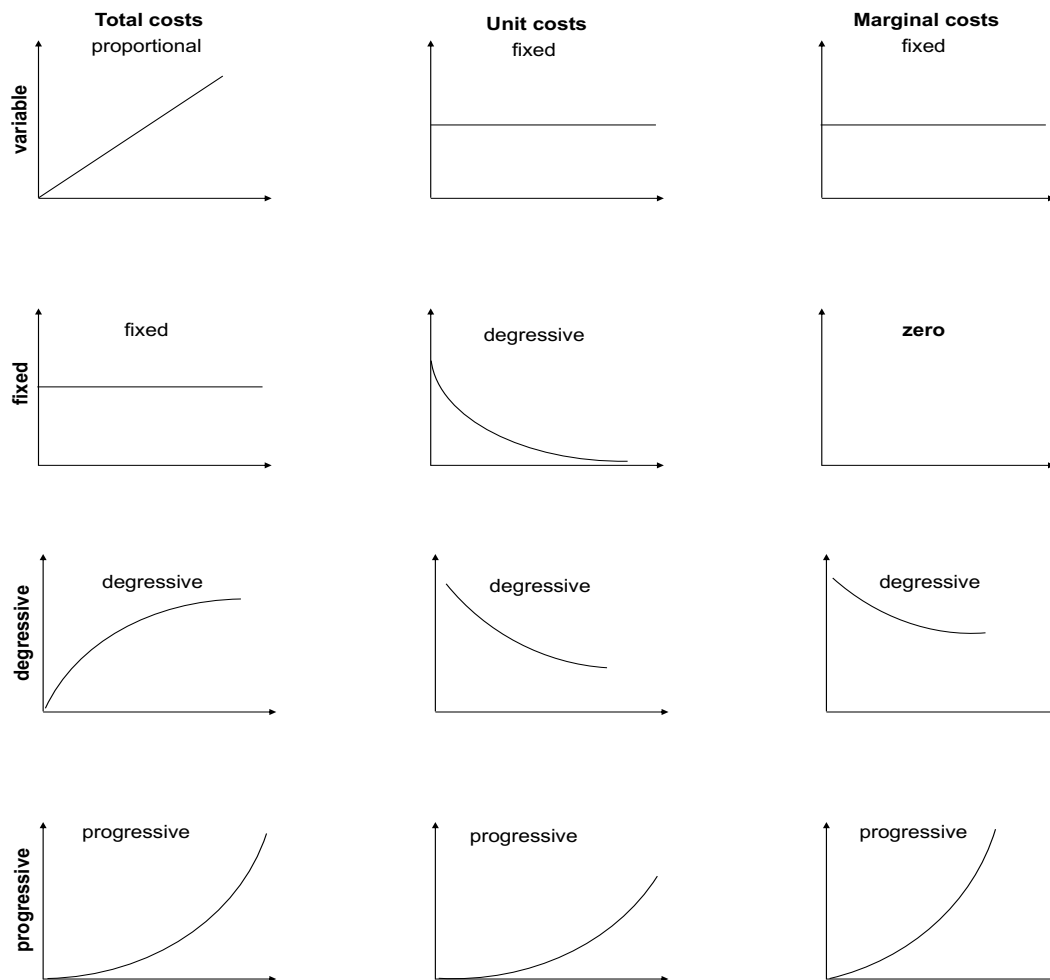


Figure 5. Cost behaviour (Wöltje 2016, p.56)

3.5 Cost accounting systems

Cost accounting systems are characterized by time reference or based on the extent of the costs (Wöltje 2016, p.63).

Time reference

Costs regarding time reference are divided into actual costs, normal costs and target costs.

Actual costs are costs actually incurred (Wöltje 2016, p.64) and must be proven by supporting documents (Ernst et al. 2017, p.12). They are also known as historical costs (Bhimani et al. 2015, p.833).

Normal costs. By contrast, normal costs are figures based on experience and on the average incurred actual costs (Wöltje 2016, p.64) of various prior periods (Ernst et al. 2017, p.12).

Target costs are the expected future or planned costs as an outcome of planning processes (Wöltje 2016, p.64). In comparison with actual and normal costs, target costs use future-oriented data instead of historical and actual information. Therefore, the verification of reality can be reviewed at a later stage. (Nickenig 2017, p. 23.) When a product or service that is generated under expected long-term costs is distributed at target price, the enterprise may attain the goal-oriented income per unit (Bhimani et al. 2015, p.844).

Extent of costs

Cost accounting systems concerning the extent of costs are also designated as techniques of costing. The techniques of costing used in cost accounting are absorption costing and marginal costing. These differ with respect to the application of different cost behaviour.

Absorption costing. With absorption costing, all costs of an enterprise are taken into account and allocated to cost units. As a consequence, variable and fix costs or more specifically direct costs and overheads are ascertained in the costs of a product or service (Singh 2007, p. 176; Rama Gopal 2009, p. 357; Nickenig 2017, p. 23). The total costing system is also known as traditional or full costing method.



Figure 6. Absorption costing (Wöltje 2016, p.61)

Figure 6 stresses how the intermediate steps of absorption costing take place. Absorption costing is divided into three stages: cost-type accounting, cost centre accounting and cost unit accounting. Since overheads cannot be traced directly

to a cost object, the general costs have to be allocated over cost centre accounting to the final stage of cost unit accounting.

In the first step of absorption costing, cost-type accounting, costs are broken down into type of costs. The main question to be answered is, which costs accrued in a certain time period. (Ernst et al. 2017, pp.13-14.) The accrued costs are grouped into different categories and therewith subjected to certain order (Nickenig 2017, p. 22). Cost-type accounting principle tasks are to collect and classify costs, provision and supply of the detected data, cost control and cost budget. The main tasks are based on the fundamental principles clarity, completeness, flexibility and efficiency. (Wöltje 2016, pp.83-84; Ernst et al. 2017, p.19.)

The second stage of absorption costing, cost centre accounting, answers the question, where costs arise (Ernst et al. 2017, p.14). Cost centre accounting is the link between cost-type accounting and cost unit accounting. Direct costs do not require a proceeding allocation and are instead directly traced to cost units. (Wöltje 2016, p.137.) Always when an enterprise produces more than one product type, the problem of correct cost distribution arises (Horsch 2010, p.85), because in comparison to direct costs, overhead cannot be directly traced to cost units (Wöltje 2016, p.137). With cost centre accounting, the overheads are assigned to cost centres with the help of cost allocation bases (Nickenig 2017, p. 74). The different cost centres are sectored according to principle of homogeneity, area of responsibility and clear allocation of costs and basis data. This means that the performance of cost centres has to be homogenous and measurable (Szyszka 2015, p. 149). Furthermore, the cost centres shall represent demarcated areas of responsibility (Joos 2014, p.162) and costs have to be assigned accurate to its cost centre which requires a meaningful designation of the cost centres as well as not too strong differentiation of cost centre structure (Joos 2014, p.162). To provide a better overview of cost centre accounting, the cost allocation sheet illustrates and assigns cost categories to the associated cost centres (Horsch 2010, p.90).

Cost unit accounting has the function to assign the costs to its cost unit based on causation (Nickenig 2017, p. 22). In this case, cost units are usually end products and revenue earning activities, and therefore, the comparison of costs and performance is ensured (Ernst et al. 2017, p.35). The main purpose of cost unit accounting is to determine the manufacturing costs and prime costs per piece and calculate the short-term operating profit (Wöltje 2016, p.187).

