

A Cost Analysis of a Selected Company

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ABSTRAKT

Cieľom bakalárskej práce je analýza nákladov vo vybranej spoločnosti počas rokov 2019 až 2021. Bakalárska práca je rozdelená do dvoch častí – teoretickej a praktickej. Prvá časť, teoretická, spracováva literárne rešerše týkajúce sa nákladov a nákladového účtovníctva, a vymedzuje základné termíny týkajúce sa nákladov a nákladovej analýzy. Následne sa sústreďuje na členenie nákladov z viacerých hľadísk, ako aj popis objektu nákladov spolu s metódami odhadu nákladov, popisom bodu zvratu a metódami výpočtu nákladov v spoločnosti. Nasledujúca, praktická časť, bakalárskej práce sa zaoberá spracovaním informácií o vybranej spoločnosti. Ďalej sa taktiež zameriava na analýzu nákladov a analýzu bodu zvratu v danej spoločnosti. V poslednej časti bakalárskej práce sú popísané výsledky analýz spolu s navrhovanými odporučeniami.

Kľúčové slová: náklady, analýza nákladov, nákladové účtovníctvo, fixné náklady, variabilné náklady, bod zvratu

ABSTRACT

The aim of the Bachelor's thesis is to conduct a cost analysis of a selected company, over the years 2019 to 2021. The thesis is divided into two parts – theoretical and practical. The first part, the theoretical part, elaborates on literary research related to costs and cost accounting and defines the basic terms related to costs and cost analysis. Subsequently, it concentrates on dividing costs from several perspectives, as well as the description of a cost object altogether with cost estimation methods, description of a break-even point, and costing methods within the company. The following, practical part of the Bachelor's thesis involves processing information about the selected company. Furthermore, it also concentrates on cost analysis and break-even point analysis of that company. In the last part of the Bachelor's thesis, the results of analyses along with the proposed recommendation are described.

Keywords: costs, cost analysis, cost accounting, fixed costs, variable costs, a break-even point

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I hereby declare that the print version of my Bachelor's thesis and the electronic version of my thesis deposited in the IS/STAG system are identical.

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INTRODUCTION

Costs are an inevitable part of any business institution. In order to get the business running, a company or an organization must take into consideration the expenses that are associated with the production of goods or the provision of services. It is essential to pay sufficient attention to costs in the company in order to avoid unwanted problems that could eventually lead to the company's bankruptcy.

Hence, the topic of the Bachelor's thesis is costs and the analysis of costs in a selected company. The structure of the Bachelor's thesis is divided into a theoretical section, where a definition of costs with various characteristics from both the point of financial and managerial accounting is provided. Furthermore, the theoretical part includes multiple divisions of costs according to different criteria and additional descriptions and explanations of each cost division. Later on, it describes costs objects, as well as cost models together with a cost function, and briefly explains cost estimation methods.

Next, the theoretical part discusses the cost-volume-profit analysis together with explaining the break-even point and the connection between the two. Furthermore, the margin of safety is briefly mentioned. As the last thing, the description of operating leverage and the degree of operating leverage is also mentioned.

The analytical section of the thesis introduces a chosen company and analysis applied to provide suggestions for its improvement based on acquired knowledge and observations. Firstly, it talks about basic information and the history of the chosen company, as well as the personnel headcount and the organisational structure of the company. Furthermore, it focuses on the strengths and weaknesses as well as opportunities and threats included in a so-called SWOT analysis.

Later on, the practical part provides multiple analyses of cost, starting with the net income analysis and moving on to analyses of costs based on their type as well as their behaviour. Afterwards, the thesis presents a short-term cost model created based on the internal information of the company altogether with a break-even point analysis, and a calculation of margin of safety.

Last but not least, it provides the evaluation of the analysis together with some suggestions for the improvement of the cost management in the selected company.

I. THEORY

1 COSTS

Term 'cost' is often used in aspects of everyday life. Various companies and businesses are not the only ones that need to keep track of their spendings, their expenditures, their costs. On a daily basis, every human being has to carefully think and calculate how to spend the money to make it through until the next pay check comes around.

1.1 Cost definition

Costs represent one of the fundamentals of economics. On average, costs are understood to be expenses on the income statement that occur in a time period that benefits from the cost. (Garrison, Noreen & Brewer 2012, p. 27)

However, as mentioned by Taušl Procházková (2018, p. 18), costs can be identified also as the monetary expression of the consumption of company production factors that are purposefully spent for the generation of the company's income.

The importance of costs lies mainly in the fact that:

- a. they quantify the different consumption of different factors of production,
- b. they enable the economic efficiency of production and the quality of labour to be monitored,
- c. they are applied as a tool for the management of the various components of the enterprise and the financial management of the enterprise,
- d. they are important for price formation,
- e. they involve funds from a depreciation of assets. (Míka 2005, p. 58)

Costs can also be divided based on different criteria into various sub-groups. To provide an example, there are sub-groups such as costs according to financial or managerial accounting, costs by behaviour, costs by traceability, costs for external reporting, and costs for decision making, which will be explained in more detail in the following pages.

1.2 Costs according to

Business organizations are not the only institutions that have to provide accounting information. Sometimes, it is demanded that individuals provide information about their own financial status as well. Therefore, the users of accounting information can be categorized into further sections:

- internal users within the organization,
- external users (e.g., shareholders, creditors). (Drury 2012, p. 6)

According to this use of accounting information, it is possible to distinguish between two branches of accounting - **management accounting** and **financial accounting**.

Management accounting reflects the internal users of accounting information. It is supposed to provide information to people within the organization to help boost the efficiency and effectiveness of existing operations as well as to help improve decision-making.

Financial accounting reflects the external users of accounting information and its purpose is to provide information to external parties outside the organization.

In other words, management accounting could be referred to as internal reporting, whereas financial accounting could be seen as external reporting. (Drury 2012, p. 6)

1.2.1 Financial accounting

Costs, according to financial accounting, can be characterized as a monetary expression of the consumption of production factors, that are purposefully spent on the generation of enterprise's revenues. Including, also, other necessary costs associated with the activity of the enterprise. (Synek 2010 p. 39) Later on, Synek (2011, p. 80) also emphasises that it is necessary to distinguish between costs and expenses, and cites as an example the purchase of machinery, which is an expense but not a cost.

As Král (2018, p. 52) further points out, in financial accounting, a cost is defined as an outflow of economic benefits that results in a decrease in assets or an increase in liabilities, and that results in a decrease in equity during the period under review.

However, Schroll (1997, p. 51) adds that costs that do not have the equivalent of a monetary outlay must not be included in the financial concept. One example of such cost might be the goodwill of the company.

1.2.2 Management accounting

Management accounting differs from financial accounting in multiple ways. Král (2018, p. 52) states that the characteristics of costs from the point of view of management accounting are seen as a value-expressed, purposeful expenditure of economic resources of an enterprise, purposefully related to economic activity.

In contrast to financial accounting, where an expense is considered to be a cost the moment it becomes part of the product (Král 2018, p. 54), from the perspective of managerial accounting a cost is already evident the moment the economic resource is expended. Most of the time, this expenditure does not lead to an overall asset reduction, but only to a change in its structure.

Garrison, Noreen, and Brewer (2012, p. 25) state that within management accounting the term cost is used in numerous different ways. Further, they explain that the reason for this is that there are many types of costs that are classified differently according to the immediate needs of management.

The notion of different costs for different purposes is seen as a critical aspect of managerial accounting as it is requested that each different use of cost data needs a different classification and definition of costs. (Garrison, Noreen, Brewer 2012, p. 25)

2 COST CLASSIFICATION

A prerequisite for effective cost management is a more detailed breakdown into homogeneous groups. (Král 2018, p. 76) There are many ways to disaggregate costs.

In order to understand and be able to work with them, costs have to be classified into various groups based on multiple different aspects. Each aspect of cost breakdown favours a particular characteristic or group of characteristics. Organising them this way makes it possible to arrange them into logical units that have a certain explanatory power and meaning. (Čechová 2011, p. 72)

2.1 Costs by behaviour

An essential element for decision-making is a knowledge of how costs and revenues will vary with different levels of volume or activity generated within the company. (Drury 2012, p. 29) Certain costs may either stay stable or they may rise or fall depending on whether the activity level itself rises or falls.

According to Drury (2012, p. 29), “activity or volume of production may be measured in terms of units of production or sales, hours worked, miles travelled, patients seen, students enrolled, or any other appropriate measure of the activity of an organization”.

Based on previous statements, costs can be categorized as:

- a. fixed,
- b. variable,
- c. mixed.

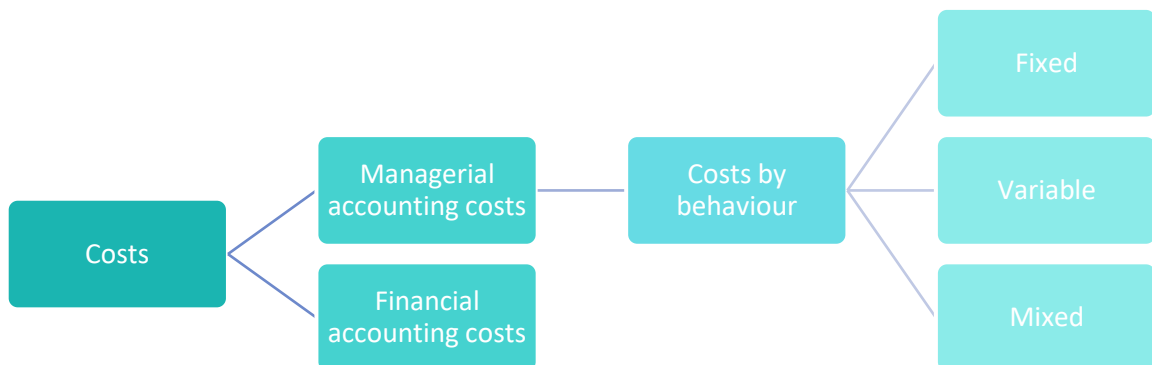


Figure 1: Classification of costs according to their relation to levels of activity (own creation)

2.1.1 Fixed costs

As stated in *Managerial Accounting* by Garrison, Noreen, and Brewer (2012, p. 30), “a fixed cost is a cost that remains constant regardless of changes in the level of activity”. Such fixed costs might include property taxes, insurance, rent, administrative salaries as well as salaries of supervisors in the company.