Marginal costing. Unlike with absorption costing, marginal costing excludes fixed costs when determining the cost of product or service (Singh 2007, p. 176). Only decision-relevant costs, in this case variable costs, are taken into consideration and allocated to cost units. Costs that do not change due to a decision must not be yielded. (Wöltje 2016, p.65.) Through this kind of calculation, the short-term lower price limit, which is the price that has to be obtained in market at least, can be detected as well as the contribution margin (Nickenig 2017, pp. 22-23; Bragg 2012, p. 78). According to Nickenig (2017), the contribution margin serves for covering the fixed costs whereby the variable costs are deducted from the sales proceeds. Marginal costing allows the management to comprehend the impact of change output volume on costs and profit (Rama Gopal 2009, p. 357) and its cost behaviour (Periasamy 2009, p. 536). The method can be used best when managers are continually faced with incremental pricing decision and the inclusion of overhead costs in costing will result in inexact information. That is why marginal costing yields to inaccurate conclusions when regarding a long-term perspective. (Bragg 2012, p. 78.) However, fixed costs are considered as period costs (Bhimani et al. 2015, p.179; Arora 2009, chapter 10). Marginal costing is also known as variable costing or direct costing. A central concept of marginal costing is the contribution margin (CM) and the therewith associated break-even analysis or cost-profit volume analysis. The contribution margin arises from the difference of the obtained revenues and variable costs, and is thereby the amount which is used to cover the fixed costs. On the contrary, the amount which covers the total cost is known as break-even point. (Ernst et al. 2017, pp.58-59.) With the achievement of the break-even-point, the enterprise does not generate any losses anymore (Wöltje 2016, p.274). The break-even-point-analysis helps the management in decision-making to answer questions like how high the sales price has to be in order to be profitable with the available sales volume, how high

the sales volume has to be to be profitable with the given sales price and so on (Plinke et al. 2015, p.198). The base for information is price per unit sold, variable costs per unit produced and fixed cost for a period (Horsch 2015, p. 56). There are two ways how to express the break-even:

$$\text{Break-even in units to be sold} = \text{fixed costs} / \text{CM per unit (1)}$$

$$\text{Break-even in monetary units to be sold} = \text{fixed costs} / \text{CM ratio per unit (2)}$$

The first way calculates the break-even point in units to be sold and the second one in monetary units like Euro, Dollar etc. to be sold. (Cafferky & Wentworth 2014, p.2.)

The graphic depiction of the break-even point in figure 7 illustrates at which point an undertaking starts to be profitable.

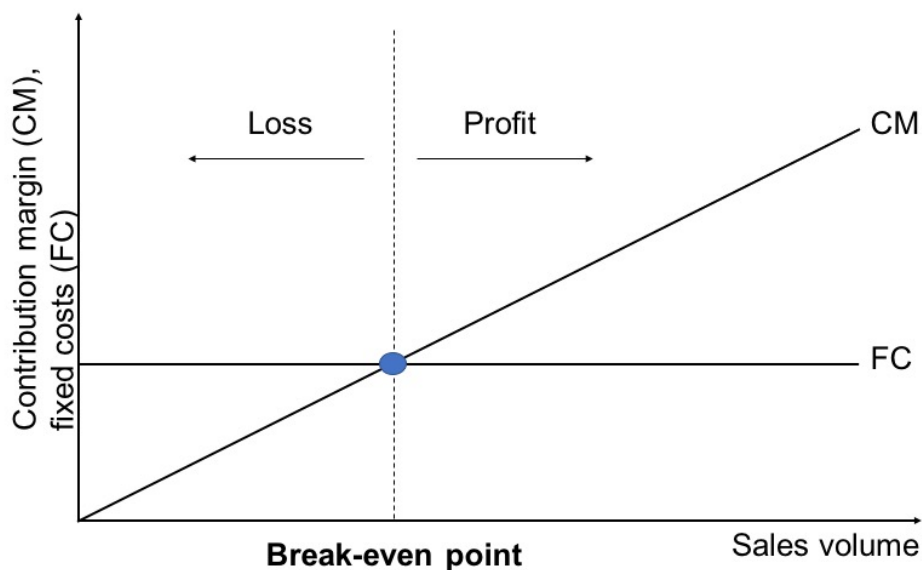


Figure 7. Graphic depiction of the break-even point (Joos 2014, p.245)

Figure 8 highlights the different cost behaviour usage of marginal costing and absorption costing. In general, prime costs are always variable since they only occur due to performance and as a consequence do not arise if the product is not produced. (Wöltje 2016, p.50.) Variable costs can be either prime costs or overhead. On the other hand, fixed costs are always overhead, but overhead can be variable as well as fixed. (Joos 2014, p.113; Wöltje 2016, p.50.)

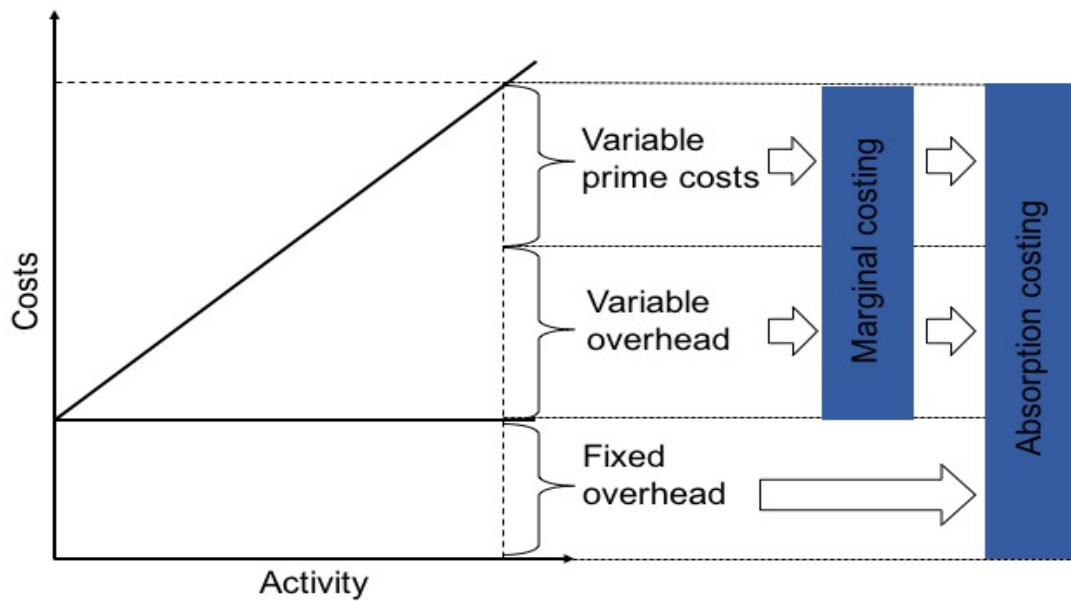


Figure 8. Marginal and absorption costing (Szyszka 2015, p.60)

Methods of costing

Marginal and absorption costs are techniques of costing, which supports an enterprise in accomplishing the goal of controlling costs, while methods of costing simplify the determination of costs (Rama Gopal 2009, p. 358). For instance, job costing, process costing, activity-based costing, target costing and standard costing are methods of costing and briefly elucidate in the following paragraph. The methods of costing may be applied in various business environments in order to satisfy the needs of the management.