Furthermore, Garrison, Noreen, and Brewer (2012, p. 31) discuss the division of fixed costs into two sub-categories. They divide the costs according to how the company views them from the perspective of the planning purposes. They are categorized as committed fixed costs and discretionary fixed costs.

Committed fixed costs are a representation of organizational investments of the company within a multi-year planning range that cannot be reduced to short time periods without the need to make fundamental changes. Real estate taxes, salaries of top management as well as insurance expenses can be presented as some examples of such costs.

When it comes to **discretionary fixed costs**, also referred to as *managed fixed costs*, they differ from committed fixed costs based on the length of the planning range. These costs are usually decided upon annually by the management of the company to be spent on certain fixed costs items. Such items might encompass advertising costs, costs spent on research and public relations as well as costs for management development programs.

Discretionary fixed costs can also be cut short without causing any significant damage to the company's long-run goals. (Garrison, Noreen & Brewer 2012, p. 31)

2.1.2 Variable costs

While fixed costs remain constant throughout changes in level activity, a variable cost is a cost that varies in direct proportion to changes in the activity's level. These costs consist of costs for direct materials, direct labour, shipping costs, as well as variable elements of manufacturing overheads that involve costs for indirect materials, supplies, and power. (Garrison, Noreen & Brewer 2012, p. 29)

Variable costs are variable with respect to something. In this case that “something” is called *an activity base*. **An activity base**, also occasionally referred to as *a cost driver*, is a measure of whatever causes the incurrence of a variable cost. Direct labour hours, machine hours, units produced, and units sold are amongst the most common activity bases. (Garrison, Noreen & Brewer 2012, p. 29)

2.1.3 Mixed costs

Mixed costs, also known as semi-variable costs, include both fixed and variable components. (Drury 2012, p. 30)

To provide an example, telephone expenses might be seen as mixed costs, as there are both fixed and variable components incorporated in them. The fixed components consist of costs of the system and costs of the equipment rental, whereas the variable component is the cost of phone calls. Other examples could be photocopying costs of the office or maintenance expenses of production machinery.

2.2 Costs by traceability

It is possible to divide costs that are assigned to cost objects into two broad categories. Based on whether they can be traced straight to cost objects or not, costs are categorized as:

- direct,
- indirect.

Both, direct and indirect costs, may be further divided into:

- direct and indirect materials,
- direct and indirect labour hours. (Drury 2012, p. 24)

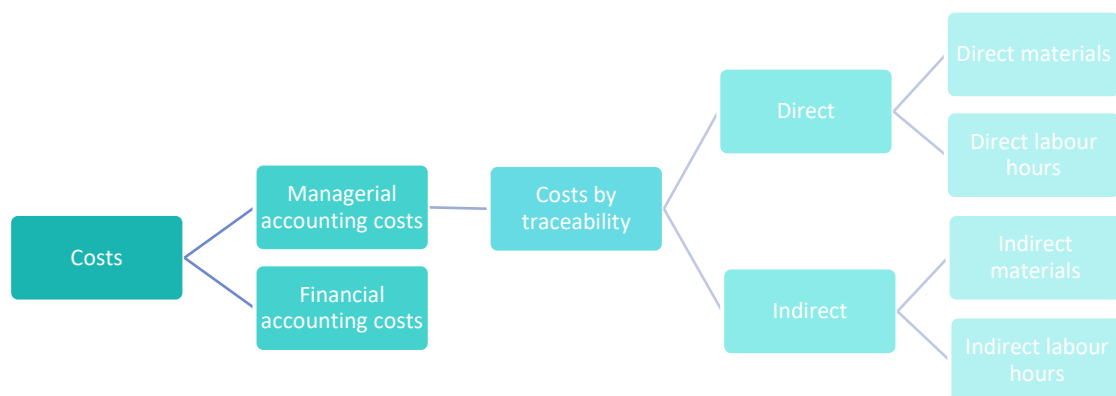


Figure 2: Classification of costs according to their traceability to cost objects (own creation)

2.2.1 Direct costs

The first sub-category of costs according to traceability is direct costs. According to Garrison, Noreen, and Brewer (2012, p. 44), “a direct cost is a cost that can be easily and conveniently traced to a specified cost object”.

For instance, as direct costs can be seen technological costs such as consumed material, wages of employees in production, accounting depreciation of equipment, etc. (Čechová 2011, p. 76)

In order to talk about direct costs, it is essential to mention their subdivision - direct material costs and direct labour costs.

Material costs that can be specifically and exclusively recognized as a part of a particular cost object are classified as **direct material costs**. (Drury 2012, p. 24)

In other words, they are such materials that “become an internal part of the finished product and whose costs can be conveniently traced to the finished product”. (Garrison, Noreen & Brewer 2012, p. 25)

As Drury (2012, p. 25) further states, an example of direct material costs could be wood used in the manufacturing process of different types of furniture as it can be directly identified with each specific type of furniture such as chairs, tables, and bookcases.

Similarly, those labour costs that can be specifically and exclusively traced to a particular cost object are known as **direct labour costs**. The direct labour cost in a production process of a certain product includes the cost of transforming the raw materials into goods. (Drury 2012, p. 25) As Garrison, Noreen, and Brewer also explain (2012, p. 25), “direct labour consists of labour costs that can be physically and conveniently traced to individual units of products”. Another name for direct labour can be *touch labour* (Garrison, Noreen & Brewer 2012, p. 25) as employees touch the product directly as it is being made.

2.2.2 Indirect costs

Another sub-category of costs according to traceability is indirect costs. With some costs, it is not easy nor convenient to trace them to a specific cost object (Garrison, Noreen & Brewer 2012, p. 44), which therefore makes it impossible for these costs to be linked specifically and exclusively to a given cost object as well. (Drury 2012, p. 25). Such costs are commonly known as indirect costs.

Indirect costs consist of:

- indirect labour,

- materials,
- expenses.

An example of an indirect cost that is part of indirect labour could be the wages of all employees whose time cannot be identified with a specific product. In the same way, the costs for machinery repairment, which are part of indirect material costs, must be classified as indirect costs as they cannot be identified with a specific product either. Furthermore, costs including lighting and heating expenses and property taxes are viewed as indirect expenses. However, in the case of indirect expenses, the cost objects are not only products but also the provision of a service or departments. (Drury 2012, p. 25)

Indirect costs are also widely known under the term '**overheads**'. They are classified as:

- manufacturing overheads,
- administration overheads,
- marketing overheads.

While manufacturing overheads include all the costs of manufacturing parts with the exception of direct labour and material costs, administrative overheads incorporate all costs that are connected to the general administration of the organization and cannot be assigned to either manufacturing, marketing, or distribution overheads. Such overheads include top-executive salaries, general accounting, secretarial, and research and development costs. The marketing overheads focus on costs that are necessary to market and distribute a product or a service. They are also known as order-getting and order-filling costs and include advertising, sales personnel salaries, warehousing, and delivery transportation costs. (Drury 2012, p. 25)

2.3 Costs for external reporting

Another way of classifying costs is according to external reporting, therefore as product costs and period costs. It is necessary to do so for profit measurement and inventory valuation purposes.

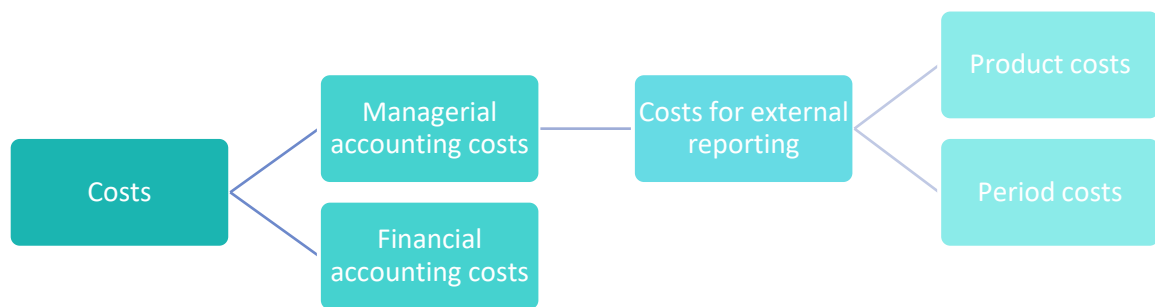


Figure 3: Classification of costs according to the external reporting of the company (own creation)

2.3.1 Product costs

Product costs are defined as costs that are identified with goods that were produced for resale or purchased goods. They include all costs involved in acquiring or making a product.

These costs are attached to the product and at the same time are included in the inventory valuation for finished goods, or partly completed goods prior to their sale. After that, they are part of expense documentation and are matched against sales for calculating profit. (Drury 2012, p. 27)

2.3.2 Period costs

In comparison to product costs, period costs are excluded from the inventory valuation and therefore are considered to be part of the expenses in the period in which they are obtained by the company. (Drury 2012, p. 27) They are not included as part of the cost of either purchased or manufactured goods.

An example of period cost can be all selling and administrative expenses, such as sales commissions, advertising, salaries of executives, and public relations. (Garrison, Noreen & Brewer 2012, p. 27)

2.4 Costs for decision making

In any company, costs play an important role when it comes to decision-making processes. For this reason, it is essential to look at and understand concepts of relevant and irrelevant costs, as well as sunk costs, opportunity costs, marginal costs, and incremental costs.

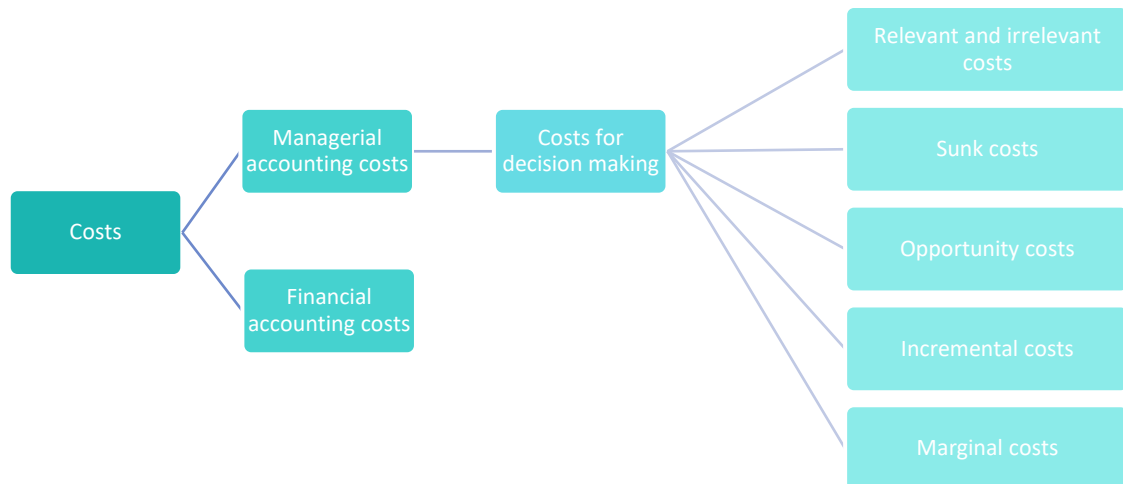


Figure 4: Classification of costs according to the decision making processes of the company (own creation)

2.4.1 Relevant and irrelevant costs

Depending on whether the costs and revenues are substantial for decision-making or not, they are classified as either relevant or irrelevant costs.

Relevant costs and revenues are classified as future costs and revenues that will change depending on the decision made. (Drury 2012, p. 32) These costs are also helpful when it comes to eliminating unnecessary information which may make the process of decision-making for the management more complicated.

On the other hand, decision-making processes within the company will have no effect on the **irrelevant costs** and revenues. (Drury 2012, p. 32) In most cases, these costs are not considered at all when it comes to the decision-making process. However, it is essential to say that irrelevant costs might become relevant with time – depending on the business's priorities.

2.4.2 Sunk costs

A sunk cost is a type of cost that has already been incurred. Simultaneously, if there is a decision made within the company, it does not have any influence on the sunk cost, no matter whether the decision is made now or in the future. Since it is not possible for these costs to be changed, they cannot be classified as differential costs – therefore, they are irrelevant for decision making and should be always ignored within the company. (Garrison, Noreen & Brewer 2012, p. 46)

To illustrate a sunk cost, if special machinery for production was purchased by a company for 50 000€ couple of years back, but the said product is no longer being produced

and therefore the machinery is no longer being used, those 50 000€ is a cost that has already been incurred and cannot be undone. Therefore, the 50 000€ paid for the machinery is a sunk cost that should be ignored when it comes to making current decisions in the company.

2.4.3 Opportunity costs

Based on Garrison, Noreen, and Brewer (2012, p. 45), an opportunity cost is a potential benefit which, in case one alternative is chosen over another, is given upon. Similarly, Drury (2012, p. 33) sees opportunity costs as “costs that measure the opportunity that is lost or sacrificed when the choice of one course of action requires that an alternative course of action is given up”.

After all, fundamental importance for decision-making in the organization lies with opportunity costs. Providing there is no other alternative use of resources, the opportunity cost is zero. However, if the resources can be used for an alternative cause, and are scarce, the opportunity cost is present. (Drury 2012, p. 34)

2.4.4 Incremental costs

Another name used for incremental costs is known to be '**differential costs**'. These costs represent the difference between the costs of each alternative action which is in consideration by the organization. Furthermore, when it comes to incremental costs, both fixed and variable costs can be part of them. (Drury 2012, p. 35)

At the same time, Bentzen and Hirschey (2016, p. 283) present incremental cost as a change in cost that is caused by a given managerial decision. Later the authors also add that such costs might come into play when judging the cost of adding a new product line, advertising campaign, or production shift.

2.4.5 Marginal costs

Marginal costs, together with marginal revenues, are in principle rather similar to incremental costs. The essential contrast between the two is that while marginal costs represent the additional cost of one extra unit, incremental costs are the representation of the additional cost that comes from a group of additional units of output. (Drury 2012, p. 35)

3 COST CALCULATIONS

3.1 Cost objects

When the users of accounting information want to measure the cost of something, that something is called a '**cost object**'. The cost of a product, the cost of rendering a service to a bank customer or hospital patient, and the cost of operating a particular department or sales territory are all included as examples of cost objects. (Drury 2012, p. 23)

Reasons for assigning costs to cost objects can vary, however, they do incorporate pricing purposes, preparing profitability studies, and controlling spending. (Garrison, Noreen & Brewer 2012, p. 43)

3.2 Cost estimation methods

The process of measuring a relationship based on data from past costs and the related level of an activity is called **cost estimation**. As an example, the Volkswagen company could use cost estimation methods to find out and better understand what is the cause of the year-to-year change in their marketing costs all while finding out the fixed and variable components of those costs at the same time. (Horngren 2009, p. 340)

There exist multiple methods that can be used for cost estimation and in reality, many companies implement a combination of these when using them.

Some of the methods are:

- Industrial Engineering Method
- Conference Method
- Account Analysis Method
- Quantitative Analysis Method (Horngren 2009, 342)

4 COST MODELLING

There are a lot of factors that influence the costs of a company. For instance, some of them are the size of a company, the structure of production, the volume of production, and so forth. However, intercepting the influence of all factors is not possible. (Martinovičová 2019, p. 63) This is where the cost models come to play.

4.1 Cost models

Cost models can be identified as simplified representations of the real process of input consumption that is expressed in monetary units. They provide the knowledge and understanding of cost trends, as well as sufficient information to enable cost management. (Martinovičová 2019, p. 63)

It is important to remember that costs behave differently, depending on whether it is in the short run or the long run. Their behaviour can be captured using a cost function. (Taušl Procházková, Jelínková 2018, p. 25)

The **cost function** is the easiest cost model to implement. This cost model reflects the effect of one factor – the volume of production. There are two variables that it takes into account, those are the independent variable which is the volume of production, and the dependent variable which is the total cost. (Martinovičová 2019, p. 63)

There are four methods of determining the cost function:

- classification analysis,
- two-period method,
- point diagram,
- regression and correlation analysis. (Taušl Procházková, Jelínková 2018, p. 28)

When performing the classification analysis, the company's costs are divided into fixed and variable costs. They are subsequently assigned into a cost function. (Taušl Procházková, Jelínková 2018, p. 28)

The two-period method, on the basis of two periods, determines the cost function. In this case, it is best to choose the two periods based on the biggest and the smallest production volume. (Taušl Procházková, Jelínková 2018, p. 28)

As hinted with the name of another method, that can also be called a graphic method, it works with a point diagram. This helps to estimate the approximate progression of the cost function. (Taušl Procházková, Jelínková 2018, p. 29)

Last but not least, there is the regression analysis. This method allows determining not only the linear progression of the cost function, but also the non-linear one. The goal is to determine the ratio dependencies and subsequently, using the correlation analysis, to determine the closeness of said dependencies. (Taušl Procházková, Jelínková 2018, p. 29)

Despite these methods, the most simplified version of the cost function is **the linear cost function**. It displays the proportional evolution of costs. (Taušl Procházková, Jelínková 2018, p. 26) The linear cost function can be, based on two formulas, calculated as:

- production volume expressed in natural units:

$$TC = FC + vc \times q$$

TC = total costs

FC = fixed costs

vc = variable costs

q = volume of production in natural units

- production volume expressed in monetary units:

$$TC = FC + vc \times Q$$

TC = total costs

FC = fixed costs

vc = variable costs

Q = volume of production in monetary units (Martinovičová 2019, p. 64)

4.2 Cost-volume-profit analysis

The cost-volume-profit (CVP) analysis deals with questions such as:

- How many sold units it takes to break-even?
- What would be the effect on profits if we reduce our selling price and sell more units?
- What sales volume is required to meet the additional fixed charges arising from an advertising campaign?

The CVP is a tool that studies the behaviour and relationship among total revenues, total costs, and income as changes in the units sold, the selling price, or fixed costs occur. (Horngren, Datar, Rajan 2012, p. 63) The analysis is based on a short period of time, usually a period of one year. (Drury 2012, p. 168)

This type of analysis is based on the assumption that the fixed costs of the company will in total remain the same within a wide range of production volume that the company is believed to operate in a certain period. (Vanderbeck 2016, p. 534)

Either way, it is a fundamental tool in decision-making, as it shows how profits are affected by the five following factors:

- a. Selling prices.
- b. Sales volume.
- c. Unit variable costs.
- d. Total fixed costs.
- e. Mix of products sold. (Garrison, Noreen & Brewer 2012, p. 184)

This knowledge is crucial to the management as it enables to identify critical output levels, amongst them also the level at which neither a profit nor a loss occurs, so-called **the break-even point**. (Drury 2012, p. 168)

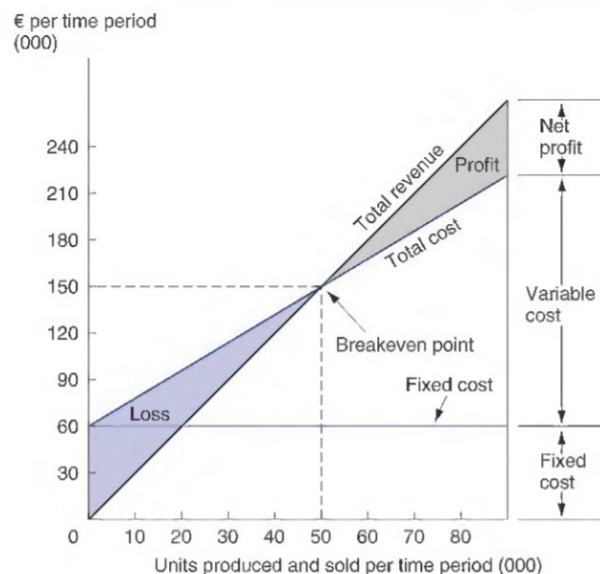


Figure 5: Cost-volume-profit analysis graph (2016, Bentzen, Hirschey)

4.2.1 Break-even point

The break-even point is determined as the starting point in the CVP analysis. The easiest definition of a break-even point could be explained as a level of sales at which the profit of a company equals zero, therefore, the loss is also equal to the fixed expenses of the company. (Garrison, Noreen, Brewer 2012, p. 186 – 187)

Vanderbeck (2016, p. 535) sees this as “a point at which sales revenue is adequate to cover all costs to manufacture and sell the product but not enough to generate any profit”.