Job costing. In job costing, the costs are gathered individually for a specific job (Rama Gopal 2009, p. 356) in a certain period where each job is treated as a distinct unit for the purpose of costing (Periasamy 2009, p.447). A job can be specified as a production order, contract or batch (Kohli 2010, pp.81-82). In general, the method is applied in industries, where customized products are manufactured for particular clients (Bragg 2012, p. 77; Bhimani et al. 2015, p.57). Its objective is to keep track of the profit and loss on every job and allows the management to determine the most and less lucrative jobs. Furthermore, it enables a base for the future price setting of related jobs and in the end a comparison of expected cost with the actual. (Arora 2009, chapter 7.) On the downside, job costing is a cost-intensive method of costing due to a high requirement of detailed

data acquisition and entry. On the basis of the considerable allocation of overheads to every job, there is a risk of an incorrect application of the method. (Bragg 2012, p. 77.)

Process costing. In comparison to job costing, process costing calculates the costs of identical products in bulk quantities for a certain period (Bragg 2012, p. 77). The task of process costing is to determine the cost when products go through various processes or stages (Rama Gopal 2009, p. 356). The costs are first determined for the entire time span and finally assigned to the production processes over the course of the period (Bragg 2012, p. 77). Process costing is best applicable in industries with a constant production (Kohli 2010, p.99) where the outcome is manufactured in the exactly same manner. As a consequence, the production uses the same level of costs (direct costs and overhead) and for this purpose, the average unit cost of output is computed by the division of total costs allocated to the product or service outcome and the total amount of output. Hence, no assignment of costs to individual outcomes is required (Drury 2012, p.102.), because purchasers obtain a uniform service or product (Bhimani et al. 2015, p.57). However, process costing requires a lot of time collecting the information (Bragg 2012, p. 77).

Target costing. Compared to the other methods of costing, target costing is the most forward-looking one (Bragg 2012, p. 79). The calculation for the target cost of a product or service is done by deducting the required profit margin from the target sales price. The method is well applicable in industries where prices are set for homogenous products with great sales quantities. Furthermore, it is essential for the management of potential product costs but is as time consuming as process costing. (Drury 2012, p.233.)

Activity-based costing (ABC) is a more precise way to allocate overheads with certain activities which can be associated to service or product costs. The key benefit of using ABC in comparison to other costing methods is that overheads are related to associated activities. (Bragg 2012, p. 78.) Costs of activities function as general basis for allocating the occurred costs to cost objects (Bhimani et al. 2015, p.833). On the downside, ABC is a rather complex cost accounting system and expects great expertise in cost accounting. Moreover, it requires large

quantities of information and money to maintain the database. (Bragg 2012, p. 79.)

Standard costing is a method of costing whereby the standard costs are contrasted with the actual costs in order to recognize the differences. Standard costs amount in the costs how high they should be. This is based on a scientific foundation and taking into consideration a particular performance level. (Arora 2009, chapter 12.2,3.) The aim of standard costing is to control costs, which is a benefit for an enterprise, but on the other hand it is time consuming and costly, because it requires high expertise (Kohli 2010, p.4).

Table 4 compares the given selection of cost accounting systems in their suitable type of industry to be applied, and used time reference.

	<i>Description</i>	<i>Suitable type of industry</i>	<i>Costs</i>
Job costing	Costs are gathered individually for each job	Custom-made manufacturing	Actual costs
Process costing	Costs are accumulated for processes	Bulk quantities of identical products	Actual costs
ABC	Based on activities performed for production	Manufacturing industry	Actual costs
Target costing	forward-looking methodology	Non custom-made and high demanded products	Planned costs
Standard costing	Comparison of standard and actual costs	Manufacturing industry	Standard costs

Table 4. Methods of costing

3.6 Advantages of cost accounting

In order to understand, why SMEs should be aware of cost accounting, the advantages for various interest groups are highlighted in the following sector. Groups with an interest in cost accounting are the management and employees of an enterprise, creditors, the society and government agencies.

Management. Cost accounting delivers the most important advantage to the management of an enterprise. It discloses activities as either profitable or unprofitable and as a consequence, wastage and inefficiencies may be eliminated or reduced. Cost accounting supports the management in controlling costs effectively and furthermore, provides detailed cost information for supporting the management in decision-making process. Since costs are the most notable influencing factor when determining the selling price, cost accounting leads the management in fixing prices. In addition, when using cost accounting as a management tool, it helps to control inventory and in framing policies concerning production and prices. (Periasamy 2009, p. 302.) Cost accounting provides guidance in reviewing the precision of the department financial accounting (Arora 2009, chapter 1.7).

Employees. The usage of cost accounting provides further advantages to the employees of an enterprise. When the business is able to generate more profits due to the application of a cost accounting system, workers might benefit from a higher operating income by means of performance bonus or incentives. (Rama Gopal 2009, p. 359 ; Periasamy 2009, p. 302.) Merely workers not only receive higher income, but also a greater efficiency and productivity may be observed (Arora 2009, chapter 1.7). Beyond that, the utilization of cost accounting ensures jobs and the productivity of employees can be measured (Periasamy 2009, p. 302).

Creditors. Not only internal stakeholders benefit from advantages of cost accounting, but also external stakeholders for instance creditors. Since financial accounting already provides information about the financial capacity of an undertaking, cost accounting supports in measuring the creditworthiness of an enter-

prise. A good financial performance may lead to an extension of credit opportunities. In addition, cost accounting strengthens the confidence of investors, debenture holder, creditors, banks etc. (Periasamy 2009, p. 302.)

Society. The society and nation also take an advantage of cost accounting. Efficient results of cost accounting decrease production costs and thus leads to reduced prices for the end customers. (Arora 2009, chapter 1.7.) Furthermore, cost accounting guarantees fair and justified prices of product and services (Periasamy 2009, p. 302). From an environmental perspective, it supports in eliminating material wastage and inefficiencies. By combining these facts, the nation continually grows (Rama Gopal 2009, p. 359).

Government agencies and others. The last group of interest are government agencies. Government agencies benefit from cost accounting due to its guidance in fixing prices, reducing costs, wage level fixation, granting subsidy import and export (Periasamy 2009, p. 302; Arora 2009, chapter 1.7.) Moreover, it supports in planning national policies in order to improve the commercial development (Periasamy 2009, p. 302).

4 Cost accounting systems for small and medium-sized enterprises

Chapters 2. Small and medium-sized enterprises and 3. Cost accounting have given a general and separate overview about their contents. This section combines the topics and stresses the relevance of cost accounting for SMEs in chapter 4.1, followed by appropriate cost accounting systems in section 4.2.

4.1 Importance of cost accounting for SMEs

According to Ossadnik et al. (2010), the necessity of cost accounting for SMEs is answered in the affirmative. However, managements of SMEs estimate the costs of introducing cost accounting systems as too high and a recourse on backward-looking financial accounting is considered as sufficient enough (Ossadnik et al. 2010, p.146). As a consequence, the main emphasis of most SME's finance and accounting departments is the financial statement which only focuses on how cost accounting provides data for it (Bragg 2012, p. 72). Furthermore, cost accounting is associated with a highly expected degree of complexity because of a lack in qualified employees in the finance and accounting sector. In the context of these facts, cost accounting is related with high effort and expenditures. Nevertheless, SMEs have the demand to develop and strengthen their information tools, especially in the field of cost accounting. (Ossadnik et al. 2010, pp.36, 47.)