The equation for the break-even point could be expressed as following (Vanderbeck, 2016, p. 353):

$$\text{Sales revenue} = \text{Cost to manufacture} + \text{Selling and administrating costs}$$

In mathematical terms, the equation can be expressed as (Vanderbeck, 2016, p. 536):

$$\text{Break – even sales volume} = \frac{\text{Total fixed costs}}{\text{Contribution margin ratio}}$$

$$\text{Contribution margin ratio} = \frac{\text{Net sales revenues} - \text{Variable costs}}{\text{Sales Revenues}}$$

In case a company runs a heterogenous production, the formula for the calculation of break-even point needs to be adjusted, so that it includes penny indicator (h). According to Chobotová (2010, s. 91 – 92), the penny indicator is calculated as the variable costs divided by total revenues in a given period. This indicator indicates how much variable costs were spent per 1€ of the total revenue of the company

$$\text{Break – even sales volume} = \frac{\text{Total fixed costs}}{(1 - h)}$$

$$h = \frac{vc}{\text{Total revenues}}$$

4.2.2 Margin of safety

The margin of safety reflects how far a business is from the break-even point. The closer the company is to zero, the greater the risk that the company will be making loss. To calculate this margin the following formula is used. (Synek 2011, p. 139)

$$MS = \frac{Q_s - BEP}{Q_s}$$

Q_s = volume of production actually achieved (in natural or monetary units)

4.3 Operating leverage

In case a company wants to calculate how big is the percentage of fixed and variable costs within the company's total costs, the operating leverage calculation is used.

Operating leverage is a measuring tool providing information about the sensitivity of the net operating income in relation to the changes in sales. According to Garrison, Noreen, and Brewer (2012, p. 202), “if the operating leverage is high, a small percentage increase in sales can produce a much larger percentage increase in net operating income”. Therefore, it can also simultaneously be used as a tool for multiplying force.

To determine how big of an impact a percentage change in sales activity will have on profits, at a given level of sales, **the degree of operating leverage** is implemented.

$$\text{Degree of operating leverage} = \frac{\text{Contribution margin}}{\text{Net operating income}}$$

The degree of operating leverage is a device for estimating how big of an impact various percentage changes in sales will have on profits while avoiding the need to prepare a detailed income statement. Furthermore, the degree of operating leverage is not a constant – the closer the sales levels are to the break-even point the greater the degree of operating leverage is. At the same time when the sale and profit increase the degree of operating leverage decreases. (Garrison, Noreen & Brewer 2012, p. 203)

5 SUMMARY OF THEORETICAL PART

The aim of the theoretical part was to collect the necessary information to be able to lay the foundation for the following analytical part of the Bachelor's thesis. The theoretical part was conducted on the basis of literature sources related to the subject of costs.

The first chapter of the Bachelor's thesis was devoted to the definition of the concept of costs, as costs can be looked at from two different levels of accounting – financial and managerial. Financial accounting characterizes costs as monetary expressions of the consumption of production factors. Meanwhile, managerial accounting sees them as value-expressed, purposeful expenditures of economic resources.

The aim of the second chapter was to provide a classification of costs according to multiple criteria. At first, the division of costs by behaviour was explained, which also described and explained terms such as fixed, variable, and mixed costs. Then the costs were classified based on their traceability – dividing the costs as direct and indirect. Another division talked about product and period costs that fall under the costs for external reporting. The last division of costs is based on decision making and includes relevant and irrelevant costs, as well as opportunity, sunk, incremental and marginal costs.

The following, third chapter, explained the concept of cost objects and talked about what a costs estimation method is, followed by briefly stating various types of estimation methods.

Lastly, the fourth chapter described cost models and cost functions and mentioned four methods of determining the cost function. Furthermore, a description of each method was given. Additionally, it discussed what the cost-volume-profit analysis is, together with the break-even point associated with it. As the last thing, the chapter also defined what operating leverage is.

II. ANALYSIS

6 INTRODUCTION OF THE COMPANY

6.1 Basic information

The analysed company is based in a rather small village in the south of Slovakia and has been operating ever since 1994 without any breaks. From the legal point of view, the company is characterized as a limited liability company. It is a private enterprise, with the total amount of permanent employees, as of today, being 8. The company is relatively small, despite being around for almost 30 years.

According to the SK NACE classification of economic activities, the selected company is classified in sector 10.61.0 – Manufacture of mill products. Here are some of the activities that are listed as the main business activities of the company:

- operating a grain mill,
- manufacturing mill products (such as flour and starch),
- providing wholesale and retail of mill and agricultural products to local citizens as well as different companies within the local regional market,
- purchase of goods for the purpose of their sale to the final customer, both in retail and wholesale.

6.2 Company's history

As was mentioned earlier, the company was launched in 1994 by two male owners. They decide to launch a company, that focuses on providing goods and services for the local regional market, with the specialization being the agriculture industry.

To make the production easier, in 2005, the company's board of owners expanded to four owners as they partnered with another company, that is also a part of the agricultural industry and focuses on the provision of services in the agriculture as well as storage and packaging activities, and handling of goods. As of today, the company has only 3 owners because one of them passed away a few years ago.

Over the last 28 years, the company stayed in the agricultural field of business, only expanding the number of companies they cooperate with as suppliers.

In 2021, the company took a part in a government project to gain additional financial funds for further development and expansion.

6.3 Personnel structure

This subchapter deals with the organisational structure of the company as well as with the development of the employee headcount over the years.

6.3.1 Organisational structure

The statutory body of the company consists of the managing directors – in this case also owners of the company. This means that the company currently has three managing directors who each act independently on behalf of the company.

The headquarters of the company is located within the Nové Zámky district, which is located in the Nitra region, where the company also predominantly operates. The company is currently not planning on expanding its premises or branching out into other areas in the country.

However, there is a possibility for the company to, in the near future, expand its supplier services into the international European market, as they have been offered a partnership with an unnamed Italian company that is interested in some of their products.

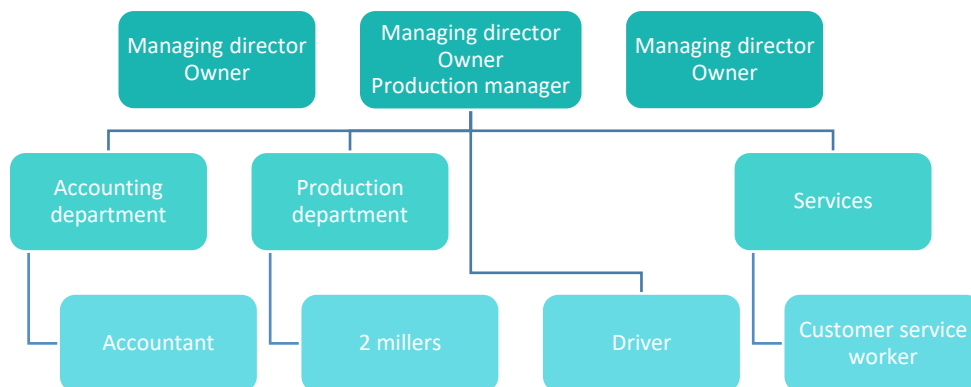


Figure 6: Organisational structure of the company (company’s internal documentation)

6.3.2 Development of the employee headcount

When it comes to the personnel of the company, there have not been very significant changes in the number of people employed throughout the years. The company started out with 7 employees in 1994. The number did not change until the already mentioned partnering in 2005 when the number went from 7 to 9 employees. Once again, during the next couple of years the headcount stayed the same, until around 2015 when the company had to let go of a few, no more needed workers, and the headcount settled once again on number 7. Finally,

in 2019, the headcount stabilized at 8 employees and the company has been functioning like that ever since, up until this day.

Current employees of the company include:

- 2 male owners, who at the same time, act as managing directors of the company,
- 1 female owner, who besides acting as a managing director of the company also holds the position of production manager,
- 2 millers,
- a driver,
- an accountant, who works based on work agreement,
- a customer service worker who also holds a position as an assistant of the production manager.

The number of employees of the company is shown in the table below.

	1994	2005	2015	2019
Employee headcount	7	9	7	8

Table 1: Development of the employee headcount (company's internal documentation)

6.4 SWOT Analysis

SWOT is a popular strategic planning technique that is used to help an organization evaluate the Strength, Weaknesses, Opportunities, and Threats – creating the acronym SWOT – in a project, organization, or in business venture.

The analysis is carried out as an evaluation of both the internal and external aspects surrounding the company. The internal includes the strengths and weaknesses, whereas the external comprises opportunities and threats.

For a better understanding of the chosen company, a SWOT analysis has been created. While creating it, it was important to think of the future strategies of the company and the essential role the analysis could have when planning those strategies.

STRENGTHS	WEAKNESSES
<ul style="list-style-type: none"> • family business • stable market position • reliable supply delivery • highly satisfied customer as well as the company's partners • fertile land 	<ul style="list-style-type: none"> • lack of employees speaking foreign languages • no official business web site • lack of promotion of the company as well as products
OPPORTUNITIES	THREATS
<ul style="list-style-type: none"> • expanding into international markets • investment into new machinery • investment into new land • financial support by the government • less competitors in local market 	<ul style="list-style-type: none"> • diseases and viruses attacking the crops • weather conditions • emerging competitors • change of the customer attitude towards the company

Table 2: SWOT analysis of the selected company (own creation)

6.4.1 Strengths

Based on the SWOT analysis provided earlier, the strengths of the company can be considered to be its stable market position throughout multiple decades as well as highly satisfied customers, and thanks to reliable supply delivery, also extremely satisfied partners of the company. Furthermore, one of the biggest advantages of the company is that it operates mostly as a family business with a great foundation. Lastly, the advantage the company holds is the fertile fields it acquired over the years.

6.4.2 Weaknesses

One of the weaknesses of the company can be seen in the lack of employees speaking foreign languages – especially now that the company has been offered a partnership with an Italian company. Another weaknesses include no official website or social media accounts of the company, which subsequently leads to a lack of the promotion of both the company and the products and services it offers.