Figure 9 clarifies the increasing relevance of internal accounting regarding to the company size and business complexity. The company size is an indicator for the financial volume. The higher the financial volume, the higher the possible financial success of a better decision and the reasonable an extensive internal accounting. On the other hand, the business complexity is an indicator for a possible enhancement of the decision quality. The more difficult and unmanageable the situation, the higher the chance to enhance the circumstances with qualified information. With regard to these factors and its economic efficiency, the requirements of internal accounting and therewith cost accounting increase. (Szyszka 2015, p. 30.)

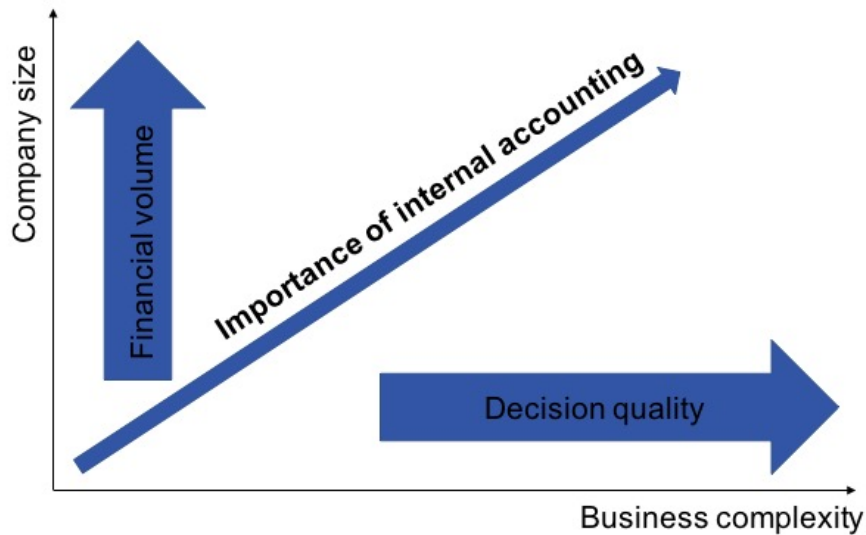


Figure 9. Importance of internal accounting (Szyszka 2015, p. 31)

4.2 Suitable cost accounting systems for SMEs

In order to utilize the given potential of cost accounting, its design has to be adjusted individually to the needs of a business (Ossadnik et al. 2010, pp.49-148). As already elaborated in section 3.5, there are special cost accounting systems for various industries and needs of an enterprise. Due to the usage of several cost accounting systems in large enterprises, cost accounting can provide useful data and indicators for different topics in decision-making (Bragg 2012, p. 72). In contrast, the business complexity of SMEs and therewith the requirement of cost accounting is not as high as in large companies. As a result, cost accounting systems like activity-based costing, job costing, process costing etc. are too cost and time intensive with respect to the small number of cost types in SMEs. (Ossadnik et al. 2010, p.149.) In accordance with Kosmider (1994), cost accounting for SMEs is based on traditional instruments, for instance, finance and budget plan, liquidity monitoring, balance sheet and profit and loss calculations, and financial ratios. These traditional instruments cover the scope of historical data to future-oriented consideration and simultaneously form a basis for cost planning and, on this basis for planning instruments. (Kosmider 1994, pp. 109–110, 222.) Thereby, the emphasis is placed on operative instruments and focused on the aforementioned traditional instruments of cost accounting, because only with the growing size of enterprises, strategic instruments gain in importance (Ossadnik et al. 2010, p.148).

Moreover, various studies investigating the usage of cost accounting in SMEs ascertained that the most applied cost accounting systems are marginal costing and absorption costing. Nevertheless, the different intentions of the two cost accounting systems have to be taken into account. As already mentioned in section 3.5, marginal costing and absorption costing differ with respect to the application of different cost behaviour. While marginal costing only uses variable costs, absorption costing calculates with both types of cost behaviour – variable and fixed costs. As the results of the systems conclude to different consequences, the management should be aware of the informational content. Marginal costing functions as a support tool for short-term decision making and is therefore only applicable as a supplementary tool along with absorption costing. In practice, absorption costing has a higher regard and marginal cost is burdened with caveats. (Ossadnik et al. 2010, pp.48-63.) According to Ossadnik et al. (2010), the investigations reveal that SMEs favour using absorption costing oriented systems, but as companies grow, there is a trend towards marginal costing.

Table 5 gives an overview about the already mentioned cost systems and if they are suitable for SMEs. Their advantages and disadvantages are stressed and followed by a decision, if the cost systems are appropriate for SMEs.

	<i>Advantages</i>	<i>Disadvantages</i>	<i>Suitable for SME</i>
Job costing	Pricing for each job	Cost intensive, high requirement of detailed data	No
Process costing	Easier calculation due to the production of homogeneous products	Time consuming	No
Target costing	Supports in market-driven management	Time consuming, risky	No
ABC	Accurate allocation of overhead	Cost intensive, time consuming, great costing knowledge required	No
Standard costing	Controlling costs	Cost intensive, time consuming, high expertise required	No
Marginal costing	short-term management, easy comprehensible	No consideration of fixed costs	Yes, but with caveats
Absorption costing	Consideration of all costs	No support for managerial decision-making	Yes

Table 5. Suitable cost accounting systems for SMEs

In summary, only marginal costing along with absorption costing are worth considering for SMEs. The other cost accounting systems job costing, process costing, target costing, activity-based costing and standard costing are either too time consuming or cost intensive or even both. Some of the systems require a great costing knowledge or high expertise in order to apply it accurately.

5 Developing a cost accounting system for the case company

This chapter addresses the thesis's case study. The first section explains the case studies design and how the data was collected. Section 5.2 gives general information about the case company including its product range, departments and future targets; followed by analysing the current situation in regard to accounting and cost accounting in chapter 5.3. Section 5.4 evaluates the current situation and 5.5 gives a recommendation on how to enhance the cost accounting system in the case company.

5.1 Case study design and data collection

In order to develop a cost accounting system for the case company X, all relevant information needed to be gathered. The process started with interviewing the co-founder and manager via telephone conversation on the 23rd of March 2018. During the telephone conversation, a cooperation framework was defined. The author of this study spent three weeks in the case company (11th of June till the 29th of June 2018). Firstly, general information about the company X including its structure, product range and future targets was collected. After gathering the general information, the author had a face-to-face meeting with the manager about their current accounting situation. During the meeting, the manager provided accounting data like annual financial statements, monthly income statements, basic cost accounting tables, financial reports for investors, forecast-based planning and price calculations. Furthermore, the student had a full access to the case company's enterprise-resource-planning system and other relevant data like Excel spread sheets etc. Afterwards, the current cost accounting situation was analysed and evaluated in order to give a first feedback to the management. The outcomes were discussed, and final decisions for a possible recommendation were made. To comprehend the current cost accounting calculation, it was necessary to contact the external tax consultant. This was done via e-mail. Another meeting was conducted with the case company's working student to discuss the results of the analysis and its evaluation. After gathering all relevant information for developing a cost accounting system, the recommendation was phrased and finally discussed with the case company's management on the 6th of July 2018.

5.2 General information about the case company

The following subchapter provides information about the case company X with its product range, departments and also its future targets. This information is important to comprehend the subsequent steps of the case study.