6.4.3 Opportunities

The opportunities of the company involve the already mentioned possibility of expanding into international markets by partnering with the Italian company. In addition, the opportunities include the investment into new machinery, together with investment in a new land, which could result in increased profits of the company, and as there is less competition in the local market, it could lead to an even more secure market position. Lastly, there is an opportunity for financial support by the government, in case, that the company decides to participate in programs and projects presented to them by the government.

6.4.4 Threats

However, it is important to remember that besides the opportunities on the market, there are also threats that could cause problems for the company in the future. As one of the main threats could be seen various diseases and viruses that could attack the crops and therefore destroy the harvest the company is so dependent on. Besides the viruses, another thing greatly influencing the crops is the weather conditions throughout the year and their consequences. On the other hand, threats for the company itself could include the possibility of new competitors emerging along with the chance of a change of the customer attitude towards the company over time.

6.5 Structure of assets and financial structure

6.5.1 Structure of assets

Looking at the table below, it is noticeable that over the years the current assets remained to be the main item of the asset structure of the company. More precisely the inventory, which is a part of the current assets.

Based on the internal documentation, the inventory mainly consists of finished and unfinished products, however, a smaller part is also made up of chemical protective substances and fuels. Essentially, the inventories account for more than half of the company's current assets, taking up approximately 57% up to 75% throughout 2019 to 2021, respectively. Out of the overall assets of the company, the inventories ranged from 45% up to a little over 48% throughout the analysed period of time. This is probably not going to change, as the inventory plays a vital part in the manufacturing process throughout the whole year.

Furthermore, taking a closer look at the overall assets of the company, it is conspicuous, that the long-term assets are composed of only the long-term tangible assets (LTA). The LTA measure up to almost 40% of the company's assets. Buildings, constructions, different vehicles, and working machinery all fall under long-term assets. Short-term receivables are also a significant item of the asset structure. For the most part, they are classified as trade receivables.

(EUR)	2019	2020	2021
Assets	1 385 033	1 163 381	1 503 912
Long-term assets	541 233	296 804	235 504
<i>Long-term tangible assets</i>	541 233	296 804	235 504
<i>Long-term intangible assets</i>	0	0	0
<i>Long-term financial assets</i>	0	0	0
Current assets	839 182	864 948	1 267 510
Inventory	630 056	538 977	730 756
Account receivables	139 405	252 918	511 568
<i>Short-term receivables</i>	139 405	252 918	511 568
<i>Long-term receivables</i>	0	0	0
Cash	69 721	73 053	25 186
<i>On hand</i>	12 365	3 445	10 214
<i>In bank accounts</i>	57 356	69 608	14 972
Other assets	4 618	1 629	898
Accrued costs	874	1 099	0
Deferred revenue	3 744	530	898

Table 3: Assets of the company (company's internal documentation)

6.5.2 Financial structure

Despite the unchanging amount of share capital, the equity of the selected company has been increasing over the last three years, as is shown in Table 4. This indicates that, in those years, the company was profitable.

However, it can be observed that the company had a relatively low economic result in 2020 compared to 2019 or 2021. The reason for that was the unfavourable weather conditions which had an impact on the insufficient harvest which essentially led to low production and consequently low sales.

The largest part of equity is represented by the profit/loss of previous years. It can be said, with a high degree of probability, that the company keeps the profit it generates for future needs and the development of the company. Another potential purpose of keeping the profit might be to cover possible losses in the future.

The major part of the company's financial structure consists of liabilities. However, it is important to point out that while the equity of the company has been increasing, the liabilities have been decreasing. In 2019 the liabilities took up over 68%, whereas in 2021 they merely covered 40% of the financial structure.

EUR	2019	2020	2021
Liabilities & equity	1 385 033	1 163 381	1 503 912
Equity	434 245	477 698	892 103
Share capital	5000	5000	5000
Capital funds	0	0	0
Profit funds	640	640	640
Profit/loss previous years	289 640	428 605	472 058
Profit/loss current year	138 965	43 453	414 405
Liabilities	945 346	678 346	604 421
Reserves	13 801	15 079	14 161
Current liabilities	890 660	636 200	519 112
Long-term liabilities	0	0	0
Short-term liabilities	890 660	636 200	519 112
Bank loans	40 885	27 067	71 148
Other liabilities & equity	5 442	7 337	7 388
Accrued expenses	0	0	0
Deferred income	5 442	7 337	7 388

Table 4: Equity and liabilities of the company (company's internal documentation)

6.6 An overview of the main economic indicators

To get a better idea of how the company is performing, let's take a look at the company's economic results over the years 2019 to 2021. In the table below, it is presented how the total revenues and the total costs of the company developed in those years and whether the company was able to make a profit or loss. As Table 5 shows, the company was able to make a profit in all three analysed years. Although, there is a significant drop in the profit in 2020. As mentioned earlier, the company suffered a loss during the harvest period, which was reflected in low production and sales.

In the following year, however, the company was able to recover from the loss and even increased its profit by almost three times compared to 2019. So far, it was proven that the profit of the company is greatly dependent on the external factors that they are not able to influence, such as weather conditions or global warming. Therefore, it is hard to predict whether the company will be able to make a profit or loss in the upcoming years.

EUR	2019	2020	2021
Total revenues	1 409 857	1 246 548	1 602 290
Total costs	1 270 892	1 203 095	1 187 885
Earnings before taxation (EBT)	226 797	93 946	470 986
Earnings after taxation (EAT)	138 965	43 453	414 405

Table 5: Revenues, costs and earnings before and after taxation 2019–2021 (company's internal documentation)

7 COST ANALYSIS OF THE COMPANY

The following cost analysis is carried out based on the knowledge gained from the theoretical part of the Bachelor's thesis. The chapter is divided into three parts. The first part is focused on net income analysis, the second part presents the analysis of costs based on their type and the third one focuses on the analysis of costs based on their behaviour. The overall analysis is based on an accurate and detailed breakdown of the company's costs, and the analysed period is from 2019 to 2021.

7.1 Net income analysis

I have chosen the years 2019 – 2021 for the analysis as well as to display the development of the net income within the company.

As can be seen, in 2020, there is a significant difference in multiple aspects compared to both the previous and next years. Besides the already mentioned drop in the overall profit, the production of the company also decreased by approximately 12% compared to 2019. In 2021 the company managed to get back on track and successfully increase the production by almost 27%. This is also reflected in the increased added value of the invested assets, which essentially leads to an increased market value of the company.

EUR	2019	2020	2021
Trade margin	82	659	231
Production	1 143 807	1 007 765	1 376 421
Production consumption	628 604	568 846	661 841
Added value	515 285	439 578	714 811
Net income from economic activities	228 708	95 316	472 528
Net income from financial activities	- 1 911	- 1 917	- 1 545
Net income from operating activities	226 797	93 399	470 983
Net income from non-operating activities	0	0	3
Earnings before taxation (EBT)	226 797	93 399	470 986
Tax	87 674	49 946	56 581
Additional tax	158	0	0
Earnings after taxation (EAT)	138 965	43 453	414 405

Table 6: Analysis of net income development 2019–2021 (own creation)

7.2 Analysis of costs by type

The first step of the analysis is to categorise the costs into different groups according to what type they are. Table 7 gives an overview of the various cost types that are divided in accordance with the reviewed years, which will be discussed in more detail later in the analysis.

Furthermore, this chapter provides a horizontal and vertical analysis of the company's costs. At first, the vertical analysis, which expresses the percentage share of each cost item to the total costs, is carried out. Subsequently, the horizontal analysis is used to portray the evolution of said costs and to compare the change they underwent year by year.

EUR	2019	2020	2021
Cost of goods sold	40 040	13 867	17 552
Consumption costs	628 604	568 846	661 841
Material consumption	456 049	403 815	475 255
Energy consumption	13 278	12 864	17 455
Service consumption	159 277	152 167	169 131
Personal costs	196 903	213 895	219 397
Wages	140 613	152 842	156 208
Social insurance	49 393	53 585	55 108
Social costs	6 897	7 468	8 081
Taxes and fees	19 401	23 506	28 522
Other operating costs	27 109	57 951	27 686
Depreciation	269 092	273 166	174 761
Financial cost	1 911	1 917	1 545
Interest	1 376	1 365	1 404
Other financial cost	535	552	141
Income tax	87 832	49 946	56 581
Total cost	1 270 892	1 203 094	1 187 885

Table 7: The classification of company's costs (own creation)

7.2.1 Vertical analysis

Table 8 shows the vertical analysis of the selected company's costs expressed as percentages. It compares individual cost items with the total cost of the enterprise. In addition, it also reflects how much of the total costs these individual items represent.

	2019	2020	2021
Cost of goods sold	3,15%	1,15%	1,48%
Consumption costs	49,47%	47,28%	55,72%
Material consumption	35,89%	33,56%	40,01%
Energy consumption	1,05%	1,07%	1,47%
Service consumption	12,53%	12,65%	14,24%
Personal costs	15,49%	17,78%	18,47%
Wages	11,06%	12,70%	13,15%
Social insurance	3,89%	4,45%	4,64%
Social costs	0,54%	0,62%	0,68%
Taxes and fees	1,53%	1,95%	2,40%
Other operating costs	2,13%	4,82%	2,33%
Depreciation	21,17%	22,71%	14,71%
Financial cost	0,15%	0,16%	0,13%
Interest	0,11%	0,11%	0,12%
Other financial cost	0,04%	0,05%	0,01%
Income tax	6,91%	4,15%	4,76%
Total cost	100,00%	100,00%	100,00%

Table 8: Vertical analysis of the selected company presented as percentages (own creation)

It is evident from the table that during the analysed period, consumption costs account for the largest percentage of the total cost. For the most part, consumed costs are made up of material consumption costs. It is most likely due to the fact that the company uses a large number of materials to manufacture its products. In the last year of the analysis, consumption costs actually accounted for more than 55% of the firm's total costs. Out of that 55%, as much as 40% represented the cost of material consumption.

Personal costs are another significant item of the analysis. They make up around 17% of the total cost. Of the 17%, approximately 12% are wages. One other item worth mentioning, as it also accounts for a large part of the overall costs, is depreciation. These costs amount to roughly 20% of the company's costs. As can be seen from the table other items account for around 2% of the total cost, apart from the income tax which is about 5%.