As already mentioned in the introduction of the bachelor thesis, the case study is about the brand XY which is a part of the company X.

Product range

[...]

Figure 10. Product portfolio of company X (XY n.d.)

In order to get a better understanding about the product portfolio, its commercial success and production costs, figure 11 provides a comparison of the product groups [...]

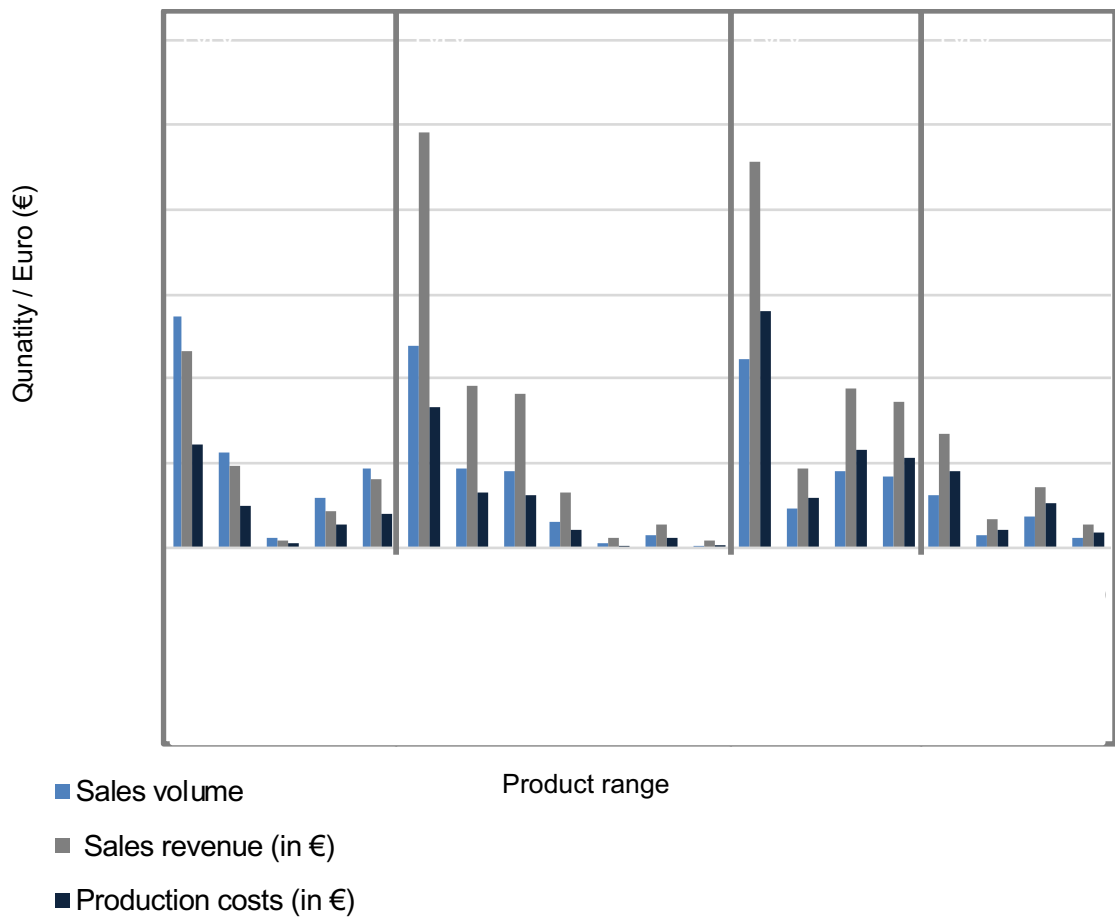


Figure 11. Comparison of products in regard to sales volume and revenue, and production costs (Microsoft Dynamics NAV 2018, 01.11.17-30.04.2018)

[...]

Consequently, the case top 5 products are [...]. The top 5 products are listed in table 6 regarding their sales revenues and sales volume.

		Sales Volume	Sales Revenue
1			€
2			€
3			€
4			€
5			€

Table 6. Top 5 products of company X

On the downside, figure 11 provides a justification, why company X has decided to remove [...] from its product portfolio.

Departments

Currently, company X employs 10 full-time employees in the fields managements sales, production and purchasing, marketing, ecommerce and performance. The enterprise receives support from one working student and two interns, who help in the day-to-day business. Described below are the five departments with their main tasks.

Management. The founders [...] and [...] are shareholders as well as members of the management. For example, [...] is on one hand responsible for decision-making and on the other hand also for financial management.

Production and Purchasing. The department of production and purchasing is responsible for the product development. After the product is developed and tested, raw materials (including [...]) for the outsourced production are purchased. Furthermore, the production and purchasing department processes complaints, and maintains the production and deadline compliance.

Sales. Employees of the sales department are in charge of customer acquisition, sales processing and afterwards customer service. Moreover, they take care of warehouse and logistics operations, and controlling.

Marketing is responsible for the project management and of course marketing campaigns. They develop point of sales concepts and are in charge of the product and graphic design of the brand.

E-commerce and performance represents the company in social media like Instagram and Facebook. Furthermore, they evaluate the sales processes of customers in their own online shop. In order to build a recognizable brand, two brand ambassadors support the company in Berlin and Hamburg.

Each individual employee cannot be simply replaced, because everyone has his/her own particular area of responsibility which requires various skills and expertise.

Future targets

The nature of every undertaking is to earn profits and since the company has not been able to earn profits yet (Profit and Loss Statement 2017), its future target is to get profitable in the end of this year (Forecast 2018-2020).

(Figures in thousand)	2017	Forecast 2018
Gross sales		
Revenue reduction		
Sales revenues		
Cost of materials		
Crude result		
Marketing		
Sales		
Purchasing and Logistics		
Contribution Margin		
R&D / QM		
Administration		
EBITDA		
Depreciation		
EBIT		

Table 7. Profit and loss statement of 2017 and forecast 2018 (Forecast planning 2018)

As revealed in table 7, the earnings before interest and taxes (EBIT) from 2017 are negative with an amount of €. By an increase in sales revenue of [...], company X targets an EBIT of € for the fiscal year 2018.

In addition, the company plans on an expansion to other European countries like France and also to the United States of America. Due to their unique mission, the demand for such an extraordinary product range is available. [...]

5.3 Analysis of current situation in regard to cost accounting

Presently, co-founder and manager is responsible for the financial department and gets support from a working student and an external tax consultant. The external tax consultant prepares a monthly short-term income statement and in the end of each fiscal year an annual financial statement with balance sheet, and profit and loss statement. Moreover, the external tax consultant develops a basic cost accounting sheet with relevant cost centres. Beyond that, the manager evaluates the monthly short-term income statements and creates a financial report for the investors and shareholders. Furthermore, a forecast-based planning shell support the operational activities and the price calculations.

The following subchapter deals with explaining the current accounting methods used in the case company (see also figure 12).