7.2.2 Horizontal analysis

Table 9 presents the horizontal analysis of costs showing the changes that occurred over two consecutive years, expressed in percentages.

	2019/2020	2020/2021
Cost of goods sold	- 65,36%	26,57%
Consumption cost	-9,50%	17,69%
Material consumption	-11,45%	16,34%
Energy consumption	-3,11%	35,68%
Service consumption	-3,86%	11,14%
Personal cost	8,62%	2,57%
Wages	8,69%	2,20%
Social insurance	8,48%	2,84%
Social costs	8,27%	8,20%
Taxes and fees	21,15%	21,33%
Other operating cost	113,77%	-52,22%
Depreciation	1,51%	-36,02%
Financial cost	0,31%	-19,40%
Interest	-0,79%	2,85%
Other financial cost	3,17%	-74,45%
Income tax	-43,13%	13,28%
Total cost	-5,33%	-1,26%

Table 9: Horizontal analysis of the selected company expressed as percentages (own creation)

The first very prominent part of the table is the changes in the cost of goods sold over the analysed period of time. The first thing that cannot go unnoticed is the decrease in the cost of goods sold in 2019/2020, which resulted in a drop of more than 65%. In comparison to that, in the period of 2020/2021 the same costs increased by a little bit under 27%, which shows that the cost of goods sold is extremely volatile.

Another interesting trend within the table is the overall reduction in the consumption costs as well as decrease in individual sections – consumption of materials, energy as well as services. Compared to 2019, the consumption costs of energy and service decreased by more than 3%. In terms of material consumption, it is even more than 11%.

In period of 2020/2021, it is noticeable that there is decrease of costs in multiple sectors. One of the biggest drops including other financial costs, which lowered by more than 74%. Followed by a decrease of a little over 52% of other operating costs.

Additionally, the overall costs of the company seem to be decreasing, based on the analysed data. As can be noticed, the total cost dropped by roughly 5% in 2020 and continued to drop even in 2021, even though in that year it is only by a little over 1%.

7.3 Analysis of costs by behaviour

The following subchapter deals with the analysis of costs that is based on their behaviour – therefore dividing them into fixed and variable. The division of these costs is based on the internal documentation of the company. However, as the company itself does not divide the costs by behaviour into fixed and variable, I had to cooperate and discuss the division with an accountant of the company who helped to allocate the costs properly. Therefore, the costs division was done by method of expert estimation.

EUR	2019	2020	2021
Fixed costs	501 562	514 926	444 204
Variable costs	769 330	688 168	743 681
Total costs	1 270 892	1 203 094	1 187 885

Table 10: Analysis of costs by behaviour (own creation)

	2019	2020	2021
Fixed costs	39,47%	42,80%	37,39%
Variable costs	60,53%	57,20%	62,61%
Total costs	100%	100%	100%

Table 11: Analysis of costs by behaviour expressed as percentages (own creation)

Tables 10 and 11 demonstrate the distribution of fixed and variable costs within the company. It is evident that variable costs portray a larger portion of total costs. Throughout the analysed period, variable costs represented over 57% of the total cost. Furthermore, in 2021 the share of variable costs reached almost 63% which is an increase of nearly 5%. On the other hand, fixed costs fluctuated over the years, going from a little less than 40% in 2019 to slightly over 37% in 2021. As for the overall costs, the company managed to decrease them throughout the years by approximately 6,5%.

7.3.1 Fixed costs

The table below displays the analysis of fixed costs of the company. It shows the distribution of costs according to individual items they were spent on.

The largest fixed-cost item appears to be depreciation. In 2019 the depreciation costs covered approximately 54% of total fixed costs. While in 2020 it remained relatively the same, only lowering to roughly 53%, in 2021 the depreciation cost drastically dropped to a little over 39%.

Another significant component of fixed costs is personal costs. These costs mainly consist of the salaries of the company's employees. Personal costs accounted for 27%, 29%, and 33% during the years 2019, 2020, and 2021, respectively. This proves that the trend of personal costs was going upwards. As mentioned before, wages take up the biggest portion of personal costs. On average they cover roughly 59% of personal costs.

EUR	2019	2020	2021
Consumption costs	47 182	38 073	61 697
Service consumption (fix. portion)	47 182	38 073	61 697
Personal costs	137 402	151 214	150 134
Wages (fix. portion)	81 112	90 161	86 945
Social insurance	49 393	53 585	55 108
Social costs	6 897	7 468	8 081
Tax and fees	19 401	23 506	28 522
Other operating costs	27 109	27 602	27 686
Depreciation	269 092	273 166	174 761
Financial costs	1 376	1 365	1 404
Interest	1 376	1 365	1 404
Total costs	501 562	514 926	444 204

Table 12: Fixed costs of the selected company (own creation)

7.3.2 Variable costs

As well as the previous table, the table below also presents the analysis of costs, however this time it is in regards to variable costs of the company.

In comparison to fixed costs, here the most significant cost item appears to be the consumption costs. As illustrated in Table 13, the consumption costs consist of material, energy, and service consumption. The most prominent aspect of consumption costs is material consumption, which is understandable, given that the company needs material to manufacture the products it sells. Based on the information provided, the material consumption costs make up on average approximately 78% over the analysed period.

The service consumption costs play a big part, not only as part of consumption costs but as part of the total costs as well. In 2020, they take up 21,5% of consumption costs while also taking up over 16% of total costs. Whereas, in the previous year they barely covered 18% of consumption costs, making it a little less than 14,5% of total costs.

In addition to consumption costs, personal costs also significantly contribute to the total costs. Despite the fact that they consist only of wages, these costs managed to slowly grow over the estimated years. In 2019, the share of wages on total costs was barely 8%.

However, in 2020 it raised up to a bit over 9% and remained relatively similar in 2021, only growing by 0,2%.

EUR	2019	2020	2021
Cost of goods sold	40 040	13 867	17 552
Consumption costs	581 422	530 773	600 144
Material consumption	456 049	403 815	475 255
Energy consumption	13 278	12 864	17 455
Service consumption (var. portion)	112 095	114 094	107 434
Personal costs	59 501	62 681	69 263
Wages (var. portion)	59 501	62 681	69 263
Other operating costs	0	30 349	0
Financial costs	535	552	141
Other financial costs	535	552	141
Income tax	87 832	49 946	56 581
Total costs	769 330	688 168	743 681

Table 13: Variable costs of the selected company (own creation)

8 COST MODELLING AND BREAK-EVEN POINT

The following chapter deals with the construction of a short-term cost model, which is then followed by an analysis of the break-even point.

8.1 Short-term cost model

As mentioned in the theoretical part, one of the cost modelling methods is the classification analysis method, which will be used to determine the cost function in this sub-chapter. When conducting this method, it is necessary to know the fixed and variable costs of the company. Those were analysed and calculated in the previous chapter.

Since the company produces and sells several types of products and therefore runs a heterogenous production, it is not possible to set a specific price per product. For that reason, the formula for the global cost function, which is shown below, is used in the calculation of the cost model.

$$TC = FC + h \times Q$$

After adjusting the formula, it was still necessary to calculate a penny indicator to be able to construct a cost function. Once the value of the penny indicator for each year was estimated, the cost function for the analysed period could be determined.

Table 14 presents all the necessary data to calculate the penny indicator as well as its resulting values from 2019 to 2021.

EUR	2019	2020	2021
Variable costs	769 330	688 168	743 681
Total revenues	1 409 857	1 246 547	1 602 290
Penny indicator	0,55	0,55	0,46

Table 14: Data for a penny indicator calculation throughout 2019–2021 (own creation)

As can be observed in Table 14, the penny indicator did not change throughout 2019 and 2020 but significantly decreased in 2021. This indicates that the company did relatively well in recent years, given that the lower the value of the penny indicator, the better it is for the business. Nonetheless, the company should continue to strive to keep the penny indicator as low as possible.

EUR	2019	2020	2021
Fixed costs	501 562	514 926	444 204
Penny indicator	0,55	0,55	0,46

Table 15: Data for a cost function calculation throughout 2019–2021 (own creation)

Year	Cost function
2019	TC = 501 652 + 0,55 x Q
2020	TC = 514 926 + 0,55 x Q
2021	TC = 444 204 + 0,46 x Q

Table 16: Cost function over the analysed years (own creation)

As presented above, Table 15 displays all the necessary data for cost function calculation which is subsequently shown in Table 16.

8.2 Break-even point analysis

In this subchapter, the analysis of the break-even point relied on the materials presented in the theoretical section of the thesis. The information obtained in chapter 4, regarding cost functions, served as a basis for the analysis and calculation of the break-even point. In addition to those, figures obtained by previous analyses or provided by the employees of the company were also used to determine the break-even point.

As pointed out in the previous subchapter, the company runs a heterogeneous production. Therefore, not only the formula for cost function calculation has to be adjusted, but also a formula for break-even point calculation has to be slightly changed to include the penny indicator. Therefore, the formula used for o:

$$\text{Break – even sales volume} = \frac{\text{Total fixed costs}}{(1 - h)}$$

The analysis of the break-even point was conducted based on my own cost classification which is included in chapter 7 of the thesis. In addition to those data, the calculations of the penny indicator from the previous subchapter were used as well.

Following Table 16 presents all the necessary data to calculate the break-even point from 2019 to 2021.

EUR	2019	2020	2021
Total revenues	1 409 857	1 246 547	1 602 290
Fixed costs	501 562	514 926	444 204
Penny indicator	0,55	0,55	0,46
Break-even point	1 114 582	1 144 280	822 600

Table 17: Break-even point calculation throughout 2019–2021 (own creation)

Comparing the results of the break-even points, it can be concluded that each year the company generated sufficient revenues to cover costs of the company and generate profit. Based on Table 16, it can be observed that the lowest break-even point actually occurred in 2021. As to previous years, it dropped by approximately 28%.

In 2020, the company reached its lowest profit, while the highest profit is reported in 2021. This indicates that 2021 was a successful year for the company, as it not only managed to lower overall costs, due to lowering the fixed costs, but it also managed to reach the lowest break-even point and generate the highest profit of the analysed time period.

8.3 Margin of safety

Based on the formula mentioned in chapter 4 of the thesis, the margin of safety was calculated and expressed in percentages.