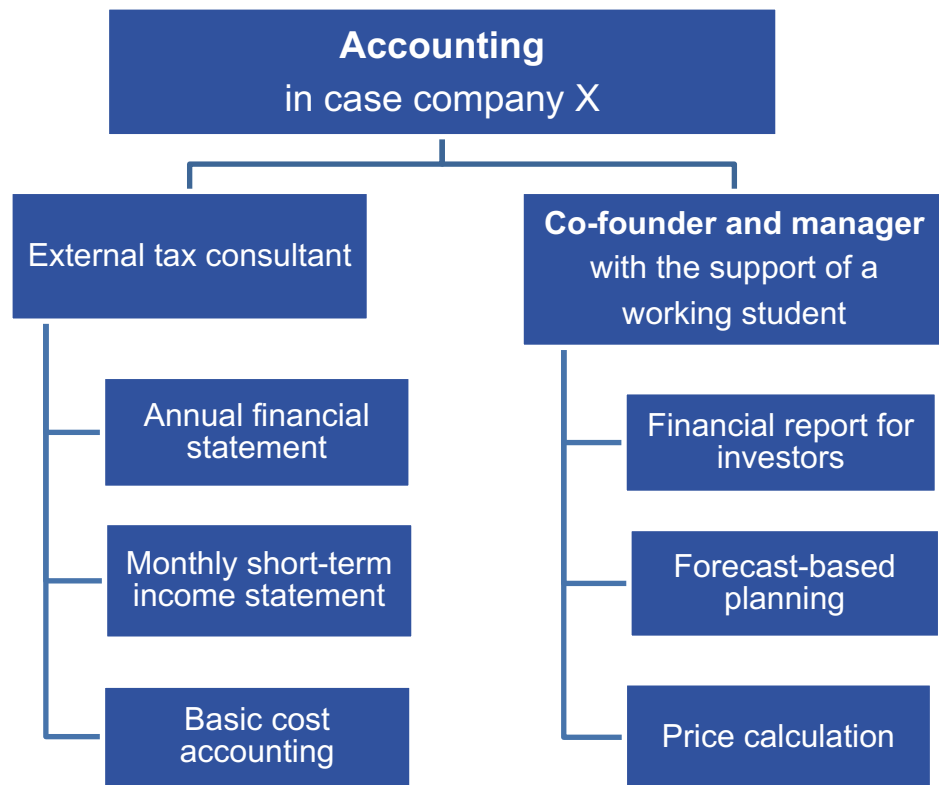


Figure 12. Current accounting situation in case company X

Annual financial statement provides a balance sheet and profit and loss statement for a fiscal year. A fiscal year of the company X is the calendar year (01.01-31.12). The balance sheet gives financial information about the enterprise at a certain reporting date including liabilities, assets and capital (Edwards, Mellett & Marriott 2008, p.26), whereas the profit and loss statement or income statement involves a specific timeframe by a tabular comparison of incomes and expenses in order to calculate a profit or loss (Nickenig 2018, p.5).

Monthly short-term income statement. In order to get a better overview about the business and its financial situation, the external tax consultant also prepares a monthly short-term income statement. Therewith, a provisional result of the annual profit and loss statement is calculated and beyond that, a cashflow statement is generated (Monthly short-term income statement 2018). The cashflow statement deals in contrast to balance sheet not with non-cumulative values of financial transactions but with flow data. Therewith, the cashflow statement gives an insight into the change of financial resources. (Lühn 2014, p.3.)

Financial report. The financial report is an evaluation of the monthly short-term income statement for company X investors and shareholders. It provides an executive summary about the monthly sales, gross profits, total cost, profit or loss and a contribution margin accounting with a comparison to the previous year's month in percentage-based changes. The results are also listed in a comparative way to the planned figures. In order to give the shareholders a better understanding of the results, the financial reports include an explanation of the current situation and therewith, justify a possible change in regard to the planned figures.

Forecast-based planning. The forecast-based planning is based on an Excel file and comprises information about scenarios profit and loss, sales and sales volume, advertising costs and overheads. The figures were calculated with the basis of historical values of the year 2017. The table of sales and sales volume scenario is divided into the different products and also various trading forms. The trading forms like drugstores, food retailing, filling stations and commercial agencies are again subdivided into various purchasers.

Price calculation. Company X has price calculations and price scenarios for its different products. The following shows examples for the production cost calculations of the product types.

[...]

The further price calculation is dependent on the required margin of the retailer. Thereby, the margin of the retailer is deducted from the recommended retail price. Furthermore, the production costs are subtracted from the generated revenues and this results in the contribution margin (CM) 1. CM 2 is the CM 1 minus the transportation costs which means that the delivery is free to the door:

[...]

Basic cost accounting. Another task of the external tax consultant is to provide a basic cost accounting spreadsheet. In this case, the already applied cost accounting method is marginal costing. As simplified illustrated in table 8, the cost accounting of the enterprise contains different cost centres and cost types. The cost centres can be assigned to the four product groups and also to the cost centre administration.

1. Cost centre 1XX:
2. Cost centre 2XX:
3. Cost centre 3XX:
4. Cost centre 4XX – 5XX:
5. Cost centre 6XX:

The cost types are the following:

1. Personnel costs
2. Rental costs
3. Operational taxes
4. Insurance fees
5. Vehicle costs
6. Advertising and travel expenses
7. Costs of handling goods
8. Depreciation
9. Repair and maintenance costs
10. Other costs

[...]

Additionally, the cost accounting table states the operating income as a preliminary result after deducting costs and the EBIT as a final result.

	Total	Cost center 101	Cost center 10x	Cost center 201	Cost center XXX
Sales revenue					
Goods and material purchase					
Gross profit					
Other operating income					
Gross operating profit					
Types of costs					
Personnel costs					
Rental costs					
Operational taxes					
Insurance fees					
Vehicle costs					
Advertising and travel expenses					
Costs of handling goods					
Depreciation					
Repair and maintenance costs					
Other costs					
Total costs					
Operating income					
Interest expenses					
Other nonoperating expenses					
Nonoperating expenses					
Other nonoperating income					
Nonoperating income					
Earnings before interest and taxes (EBIT)					

Table 8. Current cost accounting situation in case company X

5.4 Evaluating

As explained in chapter 4.1, the importance of cost accounting increases with the growth of an enterprise and its business complexity. With the targets of company X being an international expansion and growth in sales revenues, a further application of accounting systems and especially cost accounting is required.

Currently, the cost accounting tool used in the case company is marginal costing. As alluded in chapter 3.5 marginal costing can be used from SMEs along with absorption costing. Nevertheless, the case company only applies the cost accounting tool marginal costing.

However, the main problem with the current cost accounting situation is that an external tax consultant manages the enterprises cost accounting. On the basis of

the external cost accounting situation, the management of the company as well as the tax consultant suffer disadvantages. Hence, on the one hand, the external tax consultant does not have a realistic and complete overview of the processes in the company. Only invoices, bank records etc. are made available for the tax consultant and this results in an incorrect presentation of the cost accounting spreadsheet. In the course of this, cost centres are inaccurately indicated and to some extent specified several times. [...] In addition, the cost allocation seems to be erroneous as well. According to the cost accounting spreadsheet 2018 of the external tax consultant, the cost centres 102, 103 and 104 have caused material purchasing costs, even though their last production was in the end of 2014 and the products have been withdrawn from the product range. In the consequence of simplification purposes, the cost centres X01 summarize revenues from the online sales for the product groups [...]. This leads to the fact that the sales revenues of online sales are not directly assigned to the individual products, but to the product groups. A further aspect in which the cost accounting system needs to be improved is the division of cost centres. Currently, the cost centres are merely based on the products and in addition administration. Consequently, on the other hand, the management board and employees lack in understanding the already existing cost accounting system because no transparency is given. Without the related receipts and documents, it is difficult to comprehend the current cost allocation and as a result, the extent of some costs seems unrealistic and incomprehensible.

In summary, due to the external calculation of cost accounting, the current cost accounting system lacks in comprehensibility and accuracy. Some cost allocations and cost centre divisions cannot be retraced. But since the company is steadily growing in relation to the international expansion and new customer acquisition, the requirement for an appropriate cost accounting system is increasing. With business growth, cost structures get more complex and unclear as explained in chapter 4.1.

In the following table 9, the cost types are described and also divided into variable and fixed costs as well as prime costs and overheads. In addition, the costs are

listed according to their cost amount starting with the highest and ending with the lowest cost amount.

[...]

Table 9. Overview of cost types

The classification of costs into variable costs, fixed costs, prime costs and overhead is essential in order to understand the followed proposed guideline for the case company's new cost accounting system. As stated in table 9, the only variable cost types are material purchasing costs and costs of goods handling. Material purchasing costs already are prime costs, which means that they can be directly retraced to a product. In contrast, costs of goods handling are variable costs as well, but cannot be directly allocated to a product (overhead).

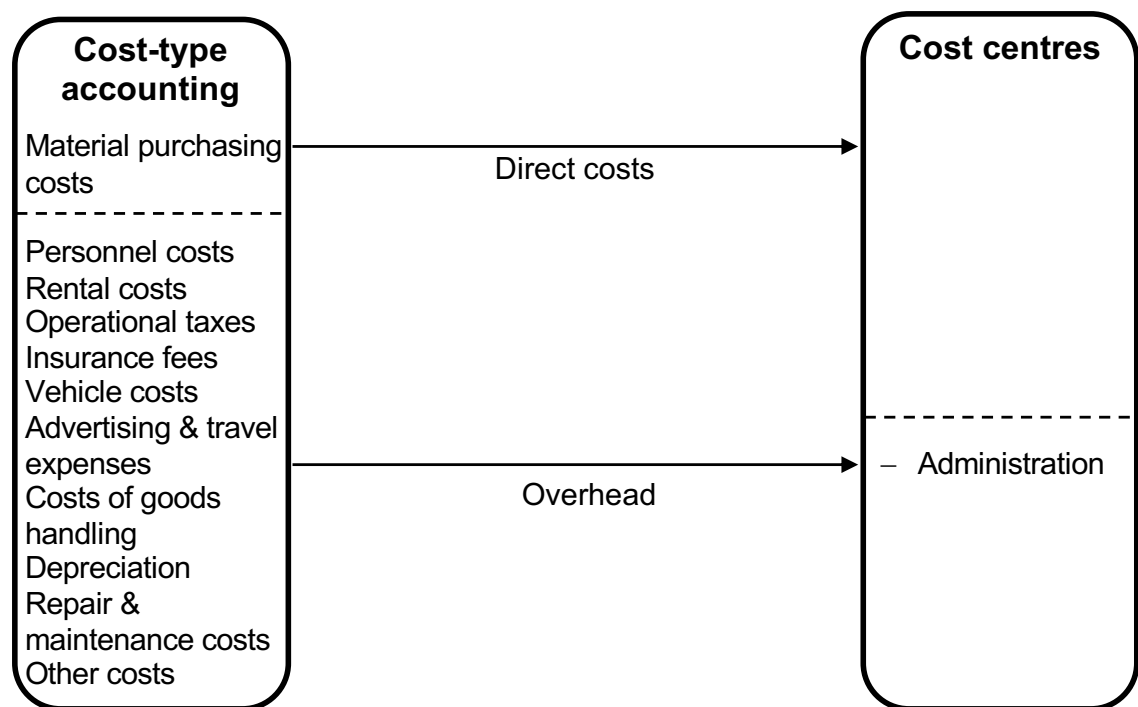


Figure 13. Marginal costing of company X

As illustrated in figure 13, all cost types except material purchasing costs are categorized as overheads and only allocated to the cost centre administration. Material purchasing costs are the only variable prime costs which can be directly assigned to the individual products. Only in exceptional cases, advertising and travel expenses are also directly allocated to final products or product groups. [...]

5.5 Recommendation

After elaborating the current problems of the case company's cost accounting system in the previous subchapter 5.4, a recommendation will be proposed how to possibly eliminate or enhance the issues.

To resolve the problem of the **external cost accounting management**, a closer cooperation between the external tax consultant and the case company X or even an insourcing of cost accounting is suggested. In doing so, the calculations of cost accounting are transparent and comprehensible for the entire company. Furthermore, with insourcing cost accounting or a closer cooperation, the difficulty of incorrect cost allocations can be eased.

Apart from that, the issue of **inaccurate indication of cost centres** can be enhanced with following the developed Excel spreadsheet attached in appendix 1. While revising the current cost accounting spreadsheet and developing a new one, transparency and clarity were paramount.

For purposes of simplification, the **e-commerce sales revenues are summarized** in combined cost centre of the product group. With an increase in sales revenues, the e-commerce sales revenues should be assigned to the individual products and not only to its product group.

Since the cost centre administration is the only cost centre for **overheads**, a further investigation is needed. In respect of some overheads, it is too time consuming to allocate the costs to a final product. For instance, to spread personnel costs to the final products it is necessary to elaborate an appropriate and efficient calculation key etc. This also applies to the overheads' rental costs, operational costs, insurance fees, vehicle costs, depreciation, repair and maintenance costs and other costs. After a meeting with the founder and manager and the working student, the decision was made to focus on the overhead costs of goods handling. This follows from the fact that these costs represent a significant part of the total overheads (see table 9) and as sales revenues increase, variable overheads rise as well.

Costs of goods handling currently constitute a major problem also in the scope of price calculations. Due to rather small orders, no pallet with only one product can be delivered. This results in re-palletizing and additional costs of goods handling. At the moment, the case company changes its main warehouse and negotiations with their logistics partner result in only accepting order with homogenous pallets.

Storage costs rate = storage costs / average stock value (Brandenburg, Fottner, Gutermuth & Muchna 2018, p.47)

In the future, the case company X should only use **marginal costing along with absorption costing** in order to get a better insight of the cost situation for a long-term perspective. The following describes a guideline on how to develop the cost accounting system.

Cost-type accounting. Due to the fundamental principle of clarity, completeness, flexibility and efficiency, the main task of cost-type accounting is to collect and classify costs (Chapter 3.5). The already existing cost classification is appropriate and can be adopted. As already stated above and again in figure 13, the only direct costs are material purchasing costs and all other costs [...] are classified as overheads.

Cost centre accounting. With determining the case company's cost centres, the principles of homogeneity, demarcated areas of responsibilities, and unambiguous assignment of costs were followed (Chapter 3.5). Table 10 illustrates the cost centre plan for the case company X. The division of cost centres is mainly based on the areas of responsibilities which are marketing, sales, production, logistics and administration. Additionally, the table provides more detail about the areas of responsibilities and also the responsible person(s) of the cost centre. In order to get a better overview of cost centre accounting, it is recommended to prepare cost allocation sheet which illustrates and assigns cost categories to the associated cost centres. From an economic perspective, it is essential to ensure that the applied calculation key is efficient and appropriate. This avoids inconsistencies and false calculations.