EUR	2019	2020	2021
Total revenues	1 409 857	1 246 547	1 602 290
Break-even point	1 114 582	1 144 280	822 600
Margin of safety	26,49%	8,20%	94,78%

Table 18: Margin of safety calculation throughout 2019 -2021 (own creation)

From Table 18 it can be observed that the company was able to stay above the break-even point throughout the analysed years. However, there is a significant decline in 2020, when the company was extremely close to zero, creating income only around 8% above the break-even point. That year, based on the information provided by the company's accountant, the company was struggling because of various external elements they could not influence, such as an extremely low crop harvest. In comparison, in 2021 the company managed to bounce back and had the safety margin of nearly 95%.

9 SUMMARY OF ANALYSIS

The purpose of the analytical part was to examine and analyse the costs of the selected company during the years 2019 - 2021. The analysis was conducted based on the internal documentation that was provided by the company. The documentation included general ledgers for the years in question as well as balance sheets. Besides the documents, some of the information was obtained directly from the company employees.

In the first chapter, the analysis introduces some basic information about the company, the field of its business as well as its history. Afterwards, the personnel structure of the company which included the organizational structure, followed by the development of the employee headcount over the period of the company's existence is presented. The biggest part of that chapter was occupied by the SWOT analysis, which is later described in more detail. Furthermore, the chapter talks about the structure of assets and the financial structure as well, which is then followed up by an overview of the main economic indicators.

The following chapter focused on allocating the costs of the company based on their type classification as well as their behaviour. It also included a net income analysis of selected years. The subchapter regarding the division of costs by type contained also the vertical and horizontal analyses of costs, while the subchapter concerning costs by behaviour involved the division of costs into fixed and variable.

The last chapter of the analytical part revolved around cost modelling and the break-even point analysis. At first, the calculations of cost functions for each analysed year were conducted. Those were followed up by the break-even point calculation as well as the interpretation of the results.

While performing various analyses, it was discovered that the largest item of the company's costs is consumption costs. They take up, on average 51%, of the company's total costs. Later on, it was also observed that the costs of the company are mainly made of variable costs, which account for more than 60% of the expenses generated by the company. As can be assumed, the largest part of the variable costs is made up of consumption costs, especially material consumption.

As for the break-even point analysis, it proved that the company is doing relatively well. Given the results, the company managed to generate higher revenues than costs during all three years under review.

10 SUGGESTIONS FOR IMPROVEMENT

Based on the analyses carried out, which enabled the identification of a number of shortcomings of the company, a series of recommendations will be proposed. The aim of these recommendations is to improve the efficiency of managerial decision-making.

- **More detailed cost records**

After going through the provided documentation of the company and a conversation with the production manager as well as the accountant, it became clear that there need to be changes implemented in the method of cost documentation. The company should not have any major problem with creating more detailed cost recording as it is size-wise relatively small. However, based on the records it is apparent that the company does not keep such records at the moment. Therefore, I would suggest for the company do that. One of the possible ways is to use a specialized software program designed to record accounting data. Such a program could, for example, directly identify the costs of repair of individual production machines, or note down costs associated with each vehicle used by the company, such as means of transport (e.g., cars, trucks used for logistics) or agriculture vehicles (e.g., harvester, tractor).

- **Classification of costs as fixed, variable, and mixed**

As was mentioned before, the company does not keep records of which costs are fixed, variable, and mixed. With the software suggested in the paragraph above, it would be possible to use the program to differentiate the costs accordingly. Therefore, it would be much easier for the company to keep track on how big of a portion is taken up by variable costs and how much is taken up by fixed costs. This could become beneficial in case the variable costs. or even fixed costs, increased. The company would be able to immediately notice such change and undertake the necessary steps to lower the costs.

- **Marketing and promotion via Internet and social media**

Although the company has a stable market position in its regional market and relatively low competition in the agricultural sector, it still falls behind its competitors in some aspects. One of the aspects in question is the marketing, promotion, and engagement of the company via the Internet, the company's website, or social media. While the competitors at the very least have some sort of social media accounts to promote themselves, the company has no means for online promotion and marketing. A good recommendation for the company would

be to create a website with some basic information about the company, which could also help to promote the products and services they are offering, and perhaps even create an online ordering form for the company's customers. In addition to that, the company could create accounts on social media where they could post pictures of products and other agriculture-related processes, inform potential customers about what they offer as well as provide some news from the company's environment. This could lead to better marketing of the company and essentially attract new customers and partners.

- **Optimal ratio of equity and liabilities, and possible investment**

The analysis of financial structure informed us about the ratio of equity and liabilities of the company. The optimal situation occurs if they are in a 1:1 ratio. However, as could be seen during the analysis of financial structure, in 2019 the liabilities of the company took up over 68%. Despite the drop by 10% in 2020, the liabilities still accounted for more than half of company's total financial resources. The situation got better in 2021, when the liabilities made up around 40%, and the bigger part accounted for equity. Therefore, my suggestion would be for the company to take a loan and invest the money into expanding business activities or investing into financial markets. In this kind of situation the company does not have to be worried about going into debt as their own equity capital is in sufficient amount to exceed the liabilities.

CONCLUSION

The main aim of the Bachelor's thesis was to perform a cost analysis of the selected company during the years 2019 - 2021, the subsequent calculation of the cost function, and the calculation of the break-even point.

The theoretical part was devoted to the review of the literature sources which deal with the issue of costs, their classification, and calculation. To start the practical part, I introduced the selected company and provided basic information, the structure of assets as well as financial structure followed by an overview of the main economic indicators. This was followed by a classification of the company's costs from two different viewpoints – according to the type and the behaviour of costs.

In the next part of the thesis, I determined the cost function using the classification method. To be able to calculate the cost function, it was necessary to adjust the original formula. That resulted in usage of the global cost function formula, which led to the need to firstly calculate the penny indicator, that was needed for the further calculations. Afterwards, I also carried out the calculation and the analysis of the break-even point of the company, followed up by calculations of safety margin. The calculations proved that the company achieving their annual goals by generating enough revenues to be able to cover for the total costs, and therefore generate profit.

In the last part of the thesis, recommendations for the improvement of the company's data organization, mainly costs, as well as ideas for better marketing and promotion of the company were proposed. Those suggestions included using a software program to obtain a more efficient system of cost recording along with a clearer classification of costs within the company. Another recommendation was to improve the marketing and promotion of the company through social media, as the company has absolutely no promotion on the Internet. This could help attract new customers and essentially generate higher revenues for the company.

Lastly, I recommended the company to invest into new markets or possible widening the business activities, as it was proven through the financial structure analysis that they have sufficient amount of own capital to be able to invest without worrying about possible debt.

Based on the presented facts and the results of the analyses, it can be concluded that the aim of the Bachelor's thesis has been fulfilled. I hope that this thesis was not beneficial not only to me but will also be beneficial to the analysed company in its future activities.

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LIST OF ABBREVIATIONS

BEP Break-even point

CVP Cost-volume-profit

FC Fixed costs

h Penny indicator

LTA Long-term assets

MS Margin of safety

Q Volume of production in monetary units

q Volume production in natural units

Qs Volume of production actually achieved in natural or monetary units

TC Total costs

vc Variable costs

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APPENDICES

Appendix P I: General ledger 2019

Appendix P II: General ledger 2020

Appendix P III: General ledger 2021

APPENDIX P I: GENERAL LEDGER 2019

HLAVNÁ KNIHA 2019		2019	
Účet	Názov účtu	Konečný stav (EUR)	
		Má dať	Dal
021	Stavby	33 300	0
022	Samostatné hnuteľné veci a súbory hnuteľných vecí	1 124 519	0
029	Ostatný dlhodobý majetok	1 500	0
042	Obstaranie DHM	33	0
052	Poskytnuté preddavky na DHM	0	0
081	Oprávky k stavbám	0	4 740
082	Oprávky k samostatným hnuteľným veciam a k súborom hnuteľných vecí	0	612 864
089	Oprávky k ostatnému DHM	0	515
0		541 233	0
111	Obstaranie materiálu	0	0
112	Materiál na sklade	10 752	0
121	Nedokončená výroba	193 942	0
123	Výrobky	420 389	0
131	Obstaranie tovaru	0	0
132	Tovar na sklade	4 973	0
1		630 056	0
211	Pokladňa	10 639	0
213	Ceniny	1 726	0
221	Bankové účty	57 356	0
231	Krátkodobé bankové úvery	0	40 885
261	Peniaze na ceste	0	0
2		28 836	0
311	Odberatelia	125 326	0
314	Poskytnuté preddavky	0	0
321	Dodávatelia	0	736 732
323	Krátkodobé rezervy	0	13 801
324	Prijaté preddavky	0	64 125
325	Ostatné záväzky	0	8 000
326	Nevyfakturované dodávky	0	4 407
331	Zamestnanci	0	8 754
335	Pohľadávky voči zamestnancom	0	0
336	Zúčtovanie s orgánmi soc. a zdrav. poistenia	0	5 731
341	Daň z príjmov	0	3 002
342	Ostatné priame dane	0	1 457
343	DPH	14 079	0
345	Ostatné dane a poplatky	0	347
346	Dotácie zo štátneho rozpočtu	0	0
365	Ostatné záväzky voči spoločníkom a členom	0	57 200
378	Iné pohľadávky	0	0
379	Iné záväzky	92	0
381	Náklady budúcich období	874	0