<i>Cost center number</i>	<i>Cost center name</i>	<i>Details</i>	<i>Cost center responsible</i>
01	Marketing		
02	Sales		
03	Production		
04	Logistics		
05	Administration		

Table 10. Proposed cost centre plan

Cost unit accounting. With cost unit accounting being the last step of absorption costing, the direct costs and divided overheads can be finally assigned to the cost units. In the case of company X the cost units are their final products.

Figure 14 outlines the proposed and recommended absorption costing for the case company X.

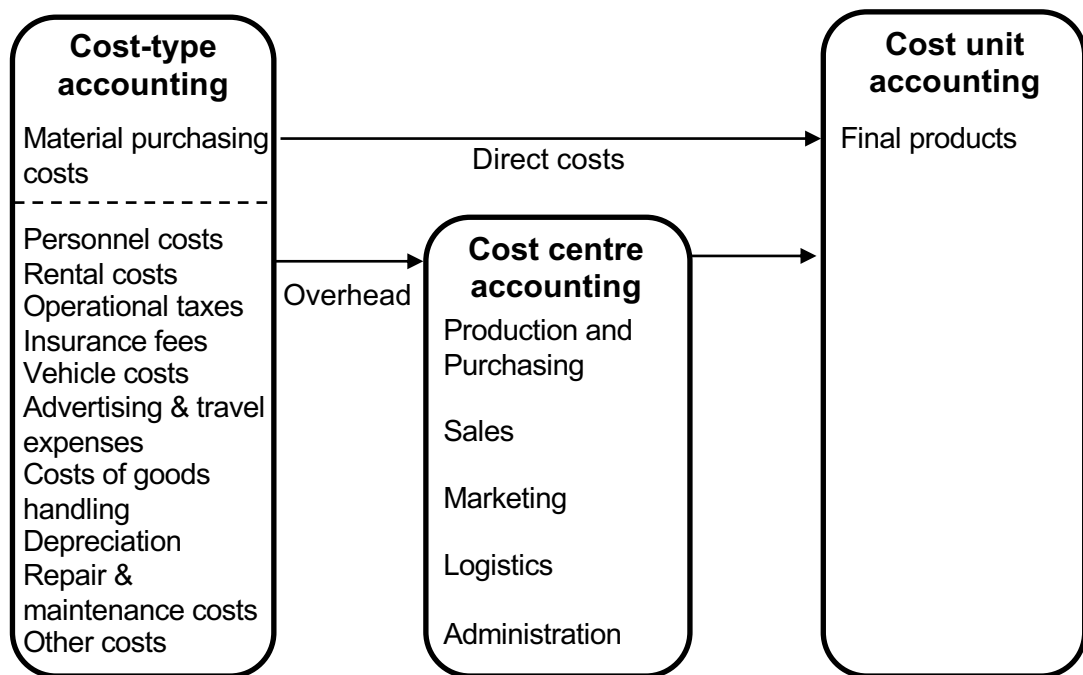


Figure 14. Absorption costing

The elaborated problems of the current cost accounting system of the case company from previous chapter are summarized in table 11, followed by a recommendation how to eliminate or enhance the issue.

<i>Problem</i>	<i>Recommendation</i>
Cost accounting managed by external tax consultant	Closer cooperation or insourcing of cost accounting
Inaccurate indication of cost centers	Follow the developed Excel spreadsheet (appendix 1)
Incorrect cost allocation	With a closer cooperation between the case company and the external tax consultant or insourcing of cost accounting, a correct cost allocation can be ensured.
Summarized sales revenues of e-commerce	As sales revenues increase, the sales revenues of e-commerce have to be assigned to the individual products and not only to its product group.
Division of cost centres	Consider new proposed division of cost centres (table 10)
Only application of marginal costing	Application of marginal costing with the combination of absorption costing

Table 11. Evaluation of current cost accounting tool in the case company X

6 Summary and evaluation of the study

This chapter includes a summary of the thesis in 6.1. Furthermore, the study is evaluated in subchapter 6.2 followed by personal learning of the author.

6.1 Summary

The objective of this study was to develop a new cost accounting tool for the case company X. The need for developing a new cost accounting tool for the case company arose from its business growth and the therewith associated increasing costs.

The thesis started with introducing the background of the study, its objectives, research method, delimitations and limitations, followed by the theoretical framework, a short introduction of the case company X and the structure of the study.

The literature review provided already existing knowledge about small and medium-sized enterprises and cost accounting in general. Subsequently, suitable cost accounting tools for SMEs were compiled. The result of the literature review is that only absorption costing or marginal costing along with absorption costing are worth considering for SMEs. This is due to their company size and business complexity. Other cost accounting tools like job costing, process costing, activity-based costing, target costing and standard costing are too time consuming and costly.

During the practical part of the study, the case company X was examined in its product range, departments, and future targets. On the basis of the future targets being a worldwide expansion as well as business growth, there is a requirement to enhance their current cost accounting system. After analysing the cost accounting situation, it became obvious that due to the maintenance of the external tax consultant, the system is not transparent and comprehensible enough to come to a deduction and improvement. Meetings and discussions with the co-founder and the working student helped the author to prepare a recommendation on the base of the case company's needs. It is especially recommended to focus on a closer collaboration between the enterprise and the external tax consultant

or even to insource cost accounting. This will eliminate the problem of an inaccurate indication of cost centres as well as an incorrect cost allocation. Furthermore, the author provided a new division of cost centres as a cost centre plan (table 10) and in addition, a new developed Excel spreadsheet for a better overview of the current cost accounting system (appendix 1). A further investigation was conducted to correct the application of only marginal costing. As stated in the literature review, marginal costing is only applicable along with absorption costing. The author proposed an absorption costing system adjusted for the case company (figure 14), where only the direct costs (material purchasing costs) are directly traced to the final products and the overheads are firstly allocated to cost centres and then finally to the cost unit.

6.2 Evaluation of the study and personal learning

Developing an accurate cost accounting tool is a requirement for enterprises to stay competitive and successful. Nevertheless, developing an appropriate cost accounting tool for an organization is not straightforward and requires expenditure of time in order to collect data and afterwards analysing it. Undertakings differ in their company size, business complexity, and structure, that is why there is no uniform cost accounting tool which is applicable and reliable for every enterprise.

It was a personal challenge for the author to apply acquired knowledge in real-world circumstances. Especially, because there is no perfect cost accounting tool which can be applied in all companies, it was challenging to get an overview of the undertakings operations and therewith develop a cost accounting tool which suits the company's needs and business requirements.

The author of this thesis gained a lot of knowledge and experience during the project. On one hand, she deepened her knowledge about internal accounting, in particular cost accounting and on the other hand, the project enriched her with expertise and experience.

Planning was recognized as being essential for a successful project. Without planning a project in advance, it might not be as structured as required or even fail. Furthermore, planning is important to be aware of possible arising issues during the project and to have an alternative solution.

Besides planning, **timing** was regarded as vitally important. It is essential to time every single step of the project and set personal deadlines, otherwise one might over- or underestimate oneself and fail to comply with the given time frame.

Even though the case company has been very cooperative, the importance of a good **cooperation** during a case study became clear. Without a successful cooperation, the author would not have been able to finish the project. A functioning cooperation is crucial to get all information and data required for the study.

After a final meeting with the enterprise's manager, he disclosed that there will be a new position with the responsibility of strategic planning and controlling operational performance with a focus on cost accounting. The result of this study will be taken into consideration.

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Appendices

Appendix 1

Current cost accounting system revised (see attached Excel File)

[...]