383	Výdavky budúcich období	0	5 442
385	Príjmy budúcich období	3 744	0
395	Vnútorne účtovanie	0	0
3		0	764 883
411	Základné imanie	0	5000
421	Zákonný rezervný fond	0	640
428	Nerozdelený zisk minulých rokov	0	305 193
429	Nerozdelená strata minulých rokov	15 553	0
431	Prevod HV	0	0
472	Sociálny fond	0	997
474	Záväzky z prenájmu	0	0
4		0	296 277
501	Spotreba materiálu	456 049	0
502	Spotreba energie	13 278	0
504	Predaný tovar	40 040	0
511	Opravy a udržiavanie	10 685	0
513	Náklady na reprezentáciu	111	0
518	Ostatné služby	148 481	0
521	Mzdové náklady	140 613	0
524	Zákonné soc. poistenie	49 393	0
527	Zákonné soc. náklady	6 232	0
528	Ostatné soc. náklady	665	0
531	Cestná daň	347	0
532	Daň z nehnuteľností	18 981	0
538	Ostatné dane a poplatky	73	0
544	Zmluvné pokuty, penále a úroky z omeškania	1	0
545	Ostatné pokuty, penále a úroky z omeškania	0	0
548	Ostatné náklady na hosp. činnosť	27 108	0
549	Manká a škody	0	0
551	Odpisy hmotného investičného majetku	269 092	0
562	Úroky	1 376	0
568	Ostatné fin. náklady	535	0
591	Splatná daň z príjmov	87 674	0
595	Dodatočné odvody dane z príjmov	158	0
5		1 270 892	0
601	Tržby za výrobky	0	1 018 955
602	Tržby z predaja služieb	0	7 665
604	Tržby za tovar	0	40 122
611	Zmena stavu nedokončenej výroby	23 817	0
613	Zmena stavu výrobkov	0	141 004
642	Tržby z predaja materiálu	0	0
648	Ostatné výnosy z hosp. činnosti	0	225 928

688	Ostatné fin. výnosy	0	0
6		0	1 409 857
701	Začiatkový účet súvahový	0	0
7		0	0
898	Režijné náklady	454 789	0
8		454 789	0
998	Výnosy z rozpustenia réžie	0	454 789
9		0	454 789
SPOLU		2 925 806	2 925 806
Hospodársky výsledok		138 965	

APPENDIX P II: GENERAL LEDGER 2020

HLAVNÁ KNIHA 2020		2020	
Účet	Názov účtu	Konečný stav (EUR)	
		Má dať	Dal
021	Stavby	33 300	0
022	Samostatné hnutelné veci a súbory hnutelných vecí	1 126 304	0
029	Ostatný dlhodobý majetok	1 500	0
042	Obstaranie DHM	26 990	0
052	Poskytnuté preddávky na DHM	0	0
081	Oprávky k stavbám	0	6 365
082	Oprávky k samostatným hnutelným veciam a k súborom hnutelných vecí	0	884 217
089	Oprávky k ostatnému DHM	0	703
0		296 809	0
111	Obstaranie materiálu	0	0
112	Materiál na sklade	6 068	0
121	Nedokončená výroba	158 902	0
123	Výrobky	374 007	0
131	Obstaranie tovaru	0	0
132	Tovar na sklade	0	0
1		538 977	0
211	Pokladňa	957	0
213	Ceniny	2 488	0
221	Bankové účty	69 608	0
231	Krátkodobé bankové úvery	0	27 067
261	Peniaze na ceste	0	0
2		45 986	0
311	Odberatelia	203 239	0
314	Poskytnuté preddávky	0	0
321	Dodávatelia	0	547 782
323	Krátkodobé rezervy	0	15 079
324	Prijaté preddávky	0	0
325	Ostatné záväzky	0	8 000
326	Nevyfakturované dodávky	0	4 367
331	Zamestnanci	0	9 480
335	Pohľadávky voči zamestnancom	0	0
336	Zúčtovanie s orgánmi soc. a zdrav. poistenia	0	6 183
341	Daň z príjmov	37 600	0
342	Ostatné priame dane	0	1 479
343	DPH	12 079	0
345	Ostatné dane a poplatky	0	352
346	Dotácie zo štátneho rozpočtu	0	0
365	Ostatné záväzky voči spoločníkom a členom	0	57 200
378	Iné pohľadávky	0	0
379	Iné záväzky	92	0
381	Náklady budúcich období	1 099	0

383	Výdavky budúcich období	0	7 337
385	Príjmy budúcich období	530	0
395	Vnútorne účtovanie	0	0
3		0	402 620
411	Základné imanie	0	5000
421	Zákonný rezervný fond	0	640
428	Nerozdelený zisk minulých rokov	0	444 158
429	Nerozdelená strata minulých rokov	15 553	0
431	Prevod HV	0	0
472	Sociálny fond	0	1 449
474	Závazky z prenájmu	0	0
4		0	435 694
501	Spotreba materiálu	403 815	0
502	Spotreba energie	12 864	0
504	Predaný tovar	13 867	0
511	Opravy a udržiavanie	9 778	0
513	Náklady na reprezentáciu	0	0
518	Ostatné služby	142 389	0
521	Mzdové náklady	152 842	0
524	Zákonné soc. poistenie	53 585	0
527	Zákonné soc. náklady	6 522	0
528	Ostatné soc. náklady	946	0
531	Cestná daň	352	0
532	Daň z nehnuteľností	23 081	0
538	Ostatné dane a poplatky	73	0
544	Zmluvné pokuty, penále a úroky z omeškania	0	0
545	Ostatné pokuty, penále a úroky z omeškania	0	0
548	Ostatné náklady na hosp. činnosť	27 602	0
549	Manká a škody	30 349	0
551	Odpisy hmotného investičného majetku	273 166	0
562	Úroky	1 365	0
568	Ostatné fin. náklady	552	0
591	Splatná daň z príjmov	49 946	0
595	Dodatočné odvody dane z príjmov	0	0
5		1 203 094	0
601	Tržby za výrobky	0	1 052 729
602	Tržby z predaja služieb	0	6 109
604	Tržby za tovar	0	14 526
611	Zmena stavu nedokončenej výroby	4 691	0
613	Zmena stavu výrobkov	46 382	0
642	Tržby z predaja materiálu	0	0
648	Ostatné výnosy z hosp. činnosti	0	224 256

688	Ostatné fin. výnosy	0	0
6		0	1 246 547
701	Začiatocný účet súvahový	0	0
7		0	0
898	Režijné náklady	459 766	0
8		459 766	0
998	Výnosy z rozpustenia réžie	0	459 766
9		0	459 766
SPOLU		2 544 632	2 544 632
Hospodársky výsledok		43 453	

APPENDIX P I: GENERAL LEDGER 2021

HLAVNÁ KNIHA 2021

Účet	Názov účtu	2021	
		Konečný stav (EUR)	
		Má dať	Dal
021	Stavby	62 538	0
022	Samostatné hnutelné veci a súbory hnutelných vecí	1 237 513	0
029	Ostatný dlhodobý majetok	1 500	0
042	Obstaranie DHM	0	0
052	Poskytnuté preddavky na DHM	0	0
081	Oprávky k stavbám	0	9 577
082	Oprávky k samostatným hnutelným veciam a k súborom hnutelných vecí	0	1 055 579
089	Oprávky k ostatnému DHM	0	890
0		235 504	0
111	Obstaranie materiálu	0	0
112	Materiál na sklade	114 031	0
121	Nedokončená výroba	199 016	0
123	Výrobky	417 709	0
131	Obstaranie tovaru	0	0
132	Tovar na sklade	0	0
1		730 756	0
211	Pokladňa	8 221	0
213	Ceniny	1 993	0
221	Bankové účty	14 972	0
231	Krátkodobé bankové úvery	0	71 148
261	Peniaze na ceste	0	0
2		0	45 962
311	Odberatelia	262 296	0
314	Poskytnuté preddavky	0	0
321	Dodávatelia	0	429 604
323	Krátkodobé rezervy	0	14 161
324	Prijaté preddavky	0	0
325	Ostatné záväzky	0	8 000
326	Nevyfakturované dodávky	0	7 844
331	Zamestnanci	0	10 318
335	Pohľadávky voči zamestnancom	0	0
336	Zúčtovanie s orgánmi soc. a zdrav. poistenia	0	6 638
341	Daň z príjmov	19 555	0
342	Ostatné priame dane	0	1 654
343	DPH	39 783	0
345	Ostatné dane a poplatky	0	358
346	Dotácie zo štátneho rozpočtu	189 362	0
365	Ostatné záväzky voči spoločníkom a členom	0	57 200
378	Iné pohľadávky	572	0
379	Iné záväzky	4 223	0
381	Náklady budúcich období	898	0

383	Výdavky budúcich období	0	7 388
385	Príjmy budúcich období	0	0
395	Vnútorne účtovanie	0	0
3		0	26 476
411	Základné imanie	0	5 000
421	Zákonný rezervný fond	0	640
428	Nerozdelený zisk minulých rokov	0	487 611
429	Nerozdelená strata minulých rokov	15 553	0
431	Prevod HV	0	0
472	Sociálny fond	0	1 719
474	Závazky z prenájmu	0	0
4		0	479 417
501	Spotreba materiálu	475 255	0
502	Spotreba energie	17 455	0
504	Predaný tovar	17 552	0
511	Opravy a udržiavanie	20 642	0
513	Náklady na reprezentáciu	140	0
518	Ostatné služby	148 349	0
521	Mzdové náklady	156 208	0
524	Zákonné soc. poistenie	55 108	0
527	Zákonné soc. náklady	7 161	0
528	Ostatné soc. náklady	920	0
531	Cestná daň	157	0
532	Daň z nehnuteľností	28 036	0
538	Ostatné dane a poplatky	129	0
544	Zmluvné pokuty, penále a úroky z omeškania	0	0
545	Ostatné pokuty, penále a úroky z omeškania	3	0
548	Ostatné náklady na hosp. činnosť	27 683	0
549	Manká a škody	0	0
551	Odpisy hmotného investičného majetku	174 761	0
562	Úroky	1 404	0
568	Ostatné fin. náklady	141	0
591	Splatná daň z príjmov	56 581	0
595	Dodatočné odvody dane z príjmov	0	0
5		1 187 885	0
601	Tržby za výrobky	0	1 288 379
602	Tržby z predaja služieb	0	4 226
604	Tržby za tovar	0	17 783
611	Zmena stavu nedokončenej výroby	0	40 114
613	Zmena stavu výrobkov	0	43 702
642	Tržby z predaja materiálu	0	1 500
648	Ostatné výnosy z hosp. činnosti	0	206 583
688	Ostatné fin. výnosy	0	3

6		0	1 602 290
701	Začiatocný účet súvahový	0	0
7		0	0
898	Režiné náklady	421 114	0
8		421 114	0
998	Výnosy z rozpustenia réžie	0	421 114
9		0	421 114
SPOLU		2 575 259	2 575 259
Hospodársky výsledok		414 405	